



The Geology of Haiti: An Annotated Bibliography of Haiti's Geology, Geography and Earth Science.

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Bibliography of Haitian Earth Science

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Preface

This bibliography was produced quickly by the Army Geospatial Center (See: <http://www.agc.army.mil/Haiti/index.html>) in response to the humanitarian crisis caused by the massive magnitude 7.0 earthquake which struck Haiti in January 2010 with an epicenter about 15 km southwest of the capital, Port-au-Prince. An estimated 2 million people live within the zone of heavy to moderate structural damage. The earthquake is assessed as the worst in this region over the last 200 years.

In support of national response efforts led by the U.S. State Department, the U.S. Agency for International Development, and U.S. Southern Command, and the U.S. Army Corps of Engineers has deployed an initial team of four engineers in response to the earthquake in Haiti. The team includes subject matter experts in civil, structural, electrical, and hydrological engineering. Two additional eight-person Forward Engineer Support Teams from USACE's South Atlantic Division and two platoons of the 249th Engineer Battalion, approximately 40 Soldiers, were placed on alert and ready to deploy. The 249th Engineer Battalion, known as the "Army's Power Company," supplies commercial grade power-related technical services to installations and disaster-relief operations. USACE's South Atlantic Division has identified and is preparing additional structural engineers for deployment if called upon.



Figure 1 U.S. Engineers, Haitians Remove Debris in Turgeau. April 2, 2010. By Chief Mass Communication Specialist James G. Pinsky, NAVFAC Public Affairs. See: [http://www.dtic.mil/dtic/pdf/success/leanup.pdf](http://www.dtic.mil/dtic/pdf/success/cleanup.pdf)

In support of this effort, the US Army Corps of Engineers' Army Geospatial Center (AGC) has scanned a number of geological and hydrological maps of Haiti to assist the disaster planners on this mission. This data is used to select locations for supply dumps, emergency hospital locations, sanitation and clean water supplies. Other data on trafficability, transportation and terrain helped with the airlifting of supplies, evacuating the injured, and the prevention of bottlenecks in air, land and water traffic.

The AGC web page has also helped civilian relief agencies in their efforts. The data are available around the world, and the US government, the United Nations and a number of non-governmental organizations have made use of this data in their humanitarian relief efforts.

Some copyrighted and sensitive materials have been placed behind the PKI site, and are available only to US government civilian and military personnel with CAC

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access and for official use only. However, most of the information on the webpage is from open sources, and thus is available to anyone.

Special thanks are given to all those people outside of the Army Geospatial Center who helped in this emergency project. They include the Reference Staff of the US Geological Survey Library who replied promptly to our requests and made their services so accessible (<http://library.usgs.gov/>); the public services staff of the Defense Technical Information Center (DTIC) who responded so quickly to our requests, and bent over backwards to make their information available online to the public (<http://www.dtic.mil/dtic/index.html>); and to the Reference Staff of the Geography and Map Division, The Library of Congress (<http://www.loc.gov/rr/geogmap/>).

Introduction

The Physical Features of Haiti¹

Haiti is a country of about 28,000 square kilometers, and is about the size of the state of Maryland. It occupies the western third of the Caribbean island of Hispaniola (La Isla Española); the Dominican Republic takes up the eastern two-thirds and borders Haiti on the east. A series of treaties and protocols- the most recent of which was the Protocol of Revision of 1936- set the 388 kilometer long eastern border, which is formed partly by the Pedernales River in the south and the Massacre River in the north.

The Dominican Republic is Haiti's only land border. To the south and west it is bordered by the Caribbean and to the north by the Atlantic Ocean. Cuba lies some 50 miles (80 km) west of Haiti's northern peninsula, across the Windward Passage, a strait connecting the Atlantic to the Caribbean. Jamaica is some 120 miles (190 km) west of the southern peninsula, across the Jamaica Channel, and Great Inagua Island (of The Bahamas) lies roughly 70 miles (110 km) to the north. Haiti claims sovereignty over Navassa (Navase) Island, an uninhabited U.S.-administered islet about 35 miles (55 km) to the west in the Jamaica Channel.

Haiti is shaped like a horseshoe on its side with prominent peninsulas in both the north and the south, and a coastline of 1,771 kilometers long. Its shores are generally rocky, rimmed with cliffs, and indented by a number of excellent natural harbours. The surrounding seas are renowned for their coral reefs. Located between the peninsulas is the Ile de la Gonâve. Northwest of the northern peninsula is the Windward Passage, a strip of water that separates Haiti from Cuba, which is about ninety kilometers away.

Haiti operates five hours behind Greenwich Mean Time (GMT).

Topography:

The generally rugged topography of central and western Hispaniola is reflected in Haiti's name, which derives from the indigenous Arawak place-name Ayti ("Mountainous Land"). Five mountain ranges define Haiti's topography, dividing the country into three regions: the northern region, which includes the northern peninsula; the central region; and the southern region, which includes the southern peninsula. The backbone of the island of Hispaniola consists of four major mountain ranges that extend from west to east.

Haiti's mountains are mainly limestone, although some volcanic formations can be found, particularly in the Massif du Nord. Karstic features, such as limestone caves, grottoes, and subterranean rivers, are present in many parts of the country.

Although Haiti is mostly mountainous, the mountain ranges alternate with fertile but overpopulated lowlands. Haiti's tropical climate is modified by the mountains and subject to periodic droughts and hurricanes.

¹ The data in this introductory section are collected from a number of open literature and common knowledge publications and resources, such as various almanacs, AGI's "Glossary of Geology", various geographical dictionaries and gazetteers; encyclopedias such as the World Survey of Climatology, the Encyclopedia Britannica, Encarta, Water Encyclopedia, etc.; open source government publications and websites from the US Department of State, the Library of Congress, the Defense Technical Information Center, the Food and Agriculture Organization of the UN and many others; the CIA Factbook, and several different reports, articles and books on Haiti from federal government geological and geographical resources.

The lowest point is the Caribbean Sea at 0 meters and the highest peak, the Morne de la Selle, is located in the south, and reaches an altitude of 2,715 meters. Slopes of mountains with more than a 20 percent grade cover nearly two-thirds of the country.

Haiti's irregular coastline forms a long, slender peninsula in the south and a shorter one in the north, separated by the triangular-shaped Gulf of Gonâve. Within the gulf lies Gonâve Island which has an area of approximately 290 square miles (750 square km). There are no navigable rivers in Haiti. The largest lake is Etang Saumâtre, a salt-water body located in southern region.

Lowland plains, which are quite limited in extent, are the most productive agricultural lands and the most densely populated areas. Plains constitute only about 20 percent of Haiti's land, making cultivation difficult.

Northern Region:

The northern region has the country's largest coastal plain, the Plaine du Nord (Northern Plain), which covers an area of 2,000 square kilometers. The Plaine du Nord lies along the northern border with the Dominican Republic, between the Massif du Nord and the North Atlantic Ocean. This lowland area of 2,000 square kilometers is about 150 kilometers long and 30 kilometers wide.

The north's major mountain range, the Massif du Nord (Northern Massif), buttresses this plain. It is a series of parallel chains known in the Dominican Republic as the Cordillera Central. This is an extension of the central mountain range in the Dominican Republic, which begins at Haiti's eastern border, north of the Guayamouc River, and extends to the northwest through the northern peninsula. The Massif du Nord ranges in elevation from 600 to 1,100 meters and has an average elevation of some 4,000 feet (1,200 metres). The Citadel (Citadelle Laferrière), a fortress built by Haitian ruler Henry Christophe in the early 19th century, stands atop one of the peaks overlooking the city of Cap-Haïtien and the narrow coastal plain.

Central Region:

The central region of Haiti consists of two plains and two sets of mountain ranges.

The Plateau Central (Central Plateau) extends along both sides of the Guayamouc River, south of the Massif du Nord. It runs eighty-five kilometers from southeast to northwest and is thirty kilometers wide. This interior basin is known as the San Juan Valley in the Dominican Republic and covers an area of more than 2,500 square kilometers. In Haiti it occupies about 150 square miles (390 square km) in the centre of the country. The Guayamouc River splits the Central Plateau and provides some of the country's most fertile soil. The plateau has an average elevation of about 1,000 feet (300 metres), and access to it is difficult through winding roads. (See Transportation and Trafficability.)

The Department du Centre, Haiti's Centre Department is one of the ten Departments of Haiti, and is located in the center of the country, along the border with the Dominican Republic. This Haiti Department is also known as "The Plateau Central". It has an area of 3,675 km² and a population of 564,200 (2002). Its capital is Hinche. It borders the Dominican Republic to the east. The Centre department is divided into 4 arrondissements: Cerca la Source; Hinche; Lascahobas and Mirebalais.²

² Taken from "Haiti Geo.com," at: <http://www.haitigeo.com/> accessed July 25, 2010.

To the southwest of the Plateau Central are the Montagnes Noires, with elevations of up to approximately 600 meters. It is bounded by two minor mountain ranges on the west and south—respectively, the Cahos Mountains and the Noires Mountains.

Southwest of the Montagnes Noires and oriented around the Artibonite River is the Plaine de l'Artibonite, measuring about 800 square kilometers.

South of this plain lies the third major range, known as the Matheux Mountains (Chaîne des Matheux) in west-central Haiti and the Trou d'Eau Mountains (Chaîne du Trou d'Eau) farther east, corresponds to the Sierra de Neiba in the Dominican Republic. The range forms the northern boundary to the narrow Cul-de-Sac Plain, which is immediately adjacent to Port-au-Prince and includes the brackish Lake Saumâtre on the Dominican border. (The Plaine du Cul-de-Sac is a natural depression, twelve kilometers wide that extends thirty-two kilometers from the border with the Dominican Republic to the coast of the Baie de Port-au-Prince.)

Southern Region:

Haiti's southern region contains a series of small coastal plains as well as the mountains of the Massif de la Selle. It encompasses both of Haiti's highest point Montagne Terrible, 2,684 meters, and the Plaine du Cul-de-Sac, which is a natural depression 12 kilometers wide and 32 kilometers wide.

South of the Cul-de-Sac Plain is the fourth major range, called the Massif de la Selle in Haiti and the Sierra de Baoruco in the Dominican Republic. It rises to 8,773 feet (2,674 metres) at Mount Selle, the highest point in the country. The mountains of the southern peninsula, an extension of the southern mountain chain of the Dominican Republic (the Sierra de Baoruco), extend from the Massif de la Selle in the east to the Massif de la Hotte in the west. The range's highest peak, the Morne de la Selle, is the highest point in Haiti, rising to an altitude of 2,715 meters. The Massif de la Hotte varies in elevation from 1,270 to 2,255 meters.

The range's western extension on the southern peninsula is called the Massif de la Hotte (also known as Massif du Sud), which rises to 7,700 feet (2,345 metres) at Macaya Peak. The Cayes Plain lies on the coast to the southeast of the peak.

Islands:

Haiti's land area includes numerous small islands as well as four large islands: Île de la Gonâve to the west, Île de la Tortue (Tortuga Island) off the north coast, and Île à Vache and Grande Cayemite, are situated, respectively, south and north of the southern peninsula.

Ile de la Gonâve is sixty kilometers long and fifteen kilometers wide with an area of approximately 290 square miles (750 square km). The hills that cross the island rise to heights of up to 760 meters.

Ile de la Tortue is located north of the northern peninsula, separated from the city of Port-de-Paix by a twelve-kilometer channel. The most northerly mountain range, known as the Cordillera Septentrional in the Dominican Republic, occurs in Haiti only on Tortue Island, off the northern coast. Tortue Island has an area of about 70 square miles (180 square km). In the 17th century it was a stronghold of privateers and pirates from various countries.

Caves of Haiti:

Haiti has karst areas throughout most of its surface area, notably in the Hotte range in the south. In fact, “haiti” is also the local term for cone karst. Although caves have been long known in that country, and were often used for religious purposes, most of the exploration and documentation of the caves of Haiti comes from the 1980 Expédition Spéléologique Française (E.S.F.), led by Alan Oddou (Bull. Centre Méditerranéen de Spél., 1980, 2: “Contribution à la Connaissance Spéléologique de la République d’Haïti.” 33 pages. Their work was facilitated by the previous geological studies of J. Butterlin.

Short caves:

bim Séjourné (vallée de Jacmel) 167 meters deep, altitude 710 meters
trouin Sene (massif de la Selle, Seguin) 92 meters deep
trouin Seguin (massif de la Selle, Seguin) 72 meters deep
trou Maïo 1 oe Nan Cadet (massif de la Selle, Seguin) 65 meters deep
trouin de la Scierie (massif de la Selle, Seguin) 63 meters deep

Long Caves:

Trouin Sene (Massif de la Selle, Seguin) 1,668 meters deep
Grotte de Port à Piment (massif du Macaya, Port à Piment) 1,000 meters deep
Grotte de Conoubois (Camp Perrin) approx 900 meters deep.³

See also: Miller, Gerrit Smith. 1929. “A Second Collection of Mammals from Caves near St. Michel, Haiti.” Washington, DC: Smithsonian Institution. Miscellaneous Collections. Volume 81 (9). 30 pages, 10 plates. Publication 3012.

Seismic Activity:

A long fault line crosses the southern peninsula and passes just south of Port-au-Prince.



Haiti is subject to periodic seismic activity; earthquakes destroyed Cap-Haïtien in 1842 and Port-au-Prince in 1751 and 1770.

Figure 2 Aerial view of buildings in Port-au-Prince damaged by the earthquake. Source: U.S. Navy/Mass Communication Specialist 2nd Class Chelsea Kennedy

In January 2010 another catastrophic earthquake and its aftershocks resulted in severe damage to Port-au-Prince.

Buildings collapsed throughout the capital and surrounding region, including many homes as well as large public structures such as the National Palace, the city’s cathedral, and hospitals. Estimates of the number of people killed ranged upwards of 200,000, and several hundred thousand others were injured. More than a million people were made

³ Courbon, Paul, et al. 1989. Atlas of Great Caves of the World. St. Louis, MO: Cave Books. Cave Research Foundation. Pages 59-60. ISBN: 0939748215.

homeless. To the west of the capital, near the quake's epicentre, the city of Léogâne was almost completely ruined.

Weather and Climate:

Haiti's is a generally hot and humid tropical climate; semiarid where the mountains in east cut off the trade winds. The north wind brings fog and drizzle, which interrupt Haiti's dry season from November to January. But during February through May, the weather is very wet. Northeast trade winds bring rains during the wet season.

Haiti is characterized by diurnal temperature variations that are greater than the annual variations and are modified by elevation. Average temperatures range from the high 70s F (about 25°C) in January and February to the mid-80s F (about 30°C) in July and August. The village of Kenscoff, at some 4,700 feet (1,430 metres), has an average temperature of about 60°F (16°C), whereas Port-au-Prince, at sea level, has an average of 79°F (26°C). In winter, frost can occur at high elevations.

Because it is located on the leeward side of the island the influence of humid trade winds is not as great as in the Dominican Republic. The more humid districts are found on the northern and eastern slopes of the mountains. Some portions of the island receive less than 28 inches (700 mm) of rainfall per year. The northwestern peninsula and Gonâve Island are particularly dry. Some regions have two rainy seasons, lasting from April to June and from August to October, whereas other regions experience rainfall from May to November. Annual variations of precipitation can cause droughts, widespread crop failures, and famine.

Haiti lies in the middle of the hurricane belt and is subject to severe storms from June to October, occasional flooding and periodic droughts. The southern peninsula, which is more vulnerable to hurricanes (tropical cyclones) than other parts of Haiti, suffered heavy damage from Hurricanes Allen (1980), Gilbert (1988), and Georges (1998). All parts of the country, however, can be hit by tropical storms and hurricanes. During the 2008 hurricane season, the country was struck by three tropical storms and one hurricane that resulted in torrential rains, extensive flooding and mudslides, and hundreds of reported casualties. The lack of government infrastructure and rescue services, combined with impassable roads and bridges, severely hindered rescue and relief efforts. Casualties were estimated at some 800 lives.

Daily weather information in Haiti is available from national and international media. The Haitian meteorological service provides hurricane warnings via national radio. Most information local media broadcast only in Kreyol and/or French. Warnings are also available on the Internet from many sources.

The average annual rainfall is 140 to 200 centimeters, but it is unevenly distributed. Heavier rainfall occurs in the southern peninsula and in the northern plains and mountains. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. Temperatures are almost always high in the lowland areas, ranging from 15° C to 25° C in the winter and from 25° C to 35° C during the summer.

Mining and Economic Geology:

Endowed with few commercially valuable natural resources, Haiti maintained only a small mining sector in the late 1980s; mining accounted for less than 1% of GDP, and it employed less than 1% of the labor force. Mining activity in the late 1980s mostly focused on raw materials for the construction industry.

Natural resources of Haiti include bauxite, copper, calcium carbonate, gold, marble and hydropower. Haiti contains relatively small amounts of gold, silver, antimony, tin, lignite, sulphur, coal, nickel, gypsum, limestone, manganese, marble, iron, tungsten, salt, clay, and various building stones.

Gold and copper are found in small quantities in the north of the country. The government announced the discovery of new gold deposits in the northern peninsula in 1985, but long-standing plans for gold production proceeded slowly. Copper also was mined, beginning in the 1960s, but production of the ore was sporadic.

There are bauxite (aluminum ore) deposits on the southern peninsula, but large-scale mining there was discontinued in 1983. The country's only bauxite mine, the Miragoâne mine in the southern peninsula, produced an average of 500,000 tons of bauxite a year in the early 1980s; however, in 1982 the declining metal content of the ore, high production costs, and the oversupplied international bauxite market forced the mine to close. Bauxite had at one time been the country's second leading export.

Haiti apparently has no hydrocarbon resources on land or in the Gulf of Gonâve and is therefore heavily dependent on energy imports (petroleum and petroleum products).

Agriculture:

The poorest country in the Americas, Haiti has a developing market economy based in large part on agriculture and light industries. Coffee is the main cash crop. Agriculture dominates the economy, but the domestic food supply has not kept pace with demand. As much as one-fifth of the food consumed in Haiti is imported or, sometimes, smuggled from the Dominican Republic or the United States; the imports have lowered overall food prices in Haiti, thereby further impoverishing the nation's struggling farmers and compelling more people to migrate to urban areas.

Agriculture employed 65 percent of labor force and accounted for 35 percent of GDP and 24 percent of exports in late 1980s. Production suffered from severe deforestation and erosion, primitive techniques, land fragmentation, and lack of public and private investment. Coffee was the leading export (a mild Arabica), but production consistently fell below country's export quota as determined by International Coffee Organization. Other cash crops included sugar, cocoa, sisal, and cotton. Real per capita production of food crops declined during 1980s, necessitating high levels of basic grains imports.

Common agricultural products include coffee, mangoes, sugarcane, rice, corn, sorghum, and wood. Many farmers concentrate on subsistence crops, including cassava (manioc), plantains and bananas, corn (maize), yams and sweet potatoes, and rice. Some foodstuffs are sold in rural markets and along roads. Haitian farmers sell it through a system of intermediaries, speculators, and merchant houses. Sugarcane is the second major cash crop, but since the late 1970s Haiti has been a net importer of sugar.

Goats and cattle are the most common livestock, with smaller numbers of pigs and horses. There is some poultry production. Following a massive outbreak of African swine fever in Haiti in the late 1970s, the country's entire Creole pig population was exterminated by 1982. This deprived many peasants of their only asset, although other pig breeds were subsequently imported as replacements.

Haiti's soils and fishing zones are threatened. Only about 28.11% of the land is arable, permanent crops cover 11.53% of the land, and 60.36% has other uses (2005). Major problems include soil erosion (particularly on mountain slopes, which are seldom terraced), recurrent drought, an absence of irrigation, extensive deforestation (much of the remaining forested land is being cleared for agriculture and used as fuel), and inadequate supplies of potable water.

The soils in the mountains are thin and lose fertility quickly when cultivated. The lower hills are covered with red clays and loams. The alluvial soils of the plains and valleys are fertile but overcultivated, owing to high population densities in those areas. Deforestation has caused much soil erosion, and as much as one-third of Haiti's land may have eroded beyond recovery.

Traditionally, Haitians have not exploited their fishing resources; because of the postindependence practice of living in the interior—away from the threat of a French invasion—Haitians have depended on agriculture rather than fishing for subsistence. There are some fisheries, however, in small ponds and various canals throughout Haiti. Although most fishing boats are small and poorly equipped, the potential for a commercial fishing industry does exist: the north-flowing currents off the coasts of Haiti carry major migrations of such deep-sea fish as bonitos, marlins, sardines, and tuna.

Deforestation in Haiti is a serious problem that began with a high need for fuel for processing sugarcane during the French colonial period and continues to the present day with an intensified demand for charcoal for fuel in Port-au-Prince and other urban areas. Political instability and poor funding have been serious obstacles to efforts to reduce dependency on forests for fuel. A number of large-scale reforestation projects have been planned, but they have been postponed because of social and political unrest and the urgent need to fund other infrastructure projects. Today only a small fraction of Haiti's land is forested.

From the 17th to the 19th century, much of the natural vegetation was destroyed through clearing for agriculture, grazing, and logging. Deforestation accelerated during the 20th century as population increased, and the forests that once covered the country have been reduced to a tiny proportion of the total land area. Patches of virgin forest remain in the Massif de la Selle, which includes tall pines, and in the Massif de la Hotte, where an evergreen forest with giant tree ferns and orchids stands on the slopes of Macaya Peak. *Bayahondes* (a type of mesquite), cacti, and acacias form thorny woods on the dry plains. The mangrove swamps on the coast have also declined rapidly, as their trees have been overexploited for firewood and for the production of charcoal.

One writer said: "Today less than 4 percent of Haiti's forests remain, and in many places the soil has eroded right down to the bedrock. From 1991 to 2002, food production per capita actually fell 30 percent." Further on, he wrote: "*Tè a fatigue*," said 70 percent of

Haitian farmers in a recent survey when asked about the major agricultural problems they faced. “The earth is tired.”⁴

With the retreat of natural vegetation, wildlife has lost its habitat and shelter. Wild boars, guinea fowls, and wild ducks are no longer present, but caimans still inhabit rivers of the southern peninsula, and some flamingos are found on Gonâve Island, where they are often hunted. Little has been done to conserve Haiti’s flora and fauna, and few national or regional parks have been established. The lack of conservation measures has been particularly damaging for coral formations and the animal life associated with them.

Demographics and population:

The estimated population of Haiti is about 9,035,000 people, about 95 % of whom are black and about 5 % of who are either mulatto or white. Estimates for this country explicitly take into account the effects of excess mortality due to AIDS; this can result in lower life expectancy, higher infant mortality, higher death rates, lower population growth rates, and changes in the distribution of population by age and sex than would otherwise be expected (July 2009 est.)

The life expectancy at birth for the total population is 60.78 years; 59.13 years for males and 62.48 years for females (2009 est.). Haiti’s death rate is high, mainly because of the prevalence of infectious and parasitic diseases, diseases of the circulatory system, and conditions associated with malnutrition. Moreover, Haiti has a higher incidence of HIV infection and AIDS and a higher infant mortality rate than any other country in the Western Hemisphere.

Most people living in Haiti are at a high risk for major infectious diseases. Food or waterborne diseases include bacterial and protozoal diarrhea, hepatitis A and E, and typhoid fever; common vectorborne diseases are dengue fever and malaria; water contact diseases include leptospirosis (2009).

Roughly three-fourths of Haitian households lack running water. Unsafe water—along with inadequate housing and unsanitary living conditions—contributes to the high incidence of infectious diseases. There is a chronic shortage of health care personnel, and hospitals lack resources, a situation that became readily apparent after the January 2010 earthquake.

Languages:

Creole (official), Haitian Creole (Kweyol, or Kreyol), and French are Haiti’s official languages. All Haitians speak Creole, but only about 10% of the people speak French fluently. English and Spanish are increasingly used as second languages among the young and in the business sector.

Creole is normally used in daily life, and French is used in more formal circumstances. However, written Creole is not widely accepted, because the school system retains French as the main language of instruction. Most of the vocabulary of Haitian Creole is derived from French, but in its syntax it is similar to the Creole languages of the Caribbean and the Indian Ocean.

⁴ Bourne, Joel K. 2008. “Haiti Soil: Dirt Poor.” National Geographic. Accessed May 2010. See: <http://ngm.nationalgeographic.com/2008/09/soil/bourne-text>

Religions:

Haiti has no official religion, and the constitution allows for religious freedom. However, Vodou (Voodoo, or Vodun), a religion whose gods (*lwa*) are derived from West African religions, has been officially sanctioned by the government as of April 2003, and Roman Catholicism, the dominant sect of Christianity, has been given special government recognition.

Most Haitian Roman Catholics are also practitioners of Vodou. However, most of the country's Protestants consider Christianity to be incompatible with Vodou. In addition to the older Protestant denominations established in the early 19th century (Methodists, Episcopalians, and Presbyterians), Baptists, Seventh-day Adventists, and Mormons came to Haiti during and after the period when the United States occupied the country (1915–34).

About 80% of the population is Roman Catholic, 16% Protestant (Baptist 10%, Pentecostal 4%, Adventist 1%, other 1%), 1% none, 3% other. Liberation theology continues to have some influence in religious life, notably in the shantytown areas of Port-au-Prince and other towns. Increasing numbers of Haitians have converted to Protestantism through the work of missionaries active throughout the country.

Economy:

Haiti is the poorest country in the Western Hemisphere with 80% of the population living under the poverty line and 54% in abject poverty. Two-thirds of all Haitians depend on the agricultural sector, mainly small-scale subsistence farming, and remain vulnerable to damage from frequent natural disasters, exacerbated by the country's widespread deforestation.

While the economy has recovered in recent years, registering positive growth since 2005, four tropical storms in 2008 severely damaged the transportation infrastructure and agricultural sector. US economic engagement under the Haitian Hemispheric Opportunity through Partnership Encouragement (HOPE) Act, passed in December 2006, has boosted apparel exports and investment by providing tariff-free access to the US. A second version of the legislation, passed in October 2008 and dubbed HOPE II, has further improved the export environment for the apparel sector by extending preferences to 2018; the apparel sector accounts for two-thirds of Haitian exports and nearly one-tenth of GDP. Remittances are the primary source of foreign exchange, equaling nearly a quarter of GDP and more than twice the earnings from exports.

Haiti suffers from a lack of investment because of financial insecurity and limited infrastructure, and a severe trade deficit. In 2005, Haiti paid its arrears to the World Bank, paving the way for reengagement with the Bank. Haiti received debt forgiveness for about \$525 million of its debt through the Highly-Indebted Poor Country (HIPC) initiative in 2009. The government relies on formal international economic assistance for fiscal sustainability.

Electricity production: 448 million kWh (2007 est.). Hydroelectricity provides roughly half of the power generated in the country, the remainder coming from thermal (mainly coal-fired) plants, especially in Port-au-Prince. However, the power supply is not

sufficient to satisfy current needs, and the main sources of energy for cooking are firewood and charcoal.

The World Bank gave this estimation of Haiti's electrical production in 2008: "In Haiti, the production, transport and distribution of electricity is the responsibility of EDH (Electricité d'Haiti), a public commercial company that is under the supervision of the MTPTC. Currently, the company provides electricity to 184,000 customers- who represent about 10 percent of the population. There has long been no maintenance. Thus, from an installed productive capacity of 220 MWh, the company now produces 60 MWh. EDH also faces a high number of illegal connections. The losses due to these illegal connection are estimated to be about 30 to 40 percent of the output."⁵

Oil consumption: 12,000 bbl/day (2008 estimate).

Telephone: There are roughly 108,000 main lines in use and 3.2 million mobile/cellular lines (2008). Telecommunications infrastructure in Haiti is among the least developed in Latin America and the Caribbean; domestic facilities are barely adequate and international facilities are only slightly better. Mobile-cellular telephone services are expanding rapidly due, in part, to the introduction of low-cost GSM phones, and mobile-cellular teledensity exceeded 35 per 100 persons in 2008. Telephone domestic: coaxial cable and microwave radio relay trunk service; international: country code - 509; satellite earth station - 1 Intelsat (Atlantic Ocean). The website for the Conseil National des Télécommunications (CONATEL) is in French: <http://www.conatel.gouv.ht/>

The radio broadcast stations in Haiti are: 41 AM stations, 53 FM stations and 0 shortwave stations (2009).

The Internet country code: .ht; Internet hosts: 9 (2009); Internet users: 1 million (2008).

Transportation and trafficability:

The roads from Port-au-Prince to Cap-Haïtien, Les Cayes, and Jacmel have been paved but are not regularly repaired, and city streets are notorious for their many deep potholes. Most inland transportation is hampered by rough roads that may become impassable in inclement weather. Trucks and buses offer irregular and costly service from Port-au-Prince to the provincial towns. There is no railway service. The primary means by which the rural population travels are on foot, by bicycle, by public bus (known as a "tap-tap" in Haiti), or by donkey. The latter mode is also commonly used to transport goods.

Airports: 14 (2009). Airports with paved runways total 4; one that is between 2,438 to 3,047 m and three airports with runways between 914 and 1,523 m (2009). Airports with unpaved runways total 10; two are between 914 and 1,523 m and eight are under 914 m (2009). Haiti has two international airports, the principal one at Port-au-Prince and another at Cap-Haïtien. Outside of Léogâne, a makeshift airstrip has been set up on part of Route 9, a highway of the commune, able to handle small planes (2010).

The U.S. Federal Aviation Administration (FAA) has assessed the government of Haiti's Civil Aviation Authority as not being in compliance with International Civil

⁵ World Bank. 2008. "Haiti: public expenditure management and financial accountability review." World Bank Publications. Page 82.

Aviation Organization (ICAO) aviation safety standards for oversight of Haiti's air carrier operations.

Railroads: N/A. There are currently no functioning railways in Haiti except for transporting sugarcane. There are no rail connections with the neighbouring Dominican Republic. In the past Haiti used railroads, but today they are no longer in use due to other forms of transportation that have become available. In the past, horse tramways, steam railways and industrial tracks were used. Their dates of closure are unknown.

Roads and highways: total: 4,160 km; paved: 1,011 km; unpaved: 3,149 km (2000).

The World Bank gives this assesment of the roads in Haiti in 2008: "The road network: The Haitian transport network is not only insufficiently developed but it deteriorated significantly in the decade before 2004. That decade has seen the transport

network in constant degradation. In 2004, according to the MTPTC, the road network consisted of 3,400km of roads, of which only 18 percent were paved. This network consists of 20.3 percent of primary roads (routes nationales), 44.4 percent of secondary roads (routes départementales) and 35.4 percent of tertiary roads (routes communales) that link the rural communities to the secondary road network.

Furthermore, only 20 percent of these roads are considered to be in acceptable condition. To address the maintenance issue, an autonomous entity- the Fonds d'Entretien Routier (FER)- has been progressively put in place from 2003 to ensure maintenance in this sector. The FER benefits from earmarked funds (coming from taxes on gasoline, car licenses, etc.) transferred directly by the MEF and act as a donor on issues regarding road maintenance (MTPTC plans and contracts while the FER finances). But this executing system has experienced some delays mainly due to a lack of planning and executing capacity of the MTPTC."⁶

Haiti has two main highways that run from one end of the country to the other. The northern highway, Route Nationale #1 (National Highway One), originates in Port-au-Prince, winding through the coastal towns of Montrouis and Gonaïves, before reaching its terminus at the northern port Cap-Haïtien. The southern highway, Route Nationale #2, links Port-au-Prince with Les Cayes via Léogâne and Petit Goâve. Maintenance for these roads lapsed after the 1991 coup, prompting the World Bank to loan USD 50 million designated for road repairs. The project was canceled in January



Figure 3 Haitian citizens walking down a debris-strewn street after the earthquake. Source: USAID/staff photo

⁶ World Bank. 2008. Haiti: Public Expenditure Management and Financial Accountability Review. Page 82.

1999, however, after auditors revealed corruption. Haiti also has a third major highway, the Route Nationale #3, which connects Port-au-Prince to Cap-Haitien via the towns of Mirebalais and Hinche. This route links the capital and Le Cap to the central plateau; however, due to its poor condition, it sees limited use. The most common form of public transportation in Haiti is the use of brightly painted pickup trucks as taxis called “tap-taps.” They are named this because when a passenger needs to be let off they use their coin money to tap the side of the vehicle and the driver usually stops. Most tap-taps are fairly priced at around 10-15 gourdes per ride within a city. The catch to the price is that the driver will often fill a truck to maximum capacity, which is nearly 20 to 30 people.

“Due to decades of deterioration of Haiti’s road network, the 250-km drive from Port-au-Prince to Cap Haitien, the largest city on the northern coast, can take up to seven hours on RN1, the country’s main highway.”⁷

TRAFFIC SAFETY AND ROAD CONDITIONS: While in a foreign country, U.S. citizens may encounter road conditions that differ significantly from those in the United States. The information below concerning Haiti is provided for general reference only, and may not be totally accurate in a particular location or circumstance.

Cars are supposed to be driven on the right side of the road in Haiti, but few roads have lane indicators and drivers use whatever part of the road is open to them, even if it is not the correct side of the road. Traffic is extremely congested in urban areas, and hours-long traffic jams develop throughout the country.

Driving in Haiti must be undertaken with extreme caution. The situation on the roads can be described as chaotic at best, and it is advisable for those with no knowledge of Haitian roads and traffic customs to hire a driver through a local hotel. Roads are generally unmarked, and detailed and accurate maps are not widely available. Lanes are not marked and signs indicating the direction of traffic flow seldom exist. This lack of organization, along with huge potholes that appear without warning, may cause drivers to execute unpredictable and dangerous maneuvers in heavy traffic. The Haitian government lacks adequate resources to assist drivers in distress or to clear the road of accidents or broken-down vehicles blocking the flow of traffic. While drinking and driving is illegal in Haiti, people frequently drive after drinking, especially at night.

Public transportation, as it is usually defined, does not exist in Haiti. While Haitians use buses, “tap-taps,” and taxis, which may observe regular routes, much like public transportation, none of these should be considered reliable. The Embassy strongly discourages their use.

Those who drive in Haiti should do so defensively and conservatively, avoid confrontations such as jockeying for position, and

⁷ Inter-American Development Bank. 2009. “Haiti invests heavily in rebuilding roads: IDB helps finance an unprecedented push to improve transportation.” Webpage accessed: Apr 13, 2009. See: <http://www.iadb.org/features-and-web-stories/2009-04/english/haiti-invests-heavily-in-rebuilding-roads-5339.html>

remain aware of the vehicles around them. Drivers should carry the phone numbers of people to call for assistance in an emergency, as Haitian authorities are unlikely to respond to requests for assistance. When traveling outside of Port-au-Prince, drivers should caravan with other vehicles to avoid being stranded in the event of an accident or breakdown.

Although Haitian law requires that applicants pass both a written and a driving test to qualify for a drivers license, many Haitian drivers appear unaware of traffic laws. Signaling imminent actions is not widely practiced and not all drivers use turn indicators or international hand signals properly. For instance, many drivers use their left blinker for all actions, including turning right and stopping in the road, and others flap their left arm out the window to indicate that they will be taking an unspecified action. Drivers do not always verify that the road is clear before switching lanes, turning, or merging.

Speed limits are seldom posted and are generally ignored. Speeding is the cause of many fatal traffic accidents in Haiti, as are overloaded vehicles on winding, mountainous roads and vehicles without brakes. Poor maintenance and mechanical failures often cause accidents as well. Drivers should be particularly cautious at night, as unlighted vehicles can appear without warning.

Right of way is not widely observed in Haiti, and there are few operational traffic lights or traffic signs. It is advisable at most intersections to stop and verify that there is no oncoming traffic even if it appears that you have the right of way. Drivers can be quite aggressive and will seldom yield. Walls built to the edge of roads frequently make it impossible to see around corners, forcing drivers to edge their cars into the road at intersections to check for oncoming traffic.

In addition to vehicles, a variety of other objects may appear on the road in Haiti, such as wooden carts dragged by people or animals, small ice cream carts, animals, mechanics working on vehicles parked on the street, and vendors and their wares. Vehicles are often abandoned in the road or by the side of the road. There are few marked crosswalks and sidewalks, and pedestrians often wend their way through traffic in urban areas.⁸

According to the Washington Post, “Officials from the U.S. Army Corps of Engineers said Saturday [January 23, 2010] that they assessed the damage from the Jan. 12 quake in Port-au-Prince, Haiti, and found that many of the roads aren’t any worse than they were before because they’ve always been in poor condition.”⁹

⁸ US Department of State. Bureau of Consular Affairs. “Haiti Country Specific Information.” See the website at: http://travel.state.gov/travel/cis_pa_tw/cis/cis_1134.html#traffic_safety accessed July 26, 2010.

⁹ Hedgpeth, Dana. 2010. “Haiti’s Bad Roads not Damaged by Quake, Army Engineers Say.” Washington Post. January 23, 2010. The website was accessed on May 5, 2010. See: <http://www.washingtonpost.com/wp-dyn/content/article/2010/01/23/AR2010012302113.html>

Water and Sanitation:

Haiti has an estimated resource of 14 cubic kilometers of freshwater (2000). Freshwater withdrawal for domestic (5%), industrial (1%) and agricultural (94%) use in Haiti is 0.99 cubic kilometers/year; per capita water use is 116 cubic meters/year (2000). Irrigated lands cover 920 square kilometers (2003).

A review of the earthquake's effects on the water supplies is given in: "National Ground Water Association Inc. Haiti earthquake: A Water Crisis." Among the effects of the Haiti earthquake is a severe disruption of water resources, including water provided by wells. This Web page furthers the National Ground Water Association's mission of "advancing groundwater knowledge" by providing resources helpful to earthquake relief agencies, affected government jurisdictions, groundwater professionals involved in the relief effort, the news media, and the public."¹⁰

"The Haitian water and sanitation sector is dominated by community-based water committees, and two state-owned companies: The CAMEP (Centrale Autonome Métropolitaine d'Eau Potable), which is in charge of the water supply in Port-au-Prince and the SNEP (Service National pour l'Eau Potable), which is in charge of water supply in secondary towns and rural areas. According to Haiti's CEM 2006, in 2002, 88 percent of the population had access to an improved water access in areas that are urban and 55 percent in areas that are rural. Service quality is poor with intermittent supply and dubious water quality, forcing those who can afford it to rely on expensive bottled water and water from tanker trucks. No real sewer network exists in Port-au-Prince or in the secondary towns. Existing sanitation facilities are individual and consist of latrines, septic systems and clandestine connections to the storm water drainage system. According to Haiti's CEM 2006, in 2002, 52 percent of the population had access to sanitation facilities in urban areas and only 23 percent in rural areas of Haiti. The sector is currently under a reform process through a Water and Sanitation Framework Law that is currently being discussed in Parliament. According to the law, regional water and sanitation companies would be created to replace CAMEO and SNEP. As part of the reform process, a General Directorate for Drinking Water and Sanitation (DGEPA) is expected to be created under MTPTC with the task of developing policies and regulate this sector."¹¹

"Too often, municipal water and sanitation services that can effectively reduce microbial diseases have been operated on the assumption that the poor could not afford water and sewer lines. In fact, these potential customers are already allocating a high proportion of the household expenses- 20 percent in Port-au-Prince, Haiti- for water supplied from vendors. Many studies have found that such urban families will not only pay the city to bring safe and reliable drinking water to them, but will pay for waste water removal as well."¹²

"Collection of municipal solid waste (MSW) by contract is becoming increasingly common in developing countries, including some of the poorest countries such as Haiti.

¹⁰ Haiti Earthquake: A Water Crisis. 2010. National Ground Water Association. See: <http://www.ngwa.org/public/gwprotection/haiti.aspx>

¹¹ "Haiti: public expenditure management and financial accountability review." 2008. World Bank. World Bank Publications, 2008. ISBN: 0821375911. Page 82.

¹² "Livable cities for the 21st century." 1996. World Bank. World Bank Publications, 1996. Length 47 pages. ISBN: 0821338129; 9780821338124. Page 33.

The impetus for seeking private sector involvement in this activity is obvious- the expenditures on MSW service absorbs 20 to 50 percent of total municipal revenue in developing countries, yet on average only 50 to 70 percent of solid wastes are collected.”¹³

Waterways: Numerous rivers and streams, which slow to a trickle during the dry season and which carry torrential flows during the wet season, cross Haiti’s plains and mountainous areas. There are a number of rivers in Haiti, but few of them are navigable.¹⁴ Many of the rivers of Haiti have not been investigated, nor have scientific reports been made on their volume, resources or water quality.

Rivers that flow into the Atlantic Ocean are the:

Dajabón River (Massacre River): The Dajabón River (also called the Massacre River) is a river of the Dominican Republic. It forms the northernmost part of the international border between the Dominican Republic and Haiti.

Grande Rivière du Nord: Grande-Rivière-du-Nord (Creole: *Grann Rivyè dinò*) is a municipality in the Grande-Rivière-du-Nord Arrondissement, in the Nord Department of Haiti.

Rivière du Limbè

Les Trois Rivières: The most important river in the northern region is Les Trois Rivières, or The Three Rivers. It is 150 kilometers long, has an average width of sixty meters, and is three to four meters deep.

Rivers that flow into the Gulf of Gonâve:

La Quinte River

Rivière de l’Estère

Artibonite River: The largest drainage system in the country is that of the Artibonite River. Rising as the Libón River in the foothills of the Massif du Nord, the river crosses the border into the Dominican Republic and then forms part of the border before reentering Haiti as the Artibonite River. At the border, the river expands to form the Lac de Péligre in the southern part of the Plateau Central. The 400-kilometer Artibonite River is only one meter deep during the dry season, and it may even dry up completely in certain spots. During the wet season, it is more than three meters deep and subject to flooding. The US Marines crossed and re-crossed this river many times during their long police action in the Dominican Republic in the 1900s.

The Artibonite River is a 320 km long river in Haiti. It is the longest as well as the most important river in Haiti and the longest on the island of Hispaniola. Its sources are in the Cordillera Central in the Dominican Republic, however most of its length lies in Haiti. It empties into the Gulf of Gonâve. The river is used for irrigation and the Peligre Hydroelectric Dam situated on it produces the country’s supply of hydroelectricity. The Artibonite forms part of the international border between Haiti and the Dominican Republic.

¹³ Kessides, Christine. 1993. “Institutional options for the provision of infrastructure.” World Bank Publications. Volume 212 of World Bank discussion papers., 1993. 81 pages. ISBN: 0821326279; 9780821326275. Page 24.

¹⁴ US Army Corps of Engineers. 1999. “L’Evaluation des Ressources d’Eau d’Haiti.” L’Août 1999. United States Southern Command. See the website, accessed May 5, 2010: <http://www.sam.usace.army.mil/en/wra/Haiti/Combined%20Final%20Haiti.pdf>

French Rivière de l'Artibonite, Spanish Río Artibonito river, the longest on the island of Hispaniola. It rises in the Cordillera Central (Cibao Mountains) of the Dominican Republic and flows southwest along the border with Haiti and then west and northwest into Haiti and through the fertile Artibonite Plain to enter the Gulf of La Gonâve after a course of 150 miles (240 km). It is navigable upstream for about 100 miles (160 km) by small craft. Large tracts of irrigated land were developed as part of the Artibonite Valley Agricultural Project.

The Artibonite River is the island's longest river, and is approximately 175 miles (280 km) long. The Artibonite rises in the western Dominican Republic in the Cordillera Central and follows a southwestward course along the border with Haiti. Its tributaries flow eastward and southward through Haiti's Central Plateau to a point near the Dominican border, where they join the river proper as it turns westward. The Artibonite then skirts the Noires Mountains as it flows to the Gulf of Gonâve. In eastern Haiti the river was impounded as Lake Péligre in the mid-20th century; a hydroelectric complex began operating at Péligre in 1971, but its power output has been unreliable during the dry season. Just upstream from the Artibonite's delta in the Gulf of Gonâve, some of its waters are used to irrigate the triangular Artibonite Plain.

Rivière de Fer à Cheval

Macasía River: The Macasía River is a river mostly of the Dominican Republic. A part of the river forms a small part of the international border between the Dominican Republic and Haiti.

Guayamouc River: The ninety-five-kilometer Guayamouc River is one of the principal tributaries of the Artibonite River. The Guayamouc River, or the Riviere Guayamouc, is a river in central and eastern Haiti. It rises on the Massif du Nord and flows generally southeast for 113 km into the Artibonite River at the border with the Dominican Republic. It is notable for producing the fertile plain of central Haiti. Notable cities on the Guayamouc include Hinche.

Rivière Bouyaha: Bouyaha River, in French, "Riviere Bouyaha", is a river flowing through the cities of Dondon, Saint Raphael and Pignon. It is said that the river started in the mountain surrounding the municipalities of Dondon and Marmelade. The Bouyaha river merges with the Guayamouc river in the nearby city of Hinche.

Rivière Canot

Rivière Locaine

Libón River

Rivière de Saint-Marc

Rivière Montrouis

Rivière Blanche

Rivière Grise (Grande Riviere du Cul de Sac)

Momance River

Rivière de Grand Goâve: The Rivière de Grand Goâve is a river in Haiti. The January 12th, 2010, 7.0 tremblor created a landslide which formed a landslide dam blocking the Grand Goâve river, that can potentially contain a large basin of water. With the wet season approaching, there is a fear that a dam collapse would directly outflow the contents behind the dam through the city of Grand-Goâve. The dam is located about a dozen kilometres from the city of Grand-Goâve.

Grand Rivière de Nippes

Grande-Anse River: The Grande-Anse River (French: *Rivière de la Grande-Anse*) flows through western Haiti and empties into the Gulf of Gonâve at the city of Jérémie. It is one of the largest rivers in Haiti.

Rivers that flow into the Caribbean Sea:

Acul River

Ravine River (Ravine du Sud)

Rivière de Cavaillon

Rivière des Côtes de Fer

Rivière de Bainet

Grand Rivière de Jacmel

Pedernales River: The Pedernales River (Hispaniola) is a river of the Dominican Republic and Haiti. It forms the southernmost part of the international boundary between the Dominican Republic and Haiti.

The most prominent body of water in the southern region is the salt-water Etang Saumâtre, located at the eastern end of the Plaine du Cul-de-Sac. At an elevation of sixteen meters above sea level, the lake is twenty kilometers long and six to fourteen kilometers wide; it has a circumference of eighty-eight kilometers.

Ports and terminals in Haiti are: Cap-Haitien, Gonaïves, Jacmel, Jérémie, Les Cayes, Miragoane, Port-au-Prince, Port-de-Paix, Saint-Marc, Fort Liberte. The two main seaports are at Cap-Haïtien and Port-au-Prince. Container facilities at the Port-au-Prince harbour handle most of Haiti's foreign trade. There are several minor ports, but passenger boat services are limited. Lesser ports include Miragoâne, Les Cayes, Fort Liberté, Gonaïves, and Jérémie.

The port at Port-au-Prince, officially known as the "Port International de Port-au-Prince," has more registered shipping than any of the over dozen ports in the country. The port's facilities include cranes, large berths, and warehouses, but these facilities are in universally poor shape. The port is underused, possibly due to the substantially high port fees compared to ports in the Dominican Republic.

Port-au-Prince is the leading commercial port, followed by Cap-Haïtien, which handled most cruise ship traffic. The port of Saint-Marc is currently the preferred port of entry for consumer goods coming into Haiti. Reasons for this may include its location away from volatile and congested Port-au-Prince, as well as its central location relative to a large group of Haitian cities including Cap-Haitien, Carrefour, Delmas, Desarmes, Fond-Parisien, Fort-Liberté, Gonaives, Hinche, l'Artibonite, Limbe, Pétionville, Port-de-Paix, and Verrettes. These cities, together with their surrounding areas, contain about six million of Haïti's eight million people.

Economy:

Much of the research in the economy pre-dates the current government, and often the most recent statistics of Haiti's economy are twenty or more years old.

Services: Accounted for 42 percent of the gross domestic product (GDP) in 1987, with 23 percent of labor force employed in the service economy in 1983. Banking and financial services are a major sectoral contributor. Transportation and communications systems are inadequate; tourism dropped off substantially during 1980s.

Currency: The Haitian currency is the Gourde. The official exchange rate is maintained at G5 to US\$1 since 1919. Black market trading began in early 1980s in response to high inflation and fiscal shortfalls. The United States dollar is also accepted as legal tender.

Imports: Approximately US\$308 million in 1987. Foodstuffs are the leading import item, followed by machinery and transport equipment, manufacturing inputs, and petroleum.

Exports: Approximately US\$198 million in 1987. Manufactured goods accounted for more than 50 percent of total, followed by coffee and handicraft items.

Fiscal Year: October 1 through September 30.

Balance of Payments: Current account deficits throughout 1980s, although increased foreign aid flows compensated to some extent in FY1986 and FY1987. Following renewed political instability after unsuccessful elections in November 1987, capital flight and aid cutbacks exacerbated the balance of payments situation.

Fiscal Policy: Tradition of balanced budgets broken by expansion of public sector under Jean-Claude Duvalier (1971-86). Public sector deficit reached 10.6 percent of GDP in FY1985, reduced slightly to 7 percent of GDP in FY 1987.

Gross Domestic Product: Approximately US\$1.95 billion in 1987, or about US\$330 per capita, lowest in Western Hemisphere. Economy contracted during most of 1980s.

Manufacturing and Industry:

Industry: Accounted for 23 percent of GDP in 1988, for 53 percent of exports, and for 6 percent of labor force. The most dynamic subsector was assembly manufacturing, mainly for United States market.

Manufacturing was the most dynamic sector of the economy in the 1980s. Growth in this sector had averaged more than 10 percent a year during the 1970s; manufactures replaced agricultural commodities as the country's leading export goods during this decade. In 1988 manufacturing accounted for 17 percent of GDP and for 53 percent of exports; it employed about 6 percent of the labor force. In addition to the dynamic assembly subsector, which experienced 22 percent real annual growth in the 1970s, included small-scale local manufacturing enterprises and large-scale, state-owned organizations.

Industry suffered in late 1980s because of political instability, country's failure to compete effectively with other Caribbean and Central American beneficiaries of Caribbean Basin Initiative, high utility rates, infrastructure deficiencies, and shortage of skilled labor.

The manufacturing sector in the late 1980s comprised 500 enterprises, most of which were small or medium in size and family-owned. Their major products included processed foods, electrical equipment, textiles, and clothing. Small enterprises, employing up to 50 workers, represented 57 percent of all manufacturing firms, but they employed only 10 percent of the industrial labor force. Medium enterprises, with 51 to 300 workers, accounted for 35 percent of the sector's firms and employed 44 percent of the industrial labor force. Large enterprises, those with more than 300 employees, constituted only 8 percent of the companies, but they employed 43 percent of all

Bibliography of Haitian Earth Science

manufacturing workers, mostly in large assembly factories in the industrial parks of Port-au-Prince.

Bibliography and Sources of Citations

This bibliography on the geology, geography and earth sciences of Haiti was gathered from a variety of different abstracting, bibliographical and cartographical resources. They include citations from agriculture, botany, engineering, geology, geography, medical, military science, soils, transportation and other subject resources.

These citation resources are provided by a number of scientific societies, such as the American Geographical Society; from government resources, such as the Defense Technical Information Center; non-governmental organizations such as the United Nation's Food and Agricultural Organization (FAO); and from commercial databanks such as GeoRef, WorldCat and GeoBase. Many unique citations were collected from the catalogs and resources of major research libraries, such as the Library of Congress and the US Geological Survey Library.

Within this bibliography, the article retrieval information is given as much as possible. These include specific ISSN, ISBN, OCLC and Library of Congress numbers that allow the electronic borrowing or copying of these items through library networks.

Alternately, the citations also include information on acquiring these items through document delivery companies and commercial services. Very often, scientific publications in less developed countries are not published in large numbers, and it is very difficult to retrieve reports or maps more than even a few years old. This bibliography is intended to be a resource for those scientific citations on Haiti that can still be retrieved.

Also included, when possible, are the addresses and contact information of the journal authors. Many of these experts could be reached as needed during the crisis for additional information and support.

Within these citations are many variations in spelling and place names. Many scientific and cartographic investigations were done in various local languages, and the languages of neighboring countries. Thus, the same name may be spelled differently according to the language(s) used, especially in those languages with irregular spelling, such as Kweyol. Variations on single and doubled consonants (geminated consonants) and single and doubled vowels (diphthongs) are common.

Abbreviations and links to resources used:

(All links and URLs in this bibliography are current as of July 2010)

AGI: American Geological Institute, Alexandria, VA. See: www.agiweb.org. The AGI also has a document delivery service. They say, "When you see a document or map cited in the GeoRef database you can simply order a copy from the GeoRef Document Delivery Service. We provide copies of earth-science documents available in the U.S. Geological Survey Library in Reston, VA, the Library of Congress, the AGI Library, and through an international network of exchange partners including organizations in Germany, China, and the Russian Federation." The document delivery service is found at: <http://www.agiweb.org/georef/dds/index.html>.

AGS: American Geographical Society Library, University of Wisconsin, Milwaukee Campus. See: <http://www.amergeog.org>.

AS&T: Applied Science & Technology from H.W. Wilson is a bibliographic database that indexes articles of at least one column in length. English-language periodicals published in the United States and elsewhere are covered; non-English language articles are included if English abstracts are provided. Periodical coverage

includes trade and industrial publications, journals issued by professional and technical societies, and specialized subject periodicals, as well as special issues such as buyers' guides, directories, and conference proceedings. See:

<http://www.hwwilson.com/Databases/applieds.htm#Abstracts>

ASFA: Aquatic Sciences and Fisheries Abstracts Input to ASFA is provided by a growing international network of information centers monitoring more than 5,000 serial publications, books, reports, conference proceedings, translations, and limited distribution literature. ASFA is a component of the Aquatic Sciences and Fisheries Information System (ASFIS), formed by four United Nations agency sponsors of ASFA and a network of international and national partners. Aquatic Sciences and Fisheries Abstracts are produced by CSA under contract to FAO. See: <http://www.csa.com/>

British Library: The British Library Document Supply Service can supply many of the article citations and reports given in this bibliography, especially those maps and other materials owned by the British Library. See:

<http://www.bl.uk/services/document/dsc.html>

CSA Technology Research Database: This comprehensive database provides a single mega-file of all the unique records available through its 3 components: the CSA Materials Research Database with METADEX, CSA High Technology Research Database with Aerospace, and the CSA Engineering Research Database. The database content represents the most comprehensive and current coverage of the relevant serial and non-serial literature available. Sources covered include over 4,000 periodicals, conference proceedings, technical reports, trade journal/newsletter items, patents, books, and press releases. See: <http://www.csa.com/>

DTIC: Defense Technical Information Center, Alexandria, VA. "The Defense Technical Information Center (DTIC[®]) serves the Department of Defense (DoD) community as the largest central resource for DoD and government-funded scientific, technical, engineering, and business related information available today. For more than 60 years DTIC has provided the warfighter and researchers, scientists, engineers, laboratories, and universities timely access to over 2 million publications covering over 250 subject areas. Our mission supports the nation's warfighter." See: www.dtic.mil

ESPM: The *CSA Environmental Sciences and Pollution Management* database offers access to the international literature in the environmental sciences. Abstracts and citations are drawn from over 6000 serials including scientific journals, conference proceedings, reports, monographs, books and government publications. See: <http://www.csa.com/>

FAO: Food and Agriculture Organization Library, United Nations, Rome, Italy. See: www.fao.org

GeoBase: GEOBASE is a unique multidisciplinary database supplying bibliographic information and abstracts for development studies, the Earth sciences, ecology, geomechanics, human geography, and oceanography. The database provides current coverage of almost 2,000 international journals, including both peer-reviewed titles and trade publications, and provides archival coverage of several thousand additional journal titles and books. GEOBASE is unequalled in its coverage of international literature of the core scientific and technical periodicals. Papers are selected, read, and classified using a unique classification scheme that is versatile and updated annually to adapt coverage to current research trends. The material covered includes

refereed scientific papers; trade journal and magazine articles, product reviews, directories and any other relevant material. GEOBASE has a unique coverage of non-English language and less readily available publications including books, conference proceedings and reports, making this the best resource available for multidisciplinary searches of international literature. The content crosses over subject, language, and cultural boundaries, providing a unique research tool to users. All material in *GEOBASE* is also available as print in the following Elsevier/Geo Abstracts journals: *Geographical Abstracts*, *Physical Geography*, *Human Geography*, *Geological Abstracts*, *Ecological Abstracts*, *International Development Abstracts* and *Oceanographic Literature Review*, *Geomechanics Abstracts*. See: www.elsevier.com

GeoRef: see: American Geological Institute, Alexandria, VA, listed above. The American Geological Institute not only identified materials for the abstracting database, GeoRef, but also locates and supplies materials as a document delivery service. See: www.agiweb.org

ISBN: International Standard Book Number. This unique number can be used to identify and locate library holdings of a particular book or report title. See: <http://www.isbn.org/standards/home/index.asp>

ISSN: International Standard Serial Number. This unique number can be used to locate libraries which have subscriptions to this journal, magazine or serial. See: <http://www.issn.org/>

LCCN: Library of Congress Control Number. This is a unique number applied by the Library of Congress to identify individual publications. This number can be used to identify copies of this item in libraries held in the US and abroad. See: http://www.loc.gov/marc/lccn_structure.html

LC or LOC: Library of Congress, Geography and Map Division, Washington, DC. The Geography and Map Division has the largest collection in the world, with 5.4 million maps, 75,000 atlases, 500 globes, 3,000 three-dimensional objects and thousands of digital files. Recently, the Library of Congress has digitally scanned and mounted its 10,000th map online. See: <http://www.loc.gov/rr/geogmap/>

Northwestern University Transportation Library: The Transportation Library was founded in 1958 to support the curricula and research programs of the Transportation Center and the Center for Public Safety of Northwestern University, including the School of Police Staff and Command. Containing over 400,000 items, the Transportation Library of Northwestern University is one of the largest transportation information centers in the world, encompassing information on all transportation modalities, including: air, rail, highway, pipeline, water, urban transport and logistics. Its collection of environmental impact statements is one of the most complete in the world. See: <http://www.library.northwestern.edu/transportation/>

NTIS: National Technical Information Service, Alexandria, VA. See: www.ntis.gov

OCLC: Founded in 1967, OCLC Online Computer Library Center is a nonprofit, membership, computer library service and research organization dedicated to the public purposes of furthering access to the world's information and reducing information costs. More than 41,555 libraries in 112 countries and territories around the world use OCLC services to locate, acquire, catalog, lend and preserve library materials. Researchers, students, faculty, scholars, professional librarians and other information seekers use

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OCLC services to obtain bibliographic, abstract and full-text information when and where they need it. See: <http://www.oclc.org/> or their free service at: www.worldcat.org

SWRA: Selected Water Resources Abstracts (1967-94). *SWRA* provides more than 271,138 abstracts compiled by the Water Resources Scientific Information Center (WRSIC) of the USGS. *SWRA* provides thorough coverage of worldwide technical literature across the life, physical, and social-science aspects of water resources as well as U.S. Government documents produced by the USGS's many research facilities. Records are drawn from journals, monographs, conference proceedings, reports, court cases, and other federal and state publications. *SWRA*, and now *Water Resources Abstracts*, are your best sources for issues pertaining to groundwater, water quality, water planning, and water law and rights.

TRIS: TRIS is a bibliographic database funded by sponsors of the Transportation Research Board (TRB), primarily the state departments of transportation and selected federal transportation agencies. TRIS Online is hosted by the National Transportation Library under a cooperative agreement between the Bureau of Transportation Statistics and TRB. See: <http://ntlsearch.bts.gov/tris/index.do>

UN: United Nations Library, New York, NY. See: www.un.org

USGS: US Geological Survey Library, Reston, VA. The U.S. Geological Survey Library system has become the largest earth science library in the world. Materials within the library system include books and maps dating back to the 16th and 17th centuries. Other materials include a nearly complete set of the various State Geological Survey publications and a virtually complete set of USGS topographic maps. Today library users have access to over 3 million items: books, periodicals and journals, maps (thematic, topographic, raised relief), microfiche, microfilm, pamphlets, photographs (aerial as well as landscape, in color and black and white), transparencies, field record notebooks, videos and audio tapes, computer media, globes, foreign language materials and electronic books. See: www.usgs.gov/library

University of Texas at Austin. Perry-Castañeda Library Map Collection: "Many of these maps have been scanned and are available for downloading and other uses." See: <http://www.lib.utexas.edu/maps/>

WorldCat: Among other things, this a free database from OCLC showing local library holdings of desired publications. See: <http://www.worldcat.org/>

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lymphedema management, which emphasized hygiene and self-care, was associated with a 69% reduction in ADLA incidence. Use of compression bandages in this setting was associated with an increased risk of ADLA. Basic lymphedema management is feasible and effective in resource-limited areas that are endemic for lymphatic filariasis. Database: SCOPUS.

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connaissance du style tectonique de l'ouest de la presqu'île du sud permet d'observer l'évolution vers l'est de la structure en fleur dont le décrochement est repris en faille normale dans un contexte de subduction de la presqu'île du sud sous les écailles du centre d'hispaniola. Notes: 307 f.: ill.; 30 cm.; Dissertation: Thèse de doctorat: Sciences: Toulouse 3: 1997; 2663.; Note(s): 1997TOU30095.; Other Titles: Geological Study of the Western Part Of Massif de la Hotte (Haiti, Greater Antilles) Within His Terrestrial And Marine Frame. Geodynamical Implications; Responsibility: par Helliott Amilcar. OCLC Accession Number: 489818858.

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Biomolecular; Protein Structure, Secondary; Protein Structure, Tertiary; Human immunodeficiency virus 1. Abstract: The computer approaches that combined the 3D protein structure modeling with the mathematical statistics methods were used to compute the NMR-based 3D structures of the HIV-1 gp120 V3 loop for the HIV-MN and HIV-Haiti isolates in water as well as to compare their conformational characteristics with the purpose of determining the structure elements common for the two virus modifications. As a result, the variability of the amino acid sequence was found to stimulate the considerable structural rearrangements of the V3 loop. However, despite this fact, one functionally crucial stretch of V3 and a greater portion of its residues were shown to preserve the conformations in the viral strains of interest. To reveal the structural motifs and individual amino acids giving rise to the close conformations in the HIV-MN and HIV-Haiti V3 loops regardless of the sequence and environment variability, the simulated structures were collated with those deciphered previously in terms of NMR data in a water/trifluoroethanol mixed solvent. The structure elements and single residues of V3 residing in its biologically significant sites and keeping the conformations in all of the cases at question are considered to be the promising targets for anti-AIDS drugs studies. In this context, the structurally inflexible motifs of V3 presenting the weak units in the virus protection system may be utilized as the most convenient landing-places for molecular docking of the V3 loop and ligand structures followed by selecting chemical compounds suitable as a basis for the design of safe and effective antiviral agents. Database: SCOPUS. ISSN: 0739-1102.

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Antilus, Loctamard. 1981. Les Sources Chaudes d'Haiti. Translated title: The Hot Springs of Haiti; Premier Colloque Sur La Geologie d'Haiti. First Symposium on the Geology of Haiti. Haiti: Florentin J. M. R. Maurrasse, Port au Prince, Haiti. Premier Colloque Sur La Geologie d'Haiti, Port-Au-Prince. Haiti Conference: March 27-29, 1980. Descriptors: Antilles; Caribbean region; chemical composition; economic geology;

faults; geothermal energy; geothermie; Greater Antilles; Haiti; Hispaniola; hot springs; hydrogeology; springs; thermal waters; West Indies. GeoRef Accession Number: 1984-019531.

Aristide. 2000. "The Water of Life. (Cover Story)." *Christian Century*. Christian Century Foundation: 03/01. Volume 117, Issue 7, Pages 236. Descriptors: Discrimination; Prejudices; Haiti- Social conditions; Haiti. Notes: M3: Article; Accession Number: 2936754; Aristide, Jean-Bertrand; Source Info: 03/01/2000, Vol. 117 Issue 7, p236; Subject Term: Discrimination; Subject Term: Prejudices; Subject Term: Haiti-Social conditions; Subject Term: Haiti; Number of Pages: 3p; Illustrations: 1 bw; Document Type: Article; Full Text Word Count: 2600. Abstract: Talks about the prejudice and discrimination in Haiti. Why the rich people in Haiti hate the idea of poor children being able to swim in a pool; Facilities of the Lafanmi Selavi center for street children; Why the experience of swimming in a pool has tremendous ramifications; Psychological and social repercussions of swimming in the same water. ISSN: 0009-5281.

Arndt, Jeffrey S. 1996. *Multi Spectral Imagery Processing Systems (Topographic Support for Military)*. AIAA, Space Programs and Technologies Conference, Huntsville, AL; United States; 24-26 Sept. 1996; AIAA, Space Programs and Technologies Conference, Huntsville, AL. United States Conference: 24-26 Sept. 1996. Descriptors: Image Processing; Multispectral Photography; Armed Forces (United States); Photomapping; Terrain Analysis; Topography; Haiti; Yugoslavia; Earth Surface; Planetary Mapping. Abstract: This paper discusses past, present, and future efforts to support the Army with multispectral imagery (MSI) and terrain analysis. The strategic level is embodied in the Defense Mapping Agency (DMA) and the Topographic Engineering Center (TEC). Products produced here require high skill levels and relatively long lead times. This level has and will have accesses to many national assets. Data and products are focused on policy and national level concerns. Data and information is general and used by the lower levels as a base to value add. The operational level is embodied by the Topographic Engineer Battalions and Corps Topographic Engineer Companies. This level has accesses to some national assets and relies on data and information from the level above. Products are more developed and focused in area and value adding has occurred. At the tactical level division terrain teams and individual S-2s are responsible for geospatial data, MSI and terrain analysis. This level depends on tactical data and information from the levels above. Products are quick, verbal and focused on current events for the commander. Notes: AIAA paper 1996-4226. ISSN: 0146-3705. Database: CSA Technology Research Database. DTIC Accession Number: A9641205.

Antoine, J.S. 2000. *Analyse du systeme de collecte de donnees forestieres en Haiti*. Translated title: Analysis of the data collection system of forestry in Haiti. FAO, Rome (Italy). Dept. des Forets; Commission Europeenne, Brussels (Belgium). Direction Generale du Developpement. 12 web pages. LA: French. Forest Products; Data Collection; Forestry Production; Fuelwood. Data Collection and Analysis for Sustainable Forest Management in ACP Countries, INT/679/EC. URL: <http://www.fao.org/DOCREP/003/X6768F/X6768F00.HTM>.

Arbon, Paul. "Applying Lessons Learned to the Haiti Earthquake Response." 2010. *Australasian Emergency Nursing Journal*. 5. Volume 13, Issue 1-2, Pages 4-6. ISSN: 1574-6267.

Army Command and General Staff Coll Fort Leavenworth KS School of Advanced Military Studies and David, William E. 1996. "Environmental Scarcity as a Cause of Violent Conflict. Fields and Groups- Sociology and Law- Government and Political Science." 01 Apr. Page(s): 73. Descriptors: National Security; Military Forces Foreign; Conflict; Defense Planning; Weapons; Military Operations; Warfare; Gulfs; Environments; Military Doctrine; Operational Readiness; Natural Resources; Signs And Symptoms; Costs; Combustion; Fresh Water; Case Studies; Images; Casualties; Somalia; Military Commanders; Birds; Forests; Haiti; Webs Sheets; Oil Wells. Abstract: Gulf War images of oil soaked birds and burning oil wells continue to generate academic research on the environment as both a victim and a weapon of war. The resulting literature has sensitized policy makers and military leaders to the environmental costs of conflict and military preparedness. Regrettably, this narrow focus obscures a potentially more ominous role for the environment as a cause of conflict. Within the complex web of causality, the increasing scarcity of renewable resources such as fresh water, forests, and arable land portends to be the leading cause of conflict in the 21st century. This monograph proves that environmental scarcity is a cause of violent conflict. Using the Modified Conflict Causality Model and six case studies, the monograph shows that scarcity generates adverse social effects which, in turn, cause violent conflict. After proving causality, the monograph looks at three implications. First, recent Operations Other Than War in Somalia, Rwanda, and Haiti treated the symptoms of scarcity without solving the underlying environmental problems. Consequently, conflicts in those countries are likely to recur, rendering the long-term outcomes of the operations as failures. Second, conflicts arising from environmental scarcity will occur more frequently in the future, threatening U.S. national security interests. Third, doctrine reveals that the Army is unprepared intellectually to contend with scarcity as a cause of violent conflict. Distribution Limitation(s): 01 - approved for public release. Notes: Full Text (pdf) Availability: Size: 3 MB. Handle: <http://handle.dtic.mil/100.2/ADA314878>; DTIC Accession Number: ADA314878.

"Aronson SM, Aronson BE: Clinical Neuropathological Conference." 1967. *Diseases of the Nervous System*. Volume 28, Issue 11, Pages 757-763. Descriptors: adult; arachnoid; article; brain tumor; case report; cysticercosis; differential diagnosis; granuloma; Haiti; hemianopia; human; hydrocephalus; male; occipital lobe; parasitosis; pathology; pia mater; pons; vertigo; Brain Neoplasms; Diagnosis, Differential; Hemianopsia; Parasitic Diseases. Database: SCOPUS. ISSN: 0012-3714.

Asch, R. G. and Turgeon, D. D. 2003. "Detection of Gaps in the Spatial Coverage of Coral Reef Monitoring Projects in the US Caribbean and Gulf of Mexico." *Revista De Biologia Tropical*. Volume 51, Issue SUPPL. 4, Pages 127-140. Descriptors: Caribbean; Coral reef; Gap analysis; Geographic information system; Gulf of Mexico; Monitoring; animal; Anthozoa; Central America; conference paper; ecosystem; environmental monitoring; methodology; Animals; Caribbean Region; Geographic Information Systems; Halophila; Rhizophoraceae. Notes: Cited By (since 1996): 1. Abstract: As part of the US Coral Reef Task Force's National Program to Map, Assess, Inventory, and Monitor US Coral Reef Ecosystems, a comprehensive survey of projects/programs

monitoring coral reef ecosystems and related habitats (i.e., seagrass beds and mangroves) in the US Caribbean and Pacific was undertaken. Information was gathered on a total of 296 monitoring and assessment projects conducted since 1990 in the US Caribbean and the Gulf of Mexico. Substantial gaps in monitoring coverage of US coral reef ecosystems were revealed through geographic information system (GIS) analysis of survey metadata. Although southern Florida contains approximately two-thirds of all marine monitoring projects found in the US Caribbean and Gulf of Mexico, we were unable to identify any ongoing projects that monitor coral reefs along Florida's western coast and off of the Florida Middle Grounds. Additionally, Florida is covered by approximately 1 900 km² of mangroves, yet there were only four ongoing projects that monitor this ecosystem, leaving gaps in coverage in the Lower and Middle Keys and along the eastern and western coasts. The Flower Garden Banks National Marine Sanctuary, located offshore of the Texas/Louisiana border, has an integral long-term monitoring program, but lacks a monitoring project that gathers long-term, quantitative data on reef fish abundance and certain water quality parameters. Numerous coral reef monitoring projects in Puerto Rico are concentrated on the island's southwestern coast surrounding La Parguera, while far fewer monitoring projects are conducted along the northern and southeastern coasts and around Vieques Island. In the US Virgin Islands, the paucity of monitoring projects in large areas of St. Croix and St. Thomas contrasts with monitoring activity in three marine protected areas (MPAs), where 66% of the US Virgin Islands' coral reef monitoring sites were found. Only a series of assessments have been conducted at Navassa, a small, uninhabited island located 55 km west of Haiti and 137 km northeast of Jamaica. In order to better understand changes in coral reef communities and to produce a series of biennial reports on the status of US coral reef ecosystems, the National Oceanic and Atmospheric Administration (NOAA) is developing a national coral reef monitoring network. This network has already begun to fill some of these gaps in monitoring coverage through issuing cooperative grants to states and territories to build long-term monitoring capacity. Database: SCOPUS. ISSN: 0034-7744.

Asker, James R. 1994. "U.S. Navy's Haiti Maps Merge Satellite Data." *Aviation Week & Space Technology*. October 17. Volume 141, Pages 49. Descriptors: Satellite imagery; Military reconnaissance; United States/Foreign relations/Haiti; United States/Naval Space Command; Applied Science & Technology; Readers' Guide (Current Events); Business; Communications equipment; Space research and technology. Notes: Illustration. Abstract: Color pictures of Haiti produced by the Naval Space Command are reproduced. The images were created by combining satellite data with elevation information to offer U.S. forces three-dimensional pictures of the nation they were preparing to invade. ISSN: 0005-2175.

Asker, James R. 1994. "U.S. Army Space Assets Get Workout in Haiti." *Aviation Week & Space Technology*. September 26. Volume 141, Pages 20. Descriptors: Military satellites; United States/Foreign relations/Haiti; United States/Army/Space Command; Applied Science & Technology; Readers' Guide (Current Events); Business; Radio & TV communications equipment; National security. Notes: PD: Illustration. Abstract: U.S. Army ground troops and aviators in Haiti are using space technologies in sophisticated combinations for communications, mapping, mission visualization, weather forecasting, and determinations of geographic location. These applications draw on a wide range of satellites, including those of the U.S. Defense Department, U.S. and French civil

spacecraft, and the International Maritime Satellite Organization. This marks the first time that the Army Space Command has deployed personnel and equipment in a scheme designed to rapidly give war-fighting or peacekeeping forces a total package of advanced space capabilities. The concept, which is called Cops (for Contingency Operations Package Space), is discussed. ISSN: 0005-2175.

Assistance a l'Etude Hydrogeologique de la Plaine de Baconnois, Haiti. Compte rendu final du projet. Translated title: Assistance to the hydrogeological study of the Baconnois Plain. 1982. FAO, Rome (Italy). Agriculture Dept. Language: French. Imprint: Rome (Italy). 1982. 21 p. Fiche no: 8227681-F. Doc. Orig. Div: AG. Project: HAI/2201. Report number(s): FAO-AG--TCP/HAI/2201. FAO-AN: 227681.

The Associated Press. 2008. "Aid Reaches Flooded Town in Haiti; Toll Rises." New York Times. Pages 8. Descriptors: peacekeeping forces; floods; public welfare; United Nations; Haiti. Notes: Article; Accession Number: 34164738; The Associated Press; Source Info: 09/06/2008, p8; Subject Term: peacekeeping forces; Subject Term: floods; Subject Term: public welfare; Subject Term: United Nations; Subject Term: Haiti; Company/Entity: United Nations. Number of Pages: 0p; Document Type: Article; Full Text Word Count: 296. Abstract: United Nations peacekeeping troops began handing out food and water to famished Haitians on Friday after the first shipload of aid sailed into a crumbling port on the outskirts of this flooded city, where tens of thousands are stranded in the wake of Tropical Storm Hanna. Receding floodwaters revealed more bodies, bringing fears that the death toll of 163 will rise even higher. A news report that hundreds of bodies have been found in Gonaives was incorrect, according to peacekeepers, regional officials and Marie-Alta Jean Baptiste, director of Haiti's civil protection department. ISSN: 0362-4331.

Aubé, M. and Caron, L. 2001. "The Mangroves of the North Coast of Haiti." Wetlands Ecology and Management. Volume 9, Issue 3, Pages 271-278. Descriptors: Caribbean mangroves; Forest structure; Human disturbances; Utilization; density; mangrove; vegetation structure; Haiti; Rhizophoraceae. Notes: Cited By (since 1996): 2. Abstract: The study of five mangrove forests was undertaken during the summer of 1998 on the north coast of Haiti. Photo-interpretation detected area changes between 1978 and 1989; the areas were reduced by an average of 43% each. Two of the sites, Salée River mangrove and Haut-du-Cap River mangrove, were characterized by means of a vegetation survey and water and soil analysis. Tree density averaged 58,750 stems/ha and 114,250 stems/ha respectively, while tree height averaged 2 m. Interviews with villagers indicated that all the assessed mangroves are intensively harvested for charcoal and fuel wood. This extraction seems to be the main human disturbance, resulting in changes in forest structure, although heavy fishing and conversion to residential sites constitute disturbances in some mangroves. The situation is critical but probably not irreversible. However, the socio-economic and environmental conditions prevailing in the country and the lack of basic information on Haitian mangroves are major obstacles to their preservation. Database: SCOPUS. ISSN/ISBN: 0923-4861.

Aube, Melanie. 1999. Evaluation Sommaire de la Situation des Mangroves de la Cote Nord Haitienne. Translated title: Review Summary of the Status of Mangroves in the North Haitian Coast. Canada: Universite de Moncton (Canada). Descriptors: Forestry; Aquaculture; Fish production; Environmental science; Geography. Abstract: An assessment of five mangroves was undertaken during the summer of 1998 on the North

coast of Haiti. Interviews with villagers regarding their use of the mangroves for wood extraction and fishing were conducted and the temporal changes in area, between 1978 and 1989, were estimated by photo-interpretation. The areas were reduced by an average of 43%. Two of the sites, Salée River and Haut-du-Cap River mangroves, were characterized by means of a vegetation survey and water and soil analysis. Tree density averaged 58 750 stems/ha and 114 250 stems/ha respectively, while tree height was 2 m. All the assessed mangroves are intensively harvested for charcoal and fuel wood. This extraction, and conversion to residential sites, are the main human disturbances resulting in changes in forest structure and in mangrove area. Although, according to the fishermen interviewed, heavy fishing seems also to constitute a disturbance. The situation is critical, but probably not irreversible. However, the socio-economic conditions prevailing in the country and the lack of basic information on Haitian mangroves are major obstacles to their preservation. Recommendations were made in order to improve the situation.

Accession Number: MQ47253. URL:

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Auerbach, P., Md, Norris, R., Md, Menon, A., Md, et al. 2010. "Civil-Military Collaboration in the Initial Medical Response to the Earthquake in Haiti." *N. Engl. J. Med.* Mar 11. Volume 362, Issue 10, Pages e32. Descriptors: Hospitals; Physicians; Earthquakes; Colleges & universities; Patients; Heatstroke. Abstract: Two days after Haiti's devastating earthquake, a medical relief team made up in part of four emergency physicians and four emergency nurses from Stanford University Hospital and three emergency physicians from Columbia University Medical Center traveled under the auspices of the International Medical Corps, a nonprofit organization based in Los Angeles, to provide emergency medical support. Since there was no cold chain (temperature-controlled supply chain), we could not store either tetanus toxoid or tetanus immune globulin. ISSN: 00284793.

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Baker, C. D., Rolling, L., Martinez, R., Baryar, A., Bulos, G. and Lipman, M. 2008. "The Power of Knowledge in Executing Household Water Treatment Programmes Globally." *Waterlines*. Volume 27, Issue 2, Pages 138-148. Descriptors: Household water treatment; Technology transfer; Training; knowledge; technology adoption; water treatment; Asia; Atlantic islands; Atlantic Ocean; Caribbean Islands; Central America; El Salvador [Central America]; Eurasia; Greater Antilles; Haiti; India; Pakistan; Philippines; South Asia; Southeast Asia. Abstract: This paper presents a case study of five organizations from five countries: Haiti, El Salvador, India, the Philippines and Pakistan, demonstrating that knowledge transfer can be a catalyst for locally driven water programmes for the poor. Each organization received training and technical consulting from the Centre for Affordable Water and Sanitation Technology on Project Implementation for the biosand filter. Each then established an independent project resulting in cleaner water for 156,000 people in six years, and widespread biosand filter acceptance among users. Lessons learned are that knowledge transfer can result in effective, sustainable and scaleable technology implementation; transfer takes place one person at a time, making education at all levels crucial; pilots/demonstrations are essential motivators to technology adoption; involvement of mainstream government can result in faster implementation and widespread acceptance; and technology training is not enough. Organizations need to learn how to plan, implement and monitor programmes. Database: SCOPUS. ISSN: 0262-8104.

Bannister, Michael Eugene. 2001. *Dynamics of Farmer Adoption, Adaptation, and Management of Soil Conservation Hedgerows in Haiti*. United States- Florida: University of Florida. Descriptors: Forestry. Abstract: Understanding the conditions under which hillside farmers in Haiti adopt soil conservation practices helps programs to develop technologies that increase farmer revenue and stabilize or improve soil and water resources. Three studies were done in Haiti that examined biophysical and socioeconomic aspects of contour hedgerows, an agroforestry practice with the potential of stabilizing soil, conserving water for crops, increasing soil fertility, and producing wood and fodder. An on-station study of soil water competition between *Leucaena leucocephala* (Lan.) de Wit hedgerows and adjacent maize (*Zea mays* L.) over three cropping cycles found that substantial maize yield reduction was caused by the hedgerow trees because of soil water competition. Polyethylene barriers between the hedges and the first row of maize improved maize yield in two subsequent seasons by 18% and 77% over plots without barriers. The percent increase in maize yield was highest during a season of very poor rainfall; but it was lowest in a season of adequate rainfall. Barrier installation reduced *Leucaena* biomass production by about 1,500 kg/ha over seven months, but this effect was temporary. An examination of the distribution of *Leucaena* roots after the final maize harvest showed that the hedgerow roots in the plots with barriers had grown under the hedgerows and developed more fine roots at 200 cm from the hedges than plots without barriers. An on-farm study comparing maize development in two kinds of hedgerows, rock wall terraces, and an untreated control was unable to detect differences in the rate of maize growth with respect to position within the alleys or with respect to position on the overall slope. However, the maize in the hedgerows developed more slowly than in the rock wall terraces or the control plot, indicating competitive interactions between maize and hedgerow plants. There were no differences in maize grain yield among treatments.

An on-farm questionnaire-based survey of 1,540 Haitian farmers showed that they considered plot characteristics, including mode of tenure, soil fertility, distance from the residence, and slope in their decisions to install different agroforestry practices. Tenure security and soil fertility appeared to be the most important plot characteristics in the decision to install, although it was not possible to separate them. Hedgerows were more likely to be installed in plots having less secure tenure and less fertile soil; the opposite was true for other agroforestry practices. Farmers' qualitative assessments of soil fertility were positively correlated with management quality of hedgerows. OCLC Accession Number: 3009881; 47260193. URL:

<http://proquest.umi.com/pqdweb?did=729038121&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Bannister, M. E. and Nair, P. K. R. 2003. "Agroforestry Adoption in Haiti: The Importance of Household and Farm Characteristics." *Agrofor. Syst.* Volume 57, Issue 2, Pages 149-157. Descriptors: Agroforestry/Haiti; Soil conservation/Haiti; Biological & Agricultural. Notes: PD: Bibliography; Illustration; Map. Abstract: Most agroforestry-adoption studies are based on surveys of non-adopters. An understanding of the circumstances that have led to a change of attitude of the adopters will be valuable in our efforts to enhance adoption rates. This study was undertaken to provide such knowledge based on a large agroforestry extension project involving 200,000 farm families and covering 25% of all rural households in Haiti. A questionnaire-based survey of the project participants was conducted covering 1,540 households and 2,295 fields in four regions of Haiti. Information was recorded about each farm and family member through interviews with farmers and visits to their farms. The results confirmed that farmers make decisions about tree culture based on household- and field characteristics. Different farmers consider trees differently depending upon how they fit into their farm-family strategy. In general, farmers installed tree hedgerows on fields of less secure tenure, of lesser fertility, and steeper slope, while on closer, more fertile fields of greater tenure security, tree seedlings and fruit trees were more common and there was a greater density of mature trees (10 cm DBH). More money was realized from sale of tree products on actively cropped fields in more secure tenure and having more fertile soil. Older farmers managed a greater density of trees, especially when the land was in secure tenure status. This broad-based study shows that agroforestry implementation strategies in poor countries such as Haiti should be based on a thorough knowledge of how farmers use household and field characteristics to make adoption decisions. It also suggests that agroforestry-adoption studies should account for the dynamic changes occurring during extended time periods. Reprinted by permission of the publisher. ISSN: 0167-4366.

Bannister, Michael E. and Nair, P. K. R. 1990. "Alley Cropping as a Sustainable Agricultural Technology for the Hillsides of Haiti: Experience of an Agroforestry Outreach Project." *Am. J. Alternative Agric.* Volume 5, Issue 2, Pages 51-59. Descriptors: Alley cropping; Sustainable agriculture; Agroforestry/Haiti; Biological & Agricultural. Notes: PD: Bibliography; Illustration; Map. ISSN: 0889-1893.

Banque mondiale. 1987. *Haiti: Examen des Depenses Publiques*. Translated title : *Public Expenditures Review*. Washington, Dc: Banque mondiale (World Bank). Descriptors: Investissements publics- Aspect économique- Haïti; Agriculture; Approvisionnement; Cee; Condition; Depense; Eau; Economie; Economique; Electricite; Electrique; Energie; Enseignement; Entreprise; Haiti; Industriel; Investissement;

Politique; Programme; Public; Sante; Situation; Telecommunication; Transport; Urbanisation. Notes: xxii, 273 p.; Note(s): Titre anglais: Haiti: public expenditure review. Other Titles: Haiti: public expenditure review. ISBN: 0821308726; 9780821308721. LCCN: 86-32599. OCLC Accession Number: 300927794.

Baranda, B. 2010. "Haiti, Land of Hope." *Boletin Latinoamericano y Del Caribe De Plantas Medicinales y Aromaticas*. Volume 9, Issue 2, Pages 84. Database: SCOPUS. ISSN: 0717-7917.

Barragán, J. M. 2008. "Argentina, Peru Sign MoU to Form Joint Peacekeeping Force." *Jane's Defence Weekly*. Issue OCT., Abstract: The Defense Ministries of Argentina and Peru have signed a memorandum of understanding (MoU) in Buenos Aires on 17 October, 2008 for creating a combined peacekeeping force. The unit will be called José Martin bi-national company, which will initially comprise of a company of engineers. The joint force is expected to be deployed to Haiti, as part of UN Stabilization Mission in Haiti (MINUSTAH), assisting in the construction of roads, public schools, and portable water infrastructure. This MoU has been signed to help both countries in developing better military relationship. Peru has provided military aid and political support to Argentina after Falklands/Malvinas conflict. Database: SCOPUS. ISSN: 0265-3818.

Barthelemy, Y. 1991. "Evaluation of Water Resources for Port-Au-Prince District - Haiti." *Hydrogeologie*. Volume 4, Pages 335-346. Descriptors: water conservation; water deficit; water legislation; water management; water resources; water resources development; water use; Haiti, Port au Prince; Haiti, Port-au-Prince. Abstract: Actual water deficit reached 83 Mm³/year, with an actual ground water production (wells and caught springs) of 159 Mm³/year and surface water use, mainly for agricultural purposes, of 101 Mm³/year. By 2015, water needs would induce a deficit of about 333 Mm³/year. Suggested solutions, including new agricultural practices and renewed irrigation equipment, are oriented to tap new alluvial aquifers on the Leogane plain. An important use of surface waters, including long distance water transfers and a new dam to be built on Momance river, were also suggested. Water legislation would have to be oriented to the program of water management. Database: SCOPUS.

Barthelemy, Y., Bobo, P., Chancy, B., et al. 1991. "Etude des Ressources En Eau de la Region De Port-Au-Prince, Haiti. Translated title: Water Resources of the Port-Au-Prince Area, Haiti." *Hydrogeologie (Orleans)*. Bureau de Recherches Geologiques et Minieres, (BRGM), Orleans, France. Volume 1991, Issue 4, Pages 335-346. Descriptors: Antilles; Caribbean region; Greater Antilles; Haiti; Hispaniola; Port-au-Prince Haiti; possibilities; water management; water resources; water yield; West Indies. Database: GeoRef. ISSN: 0246-1641.

Bayard, Budry, 19-. 2000. *Adoption and Management of Soil Conservation Practices in Haiti: The Case of Alley Cropping and Rock Walls*. Descriptors: Soil conservation- Haiti; Hedgerow intercropping- Haiti; Agroforestry- Haiti; Thesis/dissertation (deg); Manuscript (mss). Notes: xv, 164 leaves: ill.; 28 cm.; Dissertation: Thesis (M.S.)--Auburn University, 2000. Note(s): Abstract. Includes bibliographical references (leaves 89-100). Other Titles: Case of alley cropping and rock walls; Responsibility: Budry Bayard. OCLC Accession Number: 46873484.

Bayard, Budry; Jolly, Curtis M.; Shannon, Dennis Alan and Soil Management Collaborative Research Support Program. 2004. *Adoption of Rock Walls as a Soil*

Conservation Structure in Haiti. Auburn University, Ala: United States Agency for International Development, Soil Management Collaborative Research Support Program, Auburn University. Page(s): 19. Descriptors: Soil conservation- Haiti- Fort Jacques; Terracing- Haiti- Fort Jacques; Retaining walls- Haiti- Fort Jacques; Manuscript (mss). Notes: ill.; 28 cm. Note(s): Includes bibliographical references (p. 19). Department of Agricultural Economics and Rural Sociology, Auburn University and The Center for Agricultural Research and Development (CRDA) of the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR), Haiti. Funding: This work was made possible through support provided by the Global Bureau, United States Agency for International Development (USAID), under terms of Grant no. LAG-G-00-97-00002-00, and by the USAID/Haiti Mission through contracts with the South-East Consortium for International Development (SECID) in the Productive Land Use Systems (PLUS) Project (Contract no. 521-0217-C-00-5031-00). OCLC Accession Number: 62149415.

Beatty, Timothy. 2010. "Ever Green." *Planning*. American Planning Association: 03. Volume 76, Issue 3, Pages 36-36. Descriptors: Soil erosion; Earthquake relief; House construction; Haiti. Abstract: The article discusses the aspects to consider in rebuilding Haiti after the earthquake in 2010. It entails the construction of homes and neighborhoods to withstand disasters. It is considered that the country needs new approaches that emphasize ecological restoration to feed and house its population. There is also a need to help the country move away from reliance on soil-eroding annuals. ISSN: 0001-2610.

Beauboeuf, Yvon. 1981. *Potentiels Geothermiques d'Haiti*. Geothermal Potential of Haiti; Premier Colloque Sur La Geologie d'Haiti. Translated title: First Symposium on the Geology of Haiti. Haiti: Florentin J. M. R. Maurrasse, Port au Prince, Haiti. Premier Colloque Sur La Geologie d'Haiti, Port-Au-Prince. Haiti Conference: March 27-29, 1980. Descriptors: Antilles; Caribbean region; economic geology; exploration; geochemical methods; geothermal energy; Greater Antilles; ground water; Haiti; Hispaniola; hot springs; hydrogeology; springs; thermal waters; West Indies. Database: GeoRef. Accession Number: 1984-019530.

Bedos, C. and Brodeur, J. M. 2000. "Determinants of Dental Caries in Haitian Schoolchildren and Implications for Public Health." *Sante* (Montrouge, France). Volume 10, Issue 3, Pages 161-168. Descriptors: adolescent; age; article; cariogenic diet; child; comparative study; dental caries; female; Haiti; health survey; human; male; mouth hygiene; prevalence; public health; risk factor; sex difference; statistical model; Age Factors; Diet, Cariogenic; DMF Index; Humans; Logistic Models; Oral Hygiene; Risk Factors; Sex Factors. Abstract: This work was carried out as part of a community development project in North-West Haiti. The aim was to determine the prevalence of dental caries among young Haitians and to identify the principal determinants and risk factors. A total of 322 schoolchildren, all aged 12 years, participated in the study in March and April 1996. Demographic characteristics, hygiene and dietary habits were recorded. In parallel, a dentist assessed the amount of debris present on the teeth and investigated the children's history of caries. Almost two thirds of the children examined were free of caries. The mean number of decayed missing and filled teeth (DMFT index) was 0.93, which is low. However, a high-risk group was identified with a mean DMFT index of 3.8. This group is a source of some concern, particularly as the region's health services are often inaccessible resulting in dental caries frequently remaining untreated

until tooth extraction is required. Logistic regression analysis showed that dental hygiene and, to a lesser extent, sugar intake, were the principal risk factors for dental caries. Adolescents who consume more than three meals per day and who, presumably, have a higher intake of cariogenic food, present more caries than those who consume less. These schoolchildren meet the objectives of the WHO for dental caries for 2000, but two courses of action are nonetheless necessary: caries prevention and improved access to dental health care. To prevent caries, techniques for increasing the resistance of teeth could be recommended, as in industrialized countries. However, such strategies would be difficult to implement in the rural context of a developing country. The addition of fluoride to drinking water, for example, is not practical as most of the inhabitants of rural areas do not have access to running water. The use of sealing agents, which protect against decay affecting the occlusal surfaces of molars, is also impractical, for financial reasons. Thus, basic measures involving the improvement of dental hygiene and reducing the intake of cariogenic foods remain the principal means of preventing caries. Increasing the accessibility of dental care, like prevention, involves a number of problems. Increasing the number of health centers, or renovating existing clinics requires resources, and possibly infrastructure, that the Haitian state may not be in a position to provide. The recently developed ART (Atraumatic Restoration Treatment) overcomes this problem. This method involves manually cleaning cavities and sealing then with glass ionomer. This product is highly adhesive, which frees dentists from the constraints of having to use rotating electrical equipment. Caries can therefore now be treated in remote areas with a minimum of dental equipment. However, although encouraging results were obtained in a three-year trial in Thailand, the mechanical quality of glass ionomer and its ability to block caries development are unclear. In conclusion, a lack of financial resources limits the possibilities of intervention in developing countries, drawing attention to the important question of the financing of health programs. Funding remains the key to any program and has been shown to be an essential issue in epidemiological studies. Database: SCOPUS. ISSN/ISBN: 11575999.

Ben-Ezra, M., Shrira, A. and Palgi, Y. 2010. "The Hidden Face of Haiti's Tragedy." *Science*. Volume 327, Issue 5971, Page 1325. Abstract: In addition to the destruction of major civil services, including hospitals and medical centers, there is a less-attended but equally important effect of this disaster. This earthquake will probably lead to an extreme rise in mental disorders—especially stress-related illnesses such as acute stress disorder and posttraumatic stress disorder (PTSD)—in victims who have lost family support systems and face economic instability and an uncertain future. The impact of stress disorders is especially devastating in developing countries, where already underdeveloped health services cannot cope with the flood of traumatized people seeking refuge and help. Database: SCOPUS. ISSN: 0036-8075.

Benedek, C. and Rivier, L. 1989. "Evidence for the Presence of Tetrodotoxin in a Powder used in Haiti for Zombification." *Toxicon*. Volume 27, Issue 4, Pages 473-480. Descriptors: tetrodotoxin; gas chromatography; Haiti; liquid chromatography; mass spectrometry; methodology; nonhuman; Chemistry, Physical; Culture; Mass Fragmentography; Support, Non-U.S. Gov't. Notes: Cited By (since 1996): 3. Abstract: A powder prepared by Haitian voodoo sorcerers for the making of zombis was extracted with acetic acid, the extract concentrated and applied to a small cation exchange column followed by elution with water and then acetic acid. The water and acetic acid eluents

were analysed by gas chromatography-mass spectrometry and liquid chromatography-mass spectrometry. The analyses indicated the presence of an alkaline degradation product of tetrodotoxin, namely 2-amino-6-hydroxymethyl-8-hydroxyquinazoline, after base treatment, and of tetrodotoxin and an isomer on direct thermospray mass spectral activity. Database: SCOPUS. ISSN: 0041-0101.

Beno, S., Calello, D., Baluffi, A. and Henretig, F. M. 2005. "Pediatric Body Packing: Drug Smuggling Reaches a New Low." *Pediatric Emergency Care*. Volume 21, Issue 11, Pages 744-746. Descriptors: Body packing; Opioids; Overdose; Poisoning; opiate; anamnesis; article; case report; child; clinical feature; diagnostic approach route; diagnostic imaging; diagnostic test; drug intoxication; drug traffic; human; laboratory test; male; medical examination; neurologic examination; patient information; prescription; urinalysis; Child Abuse; Coma; Crime; Diseases in Twins; False Negative Reactions; Gastrointestinal Contents; Haiti; Humans; Hydrocodone; New York City; Oxycodone; Substance Abuse Detection; Tablets; Travel. Notes: Cited By (since 1996): 1. Abstract: The case of a 6-year-old boy presenting with severe clinical manifestations of an opioid intoxication and who is discovered to be an international "body packer" is presented and discussed. This article is the first to report on the phenomenon of body packing in young children. It also highlights the use of prescription opioids as cargo, which has not previously been addressed in the literature. Database: SCOPUS. ISSN: 0749-5161.

Berdanier, B. 2006. Water Resources Evaluation Following Natural Disaster in Haiti. ASEE Annual Conference and Exposition, Conference Proceedings 113th Annual ASEE Conference and Exposition, 2006. Chicago, IL Conference: 18 June 2006 through 21 June 2006. Descriptors: Disaster prevention; Floods; Gravitation; Hurricane effects; Gravity feed water systems; Natural disaster; Water resources. Abstract: This paper will present a case study of the impacts of a hurricane and the resultant flooding during June 2005 in Deschapelles, Haiti on spring box collection systems and gravity feed water systems which serve Hospital Albert Schweitzer (HAS) and the surrounding Deschapelles community. The paper will explore long and short term options for replacement or rehabilitation of existing systems and discuss the field evaluation performed and recommendations made by the author in cooperation with the directors of the Grant Foundation. HAS is a private hospital which was founded in 1954 by Dr. Larimer and Mrs. Gwen Grant Mellon. Currently HAS is funded and administered through the Grant Foundation in Pittsburg and provides medical services, community development, and community health services to the Artibonite Valley in Haiti in service to well over 300,000 people. The paper presents the culmination of the project which has evolved over the past five years involving the professor project leader, two graduate students, and one senior level BSCE in developing field survey data, technical feasibility studies and preliminary cost estimates. Database: SCOPUS.

Berdanier, Bruce W. 1999. Environmental Systems Construction in Deschapelles, Haiti. WRPMD 1999- Preparing for the 21st Century. Proceedings of 29th Annual Water Resources Planning and Management Conference. ASCE. Descriptors: Water treatment, Sewage disposal, Environmental quality, Water distribution, Health care facilities . Abstract: Hospital Albert Schweitzer (HAS) was established in Deschapelles, Haiti in 1954 by Dr. and Mrs. William Larimer Mellon. The hospital is currently administered through the Grant Foundation Board of Directors. HAS was conceived, planned and built

as a state-of-the art hospital for a tropical region. The environmental support systems of the hospital included: water collection, treatment, storage, and distribution; sanitary sewerage collection system; wastewater treatment; and solid waste incineration. The work planned for the subject project is for rehabilitating and replacing the HAS environmental support systems. Although these systems were well conceived and built in 1954, their typical useful design life is approximately 30 years. The staff has kept the systems operational with maintenance and design changes through the years, but major rehabilitation and replacement is now required for continued support of HAS operations and to protect the health of the staff and of the 600,000 residents of the region. Failing systems (such as the sanitary sewerage and wastewater treatment) currently are adversely affecting the health of the residents due to their impact on surface water sources. This project was initiated in the fall of 1995 with HAS staff members defining the need for the project. Permalink: [http://dx.doi.org/10.1061/40430\(1999\)80](http://dx.doi.org/10.1061/40430(1999)80)

Berdanier, Bruce W. 1998. Environmental Systems Rehab in Deschapelles, Haiti. Reston, VA, United States: ASCE. Proceedings of the Annual Water Resources Planning and Management Conference page(s): 307-312. Proceedings of the 1998 25th Annual Conference on Water Resources Planning and Management. Chicago, IL, USA Conference: 7 June 1998 through 10 June 1998. Descriptors: Health care; Industrial wastes; Sewage treatment; Waste incineration; Wastewater treatment; Water distribution systems; Environmental support systems; Hospitals. Abstract: Hospital Albert Schweitzer (HAS) was established in Deschapelles, Haiti in 1954 by Dr. and Mrs. William Larimer Mellon. HAS was conceived, planned and built as a state-of-the art hospital for a tropical region. The environmental support systems of the hospital included: water collection, treatment, storage, and distribution; sanitary sewerage collection system; wastewater treatment; and solid waste incineration. The work planned for the subject project is for rehabilitating and replacing the HAS environmental support systems. Although these systems were well conceived and built in 1954, their typical useful design life is approximately 30 years. The staff has kept the systems operational with maintenance and design changes through the years, but major rehabilitation and replacement is now required for continued support of HAS operations and to protect the health of the staff and of the residents of the region. Notes: ASCE. Database: SCOPUS.

Berger, C.; Lilin, C. 1987. Proposition pour un projet national de conservation des sols et d'aménagement des bassins versants. Mission technique préparatoire PAM/FAO. (Proposal for a national soil conservation and watershed management project. WFP/FAO preparatory technical mission). Language: French. Imprint: Port-au-Prince (Haiti). Jan 1987. 52 p. Fiche no: 341553. FAO-AN: 341553.

Berkelman, Ruth, Cohen, Mitchell, Yashuk, , Barrett, , Wells, Joy and Blake, Paul. 1983. "Traveler's Diarrhea at Sea: Two Multi-Pathogen Outbreaks Caused by Food Eaten on Shore Visits." Am. J. Public Health. American Public Health Association: 07. Volume 73, Issue 7, Pages 770. Descriptors: diarrhea; case studies; food poisoning; seafood; passenger ships; cruise ships; shipyards; diseases; public health; Hait. Abstract: In 1976 and 1981, two outbreaks of gastrointestinal illness aboard cruise ships occurred within 24 hours following onshore visits to Haiti and Mexico, respectively. Three hundred eighty-six of 600 (64 per cent) and 98 of 260 (38 per cent) passengers became ill following luncheons in Port-an-Prince, Haiti, and Cozumel, Mexico. No increase in illness was observed among those passengers who did not attend the onshore luncheons.

In both outbreaks, unrefrigerated seafood dishes served at outdoor buffets were epidemiologically incriminated as the vehicles of transmission. Several species of *Vibrio*, *Salmonella*, and toxigenic *Escherichia coli* were recovered from stool specimens of ill passengers in both outbreaks. In addition, invasive *Escherichia coli* and *Shigella* were isolated from stool specimens of ill passengers who ate at the Haitian buffet. Previous investigations of outbreaks of gastrointestinal illness aboard cruise ships have implicated exposures on board as the source and have involved only a single pathogen. ISSN: 0090-0036.

Berney, C. 1985. *Rehabilitation de trois petits perimetres irrigues: Laverdure, Riviere Bois et Maury. Dossier de factibilite et avant project detaille des amagements hydrauliques. (Rehabilitation of three small irrigated areas: Laverdure, Riviere Bois and Maury, Haiti. Feasibility study and detailed draft of water management works).* Language: French. Imprint: Port-au-Prince (Haiti). 1985. 86 p. Fiche no: 85X03072. Doc. Orig. Div: AGO. Project: Service Consultatif en Genie Rural et Cellule d'Evaluation Economique, HAI/84/011. Report number(s): FAO-AGO--HAI/84/011. FAO-AN: 254041.

Berry, M. J.; Spécialiste En Aménagement Forestier; Musgrave, K. D.; Haiti; Food and Agriculture Organization of the United Nations and United Nations Development Programme. 1978. *Reboisement, Lutte Contre l'Érosion Et Mise En Valeur des Forêts Naturelles, Haïti: Étude Qualitative Et Quantitative De l'Évolution du Couvert Forestier Entre 1956-58 Et 1977: Rapport.* Rome: Programme des Nations Unies pour le développement: Organisation des Nations Unies pour l'alimentation et l'agriculture. Page(s): 27. Descriptors: Forests and forestry- Haiti; Reforestation- Haiti; Soil erosion- Haiti. Notes: vi; ill.; 28 cm. Note(s): Five folded maps in pocket. Bibliography: page 15. Responsibility: préparé pour le Gouvernement d'Haïti par l'Organisation des Nations Unies pour l'alimentation et l'agriculture agissant en qualité d'agence d'exécution du Programme des Nations Unies pour le développement; sur la base des travaux de M.J. Berry et K.D. Musgrave. LCCN: 81-213092. OCLC Accession Number: 12022683.

Bersch, C. 2010. "Disasters: Where they Find Us." *Clinical Chemistry and Laboratory Medicine*. Volume 48, Issue 5, Pages 599-602. Abstract: Preparing for a natural disaster starts with a thorough understanding of the geography of your particular location, as well as its weather patterns. Early planning must also look beyond the disaster to examine the possible consequences of such a disaster. While no disaster/emergency preparedness planners like to think of the bleakest outcome (i.e., mass fatalities), building in solutions at the outset of a plan alleviates having to figure them out in the middle of an earthquake, a fire, or a hurricane. January's earthquake in Haiti holds lessons for anyone who is part of a first responder or healthcare profession, and those lessons have been hard ones for the world to learn. Database: SCOPUS. ISSN: 1434-6621.

Bildgen, Pierre. 1985. *Etude de la Genese des Formations Bauxitiques de la Presqu'île du Sud D'haiti (Grandes-Antilles).* Descriptors: Sciences Biologiques Fondamentales Et Appliquees; Psychologie: Sciences Biologiques Fondamentales Et Appliquees; Roche Volcanique-Roche Ignee-Roche Clastique-Roche Sedimentaire-Antilles; These-Sol-Basalte-Tholeiite-Bauxite-Karst; Haiti-Amerique Centrale Amerique-Sol Ferrallitique; Volcanic Rocks-Igneous Rocks-Clastic Rocks-Sedimentary Rocks-West Indies-Theses-Soils-Basalts-Tholeiite-Bauxite-Karst-Haiti-Central America-

America-Thesis-Soil-Ferrallitic Soil; Thesis-dissertation. Abstract: ces produits ferrallitiques et bauxitiques se sont formes en plusieurs etapes: 1) formation de profils lateritiques primaires sur roche-mere tholeitique oceanique; 2) demantelement et transport des produits formes au sein de ces profils qui constituent un melange kaolinique, alumineux et siliceux; 3) depot de ce melange sur les surfaces carbonatees et transformations mineralogiques secondaires des produits en fonction du modele karstique affectant ces surfaces. Notes: 44 p.; 30 cm. OCLC Accession Number: 490504156.

Bildgen, P. and Boulegue, J. 1988. "Analyse, Par Teledetection Spatiale, de la Charge Solide Transportee Par Les Rivieres; Exemple du Bilan Erosion-Transport dans la Vallee de la Grande Riviere De Jacmel (Presqu'Ile du Sud d'Haiti, WI). Space Remote Sensing Analysis of Solid Load Transported by Rivers; Example of Erosion-Transport Balance in the Grande Riviere De Jacmel, Peninsula in Southern Haiti, West Indies; Teledetection; Actes du 113eme Congres National des Societes Savantes; Section des Sciences, Section De Geographie Physique Et Humaine. Remote Sensing; Proceedings of the 113th Congres National des Societes Savantes, Section des Sciences, Section De Geographie Physique Et Humaine." Actes du Congres National des Societes Savantes, Section des Sciences. Gauthier-Villars, Paris, France: France. Volume 113, Pages 75-87. Descriptors: Antilles; basalts; bedload; Caribbean region; drainage basins; erosion; fluvial features; geomorphology; Greater Antilles; Haiti; Hispaniola; hydrology; igneous rocks; Jacmel; laterites; remote sensing; rivers and streams; soils; southern Haiti; stream transport; volcanic rocks; water erosion; West Indies. Notes: FE: References: 4; illus. incl. sects., geol. sketch maps. Database: GeoRef. ISSN/ISBN: 0996-357X.

Bildgen, P.; Boulegue, J. And Simonin, A. 1985. Characterization of Spectral Signatures of Aluminous Formations (Laterites and Bauxites) - Possibilities of using Satellite Remote Sensing for Prospecting for Aluminous Minerals. MI, Environmental Research Institute of Michigan: Ann Arbor. page(s): 1383-1392. International Symposium on Remote Sensing of Environment, 18th, Paris, France; United States; 1-5 Oct. 1984; International Symposium on Remote Sensing of Environment, 18th, Paris, France. United States Conference: 1-5 Oct. 1984. Descriptors: Aluminum; Bauxite; Laterites; Mineral Exploration; Remote Sensing; Satellite Imagery; France; Haiti; Infrared Spectra; Landsat Satellites; Spectral Reflectance; Thematic Mappers (Landsat); Visible Spectrum. Abstract: The present paper is concerned with the problem of spectral characterization of aluminous lateritic rocks and bauxites, taking into account possibilities for the utilization of satellite data in prospecting for aluminous minerals. Previous studies are discussed, and the geological data of selected test-sites are considered. Attention is given to Haitian test-sites, test-sites in the southeast of France, and the conduction of laboratory and field studies. The analysis of spectrophotographic data and in situ field data shows clearly that in the spectral regions presently used by satellite sensors of the type employed by Landsat, only the occurrence of iron can be detected. A differentiation between aluminous kaolinic rocks and red sediments with a high content of aluminum hydroxides (bauxites) cannot be achieved on the basis of data obtained in this spectral region. However, the employment of new sensors, such as the Thematic Mapper, will improve possibilities for the differentiation. Notes: NU: A86-21101 08-43; proceedings. volume 3; NR: 12. Database: CSA Technology Research Database. DTIC Accession Number: A8621213.

Bildgen, P. and Hieronymus, B. 1982. "Nature Mineralogique des Premiers Stades De l'Alteration Bauxitique En Haiti. Mineralogic Nature of the First Stages of the Bauxitic Alteration in Haiti; Comptes Rendus du 106eme Congres National des Societes Savantes, Sciences de la Terre. the Proceedings of the 106th National Congress of Learned Societies; Earth Sciences." Comptes Rendus du Congres National des Societes Savantes. Sciences de la Terre. Bibliotheque Nationale, Paris, France: France. Volume 106, Issue 3, Pages 401-411. Descriptors: altitude; aluminum; Antilles; areal studies; basalts; bauxitization; Caribbean region; clay mineralogy; clay minerals; geochemistry; gibbsite; Greater Antilles; Haiti; Hispaniola; hydration; hydrolysis; hydroxides; igneous rocks; iron; kaolinite; metals; oxides; SEM data; sheet silicates; silicates; soil profiles; soils; surveys; volcanic rocks; weathering; West Indies.. Database: GeoRef.

Bilger, Burkhard. 2010. "Towheads." *New Yorker*. April 19, 2010. Pages 84-97. Abstract: This article describes the dangerous but lucrative work of tugboating. A brief history of tugboats from the steam age to the present is given, and the role tugboats play in towing barges and guiding larger ships into ports is discussed. The activities of one tugboating family in southern Louisiana are highlighted. The family specializes in salvage and ocean towing, and has towed all over the world. Even though the younger generation is estranged from their father, they sometimes bid for the same jobs. The complicated preparations for a contract to transport relief supplies to Haiti are described. Database: TRIS. ISSN: 0028-792X.

Bilham, R. "Lessons from the Haiti Earthquake." 2010. *Nature*. Volume 463, Issue 7283, Pages 878-879. Abstract: With an official death toll of 230,000 and thousands still buried beneath collapsed structures, the Haiti earthquake of 12 January was more than twice as lethal as any previous magnitude-7.0 event. In my visit to the region in the weeks after the earthquake, the reason for the disaster was clear in the mangled ruins- the buildings had been doomed during their construction. Every possible mistake was evident: brittle steel, coarse non-angular aggregate, weak cement mixed with dirty or salty sand, and the widespread termination of steel reinforcement rods at the joints between columns and floors of buildings where earthquake stresses are highest. Database: SCOPUS. ISSN: 0028-0836.

Bird, M. I., Longstaffe, F. J., Fyfe, W. S. and Bildgen, P. 1992. "Oxygen-Isotope Systematics in a Multiphase Weathering System in Haiti." *Geochimica Et Cosmochimica Acta*. Volume 56, Issue 7, Pages 2831-2838. Descriptors: bauxite; isotope study; oxygen isotope value; partial dissolution technique; regolith; weathering; Haiti. Notes: Cited By (since 1996): 25. Abstract: Physical and chemical (partial dissolution) techniques have been applied to a suite of young karst bauxite and laterite samples from the southern peninsula of Haiti. The $\delta^{18}\text{O}$ values have been obtained for nine mineral species and range from + 1.0‰ for anatase/rutile to +33.4‰ for authigenic quartz. On one hand, results for quartz, calcite, kaolinite, gibbsite and boehmite compare favourably with $\delta^{18}\text{O}$ values predicted from accepted mineral-water fractionation factors, assuming modern temperatures ($25 \pm 2^\circ\text{C}$) and water $\delta^{18}\text{O}$ values ($-3.1 \pm 0.5\text{‰}$). On the other hand, the $\delta^{18}\text{O}$ values measured for anatase, illite/smectite, chlorite/smectite, and some iron oxide samples do not compare favourably with predicted values. Departures from expected values for these minerals may be related to crystallization from water with a different $\delta^{18}\text{O}$ value than modern water, an imprecise knowledge of some mineralwater fractionation factors under surficial conditions, or nonattainment of isotopic equilibrium

between mineral and water during formation. Partial dissolution techniques hold considerable promise for obtaining quantitative $\delta^{18}\text{O}$ values of individual minerals in single samples of complex, fine-grained regolith material. Database: SCOPUS. ISSN: 0016-7037.

Blanquet, Lucienne and Morette, Andre. 1957. "Sur La Composition des Eaux Et des Gaz Spontanes De Quelques Sources Thermominerales De Haiti." Vol.18. Oct. Volume 18, Pages 1556-1559. Descriptors: Antilles; Caribbean region; composition of water and gas; Greater Antilles; ground water; Haiti; Hispaniola; Hot mineral springs; mineral springs; springs; thermal mineral; thermal waters; West Indies. Notes: Acad. Sci. Comptes rendus, tome 245; FE: tables, Paris. Database: GeoRef.

Blum, Joel D. and Chamberlain, C. Page. 1992. "Oxygen Isotope Constraints on the Origin of Impact Glasses from the Cretaceous-Tertiary Boundary." *Science*. August 21. Volume 257, Pages 1104-1107. Descriptors: Glass beads; Isotope geology; Cretaceous-Tertiary boundary; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Bibliography; Illustration. Abstract: Laser-extraction oxygen isotope and major element analyses of individual glass spherules from Haitian Cretaceous-Tertiary boundary sediments demonstrate that the glasses fall on a mixing line between an isotopically heavy ($^{18}\text{O} = 14$ per mil) high-calcium composition and an isotopically light ($^{18}\text{O} = 6$ per mil) high-silicon composition. This trend can be explained by melting of heterogeneous source rocks during the impact of an asteroid (or comet) approximately 65 million years ago. The data indicate that the glasses are a mixture of carbonate and silicate rocks and exclude derivation of the glasses either by volcanic processes or as mixtures of sulfate-rich evaporate and silicate rocks. Copyright 1992 by the AAAS. ISSN: 0036-8075.

Bohner, Bruce K., Bowman, Wendi, Dell, Danielle and Gutermuth, Fred. 2005. "Disease Nonbattle Injury Surveillance for Commander, Joint Task Force Haiti, 2004." *Mil. Med.* Dec. Volume 170, Issue 12, Pages 1032. Abstract: We analyzed weekly disease nonbattle injury data from the Joint Task Force in Haiti during 2004. Surveillance found 908 initial visits during 17,938 person-weeks, for an overall rate of 5.1% (95% confidence interval, 4.7-5.4%), above the reference rate of 4% suggested by the Chairman of the Joint Chiefs of Staff. Rates of dermatological (1%), respiratory (0.8%), and other medical/surgical (0.9%) conditions were above suggested rates, whereas rates of work injuries (0.6%) and recreational injuries (0.8%) were below suggested rates. Leading causes of light duty ($n = 1,079$; 6.01 days per 100 person-weeks) were recreational injuries (39%) and work-related injuries (36%), followed by other medical/surgical conditions (12%). One case of malaria was reported during the deployment. These rates are lower than disease nonbattle injury rates of 9.2% to 13% reported for multinational forces from previous operations in Haiti. They are also lower than rates of 7.1% to 8.1% reported from Bosnia and Kosovo in the late 1990s. ISSN: 0026-4075.

Bohor, B. F.; Glass, B. P. and Betterton, W. J. 1993. "K/T Spherules from Haiti and Wyoming: Origin, Diagenesis, and Similarity to some Microtektites." Denver, CO. Sponsor: National Aeronautics and Space Administration, Washington, DC; United States: Geological Survey. Volume: N94120854, page(s): 2. Descriptors: Cretaceous-tertiary boundary; Micrometeorites; Spherules; Tektites; Ejecta; Glass; Andesite; Haiti; Meteoritic composition; Scalloping; Wyoming. Abstract: Spherules with relict glass cores

in the K/T boundary bed of Haiti allow for a comparison of these bodies with hollow goyazite shells in the K/T boundary claystone of Wyoming and with younger microtektites of the Ivory Coast strewn field. Samples of the Haitian beds from undisturbed sections at Beloc, as determined by Jehanno et al., contain both hollow shells and relict glass cores rimmed by palagonite that has been partially converted to smectite. These palagonite rims developed from hydration zones formed when hot, splash-form droplets of andesitic impact glass were deposited into water. Mutual collisions between these droplets in the ejecta curtain may have formed point-source stresses on their surfaces. Initiation of hydration would be facilitated at these surface stress points and propagated radially into the glass. The inner surface of these merged hemispherical fronts appears mammillary, which is reflected as scalloping in Haitian relict glass cores. Notes: In Lunar and Planetary Inst., Twenty-Fourth Lunar and Planetary Science Conference. Part 1: A-F p 145-146. Database: NTIS. NTIS Accession Number: N94120854.

Boisson, Dominique; Aubouin, Jean and Dir. 1987. Etude Geologique du Massif du Nord D'haiti (Hispaniola - Grandes Antilles). Descriptors: Terre; Ocean; Espace: Geologie Regionale; Cartes; Secondaire-Antilles-These-Cretace Sup-Cenozoique-Roche Ignee-Composition Calcoalcaline-Arc Insulaire-Deformation Polyphasee-Haiti-Amerique Centrale-Amerique; Mesozoic-West Indies-Theses-Upper Cretaceous-Cenozoic-Igneous Rocks-Calc-Alkalic Composition-Island Arcs-Polyphase Processes-Haiti-Central America-America-Thesis-Island Arc; Espace: Terre; Espace; Thesis/dissertation (deg). Abstract: le massif du nord est un edifice cretace et tertiaire polyphase appartenant a la bordure nord de l'orogene caraibe. Son etude stratigraphique et petrographique permet d'y distinguer: une logique de depot post-danienne caracterisee par: une sedimentation neogene essentiellement detritique: deux cycles de plate-forme carbonatee (l'un a l'eocene et l'autre au miocene inferieur) separees par une discordance fini-eocene et une lacune locale de sedimentation oligocene. Tous ces terrains sont supportes par l'ensemble volcano-sedimentaire de l'arc cretace recoupe par plusieurs generations d'intrusifs; le chimisme de cet ensemble indique clairement son appartenance a une lignee calcoalcaline d'arc insulaire. Le substratum de cet ensemble affleure tres peu et est constitue de roches basiques et ultrabasiqes d'age inconnu. l'inventaire des differentes structures qui affectent les terrains du massif du nord combine aux contraintes stratigraphiques conduit a y retenir six episodes de deformation. Notes: XII-256 P.; 30 cm.; Dissertation: Doctorat D'etat: Terre, Ocean, Espace: Paris 6: 1987.; Note(s): 1987PA066771. 12 P.; Other Titles: Geological Study of the Haitian Massif du Nord (Hispaniola, Greater Antilles); Responsibility: Dominique Boisson. OCLC Accession Number: 490207210.

Bonhomme, G. C. 1995. Rapport no. 1 sur la construction de retenues collinaires a Pandiassou. (Report no. 1 on building small dams in Pandiassou). FAO, Rome (Italy). Dept. des Forets. Language: French. Imprint: (np). Jun 1995. FAO, Rome (Italy). Dept. des Forets. Jun 1995. 5 p. Fiche no: 371003. Project: Mise en Place d'une Cellule d'Appui au Projet PAM/HAI/2820, Haiti, Document de travail 5, HAI/89/024. Report number(s): FAO-FO--HAI/89/024. FAO- AN: 371003.

Bohor, Bruce F. 1996. "A Sediment Gravity Flow Hypothesis for Siliciclastic Units at the K/T Boundary, Northeastern Mexico; the Cretaceous-Tertiary Event and Other Catastrophes in Earth History." Special Paper - Geological Society of America. Geological Society of America (GSA), Boulder, CO, United States: United States. Volume 307, Pages 183-195. Descriptors: Antilles; Arroyo el Mimbral; Beloc Haiti;

Bouma sequence; Caribbean region; Cenozoic; clastic rocks; clastic sediments; Cretaceous; deep-water environment; deposition; depositional environment; Greater Antilles; Haiti; Hispaniola; impacts; K-T boundary; La Lajilla Mexico; lower Paleocene; marine environment; marl; Mesozoic; Mexico; mineral composition; northeastern Mexico; Paleocene; Paleogene; provenance; sand; sedimentary rocks; sedimentary structures; sediments; SEM data; shallow-water environment; shelf environment; siliciclastics; spherules; stratigraphic boundary; Tertiary; tsunamis; turbidite; turbidity current structures; Upper Cretaceous; West Indies; Yucatan Peninsula. Notes: SP: USGSOP, Non-USGS publications with USGS authors; CD: GSAPAZ; FE: References: 52; illus. incl. block diag., sect., strat. cols., 1 table, sketch map. Database: GeoRef. ISBN: 0813723078.

Bonnlander, Heinke P. 1994. Two Epidemiological Studies in Central Haiti. United States- Oregon: Oregon State University. Descriptors: Public health. Abstract: Two epidemiological studies, designed to expand our knowledge of morbidity and mortality indicators concerning malaria and Bacillus Calmette-Guerin vaccination in the Hospital Albert Schweitzer health district located in Central Haiti's Artibonite Valley, are presented. The hospital serves a rural population of 190,000 in its 610 square mile district. A large proportion of the rural population still relies on traditional healers in times of illness. Consequently, accurate morbidity and mortality data from individuals and communities in the district are scarce. The first study investigated an outbreak of axillary lymphadenitis and abscesses after Bacillus Calmette-Guerin vaccination among rural Haitian children treated at Hospital Albert Schweitzer from January 1986 through March 1991. Seventy-seven cases of vaccine-related complications were identified, all among children immunized before the age of 1 year. The proportions of children with complications were 0.017% for 1986 through 1989, 0.91% for 1990, and 2.2% for January through March 1991. The probable explanation for the increase is a change in the BCG strain or in the reactogenicity of the Pasteur strain. The second study, also conducted at Haiti's Hospital Albert Schweitzer, sought to assess the numbers of malaria cases seen at the hospital in 1982-1991, the distribution of cases by age and sex in the 1989-1991 period, and the validity of official reports indicating an overall decline in malaria cases. Review of the hospital's laboratory records (1982-1986, 1988-1991), patient medical records (1989-1991), and patient discharge summary cards (1989-1991) revealed 5,251 malaria cases identified through examination of approximately 65,000 blood smears. The largest numbers of cases were diagnosed in 1982 (1,150 cases) and 1988 (980 cases), the smallest numbers in 1990 (120) and 1991 (317). Peak malaria incidence occurred yearly in the November through January period, a few months after the rainy season. Of the 838 malaria cases found in the 1989-1991 period, 53% occurred in females and 47% in males. Relatively high numbers of cases (41.1 cases per year of age) were found among children aged, 0-6 years, with the largest number of cases in any one-year age group (54) occurring among children 1 year old. (In general, the numbers of cases declined with increasing age.) Eight cases among hospital inpatients ended in malaria-related death; five of these deaths occurred among children aged 0-6 years, and six involved cerebral malaria (a common complication of *P. falciparum* infection). Overall, the results of this study supported official reports showing a general decline in the number of malaria cases in this region of Haiti between 1982 and 1991. Primary health care may have contributed to the decline in malaria in addition to a 1990 drought

in the Dominican Republic, whose mountains supply the district's Artibonite River with its water. Finally, a brief overview of Haiti's history and its political economy is given because, ultimately, health care is closely related to development and resource distribution. OCLC Accession Number: 9434249. URL: <http://proquest.umi.com/pqdweb?did=741138531&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Botton, Sarah; Brailowsky, Alexandra; Matthieussent, Sarah and Water, Engineering, and Development Centre. 2005. *The Real Obstacles to Universal Access to Drinking Water in Developing Countries: Thoughts Stemming from how Poor Neighbourhood Populations Living in Port-Au-Prince (Haiti) and Bueno Aires (Argentina) Experience Access to Drinking Water*. Loughborough: Water, Engineering and Development Centre, Loughborough University. Page(s): 36. Descriptors: Drinking water- Argentina- Buenos Aires; Drinking water- Haiti- Port-au-Prince; Water-supply-Rates- Developing countries. Notes: x; illustrations30 cm. Note(s): Includes bibliographical references. Responsibility: Sarah Botton, Alexandra Brailowsky and Sarah Matthieussent. ISSN/ISBN: 1843800896 (pbk.); 9781843800897 (pbk.). OCLC Accession Number: 78202308.

Boulègue, Jacques, Benedetti, Marc and Bildgen, Pierre. 1989. "Geochemistry of Waters Associated with Current Karst Bauxite Formation, Southern Peninsula of Haiti." *Applied Geochemistry*. Volume 4, Issue 1, Pages 37-47. Abstract: Geological and petrographical observations have led to the hypothesis that there is current formation of bauxitic deposits in the southern peninsula of Haiti. The kaolinitic products of the lateritic alteration of the basalts are trapped in karst. It is then proposed that they are transformed into gibbsite by the flushing out of dissolved silica. The study of waters percolating the different outcrops show that the formation of gibbsite takes place during the rainy season; during the dry season kailinite is not significantly altered. The geochemistry of Al, Si, Ca and ΣCO_2 is in agreement with the reaction: kaolinite \rightarrow gibbsite + dissolved silica. The resulting gibbsite remains trapped in karst. Geochemical budgets show that the formation of such bauxitic deposits of 1.3 m thick can take place in only 100,000 a. ISSN: 0883-2927.

Boulos, Antoine. 1995. *Haïti: Ressources Physiques Informatisées et Vocation des Terres*. Berkeley: University of California. Page(s): 143. Descriptors: Natural resources- Haiti- Maps; Agriculture- Haiti- Maps; Soils- Haiti- Maps; Cartography- Haiti- Data processing; Digital mapping; Haiti- Maps. Notes: maps; 22 x 28 cm. Note(s): Recherche réalisée à l'Université de Californie du sud (U.S.C) en collaboration avec l'architecte Ngok Lung Ha et le professeur Charles Steve Dwyer. Responsibility: Antoine Boulos. OCLC Accession Number: 52346193.

Bourée, P., Joseph, P. -F, Joseph, P. -F and Morell Gil, R. -E. 2001. "Haïti: La diarrhée Aiguë Est La première Cause De Mortalité Infantile." *Revue Internationale De Pédiatrie*. Issue 313, Pages 9-12. Descriptors: Acute diarrhea; Fecal hazards; Haiti; Infant mortality. Abstract: Haiti: Acute diarrhea is the first cause of infant mortality. The acute diarrhea, infectious disease transmitted by fecal-oral route, remains a major public health problem in countries with precarious hygiene conditions. Worldwide spread, it affects more than 300 million of infantile population, and is responsible for nearly 1.5 million deaths each year, including 200 000 in America's countries. This affection occurs in Haiti, because of the importance of fecal hazards, with a high incidence during the

weaning. Among Haitian population, only 1/3 in rural zone and 1/2 in urban zone have access to safe water. Similarly, 43% of urban population have access to latrines against only 16% of rural population. A study carried out at Community hospital of Mirebalais, in Center of Haiti, between July 1994 and December 1995, showed that on 1 000 live births, the incidence of infant mortality was 45.6 in children aged more than one month. The causes of death were primarily gastro-intestinal disturbances (60%). The infant mortality rate in Haiti has decreased from 124 per 1 000 in 1978 to 106.7 per 1 000 in 1984 and to 57.2 per 1 000 in 1995. In spite of this reduction observed in the country, the incidence of mortality remains high, compared to others countries in the same area, as the Dominican republic where the rate is 42 per 1 000 live births. In a country with strong endemicity like Haiti, in the absence of improvement of the socio-economic situation and the environment, the oral rehydration remains an effective means of treatment of dehydration and serious malnutrition, responsible for the infant mortality. Database: SCOPUS. ISSN/ISBN: 00488135.

Bouvier, A. 1986. "Methodes Geophysiques Appliquees a l'Hydraulique Villageoise. Geophysical Methods Applied to Village Hydraulics." *Geologues*. [publisher unknown], Paris, France: France. Volume 78-79, Pages 43-52. Descriptors: Africa; Antilles; Australasia; Australia; Caribbean region; exploration; geophysical surveys; Greater Antilles; Haiti; Hispaniola; surveys; water resources; West Africa; West Indies; Western Australia. Notes: GEOLBU; References: 6; illus. Database: GeoRef. ISSN: 0016-7916.

Bower, Kathleen M., Brown, Mary L., Burnitz, Kimberly, Nance, Kyla and Schiaretti, Kimberly. 2007. "Increased Drinking Water Supply through Improved Cistern Design in Rural Haiti; Geological Society of America, South-Central Section, 41st Annual Meeting; Geological Society of America, North-Central Section, 41st Annual Meeting." *Abstracts with Programs - Geological Society of America*. April. Volume 39, Issue 3, Pages 58. Descriptors: Antilles; Barasa Haiti; Caribbean region; design; drinking water; economics; Greater Antilles; Haiti; Hispaniola; hydrology; rural environment; water resources; water supply; water wells; West Indies. Abstract: Barasa, Haiti is an extremely poor, isolated rural community located on a mountain. Cisterns in Barasa, Haiti are the preferred method to collect and store water for household use. Local masons build the cisterns which provides jobs for local people. The local construction may be funded through charitable organizations, such as the Haiti Connection of Charleston, Illinois. Stone and concrete aggregate found in Barasa are used for local cistern construction but are of calcite which weakens the mortar between limestone blocks. Some locally built cisterns crack and water escapes. While this is a problem over the entire developing world, cistern crack formation seems to occur often in Haiti. When cisterns crack, people no longer have easy year-round access to water. Development of simple and economical solutions to help prevent cistern cracking or repair cisterns so water is retained after cracking, would benefit many organizations, communities, and those who are water-poor in Haiti and other developing countries. In order to be sustainable, methods chosen for constructing cisterns must be economically feasible for Haitians, be easy to apply by uneducated and untrained masons, use material readily available and economical in Haiti, be safe, and be culturally acceptable to Haitians. The solution to cracking cisterns in Haiti involves improvement of construction methods and materials used for cisterns in Haiti. It was determined in this project that addition of

inexpensive dried fibers from sisal, a native plant in Haiti, increased compressive strength in concrete. Longer curing times under moist conditions also increased mortar strength in cisterns. These methods are both inexpensive, easy to use, and utilize readily available materials in Barasa, Haiti. The Eastern Illinois University students tested these methods for effectiveness and ease of application. The most promising methods will be communicated to Haitian masons via interaction with members of the Haiti Connection. If feasible, Haitian masons will field test the most promising methods in Barasa, Haiti. Sustainable new methods of cistern construction should increase the drinking water supply of rural Haiti, improving health and economic productivity of the residents. Database: GeoRef. ISSN: 0016-7592.

Bracey, Dewey R. and Peter R. Vogt. 1970. "Plate Tectonics in the Hispaniola Area." *Geological Society of America Bulletin*. September 1970 v. 81 no. 9 p. 2855-2860. URL: <http://gsabulletin.gsapubs.org/content/81/9/2855.abstract>

Bracey, Dewey R. and Peter R. Vogt. 1971. "Plate Tectonics in the Hispaniola Area: Reply." *Geological Society of America Bulletin*. April 1971 v. 82 no. 4 p. 1127-1128. URL: <http://gsabulletin.gsapubs.org/content/82/4/1127.abstract>

Brandimarte, L., Brath, A., Castellarin, A. and Baldassarre, G. D. "Isla Hispaniola: A Trans-Boundary Flood Risk Mitigation Plan." *Physics and Chemistry of the Earth*. Descriptors: Dominican Republic; Flood risk mitigation plan; Haiti; Institutional capacity building; River Soliette. Notes: Article in Press. Abstract: It is sadly known that over the past decades Isla Hispaniola (Haiti and the Dominican Republic) has been exposed to the devastating passage of several hurricanes and tropical storms. Territories that are economically weak and extremely poor in terms of natural resources have been shaken by severe flood events that caused the loss of thousands of human lives, displacement of people and damage to the environment. On May 24th 2004, the flooding of the trans-boundary river Soliette killed over 1000 Haitian and Dominican people, wiping out villages and leaving behind desolation and poverty. After this catastrophic flood event, the General Direction for Development and Cooperation of the Italian Department of Foreign Affairs funded through the Istituto Italo-Latino Americano (IILA, www.iila.org) an international cooperation initiative (ICI), coordinated and directed by the University of Bologna. The ICI involved Haitian and Dominican institutions and was twofold: (a) institutional capacity building on flood risk management and mitigation measures and policies; (b) hydrological and hydraulic analysis of the May 2004 flood event aimed at formulating a suitable and affordable flood risk mitigation plan, consisting of structural and non-structural measures. Database: SCOPUS. ISSN/ISBN: 14747065.

Bras, A., Berdier, C., Emmanuel, E. and Zimmerman, M. 2009. "Problems and Current Practices of Solid Waste Management in Port-Au-Prince (Haiti)." *Waste Manage*. Nov. Volume 29, Issue 11, Pages 2907-2909. Descriptors: Environmental Engineering; ASW, Caribbean Sea, Greater Antilles, Haiti; Solid waste management. Abstract: Abstract not available. Database: CSA Technology Research Database. ISSN: 0956-053X.

Bras, A., Emmanuel, E., Obicson, L., Brasseur, P., Pape, J. W. and Raccurt, C. P. 2007. "Assessment of the Risks of Cryptosporidium Oocysts in Drinking Water in Port-Au-Prince (Haiti)." *Environnement, Risques Et Sante*. Volume 6, Issue 5, Pages 355-364. Descriptors: Cryptosporidium; Drinking water; Environmental exposure; Haiti; Risk

assessment; article; cryptosporidiosis; groups by age; human; immune deficiency; immunocompetence; oocyte; pathogenesis; population research; United States. Abstract: Cryptosporidiosis is one of the most frequent causes of diarrhoea in Haiti. Its transmission to humans, and in particular the groups at highest risk - children younger than five, people with HIV infection, and the undernourished - occurs through food and water containing *Cryptosporidium* oocysts. Recent studies demonstrate that the concentration of oocysts in 100 litres of the drinking water used by the population in Port-au-Prince (Haiti) ranges from 4 to 1,274 oocysts in 16 of the 18 water points sampled (89%). The aim of this study was to evaluate the risks associated with this parasite in the drinking water of the Port-au-Prince metropolitan area. An exponential model was used to mark on the probability of an increasing infection. Four populations were considered: immunocompetent and immunodeficient children younger than five years, and immunocompetent and immunodeficient people five years or older. The risk of infestation in the immunocompetent portion of the population was 1% to 5%, and in the immunodeficient portion, 1% to 97%, according to the *Cryptosporidium* oocyst concentration. It is necessary to monitor and improve the microbiologic quality of drinking water to reduce the risk of human infections with pathogenic microorganisms related to biological pollution in Haiti. Database: SCOPUS. ISSN/ISBN: 16350421.

Bredl, Sebastian. "Migration, Remittances and Educational Outcomes: The Case of Haiti." *International Journal of Educational Development*. Volume In Press. Descriptors: Haiti; International education; Development; Remittances; Migration. Abstract: This paper empirically investigates how migration and the receipt of remittances affect educational outcomes in Haiti. Based on a theoretical approach it tries to disentangle the effects of both phenomena that have mostly been jointly modeled in previous literature. The results suggest that remittances play an important role for poor households in alleviating budget constraints. Household wealth, captured via an asset index, is found to have a significant impact on education as well, supporting the idea that budget constraints play a crucial role in schooling decisions in Haiti. ISSN: 0738-0593.

Brenner, M. and Binford, M. W. 1988. "A Sedimentary Record of Human Disturbance from Lake Miragoane, Haiti." *Journal of Paleolimnology*. Kluwer Academic Publishers: Volume 1, Issue 2, Pages 85-97. Descriptors: 210Pb; land-water interactions; limnology; paleolimnology; sediment geochemistry; West Indies; carbonate; carbonates; deforestation; organic matter; palaeolimnology; sedimentation rate; sedimentation rates; soil erosion; Haiti, Lake Miragoane. Notes: Cited By (since 1996): 10. Abstract: Lake Miragoane, Haiti is one of the largest, natural freshwater lakes in the Caribbean ($A=7.06 \text{ km}^2$, $z_{\text{max}}=41.0 \text{ m}$, conductivity = $350 \mu\text{S cm}^{-1}$). Lake waters are dominated by calcium and bicarbonate ions. The lake was thermally stratified, and oxygen profiles were clinograde during summer visits in 1983 and 1985. A 72-cm mud-water interface core was taken near the center of the lake and dated with 210Pb. The local 210Pb fallout rate is low ($0.09 \text{ pCi cm}^{-2} \text{ yr}^{-1}$), about 20% of the global average. Bulk sedimentation rates ranged from 0.008 to $0.030 \text{ g cm}^{-2} \text{ yr}^{-1}$ during the past 130 years (0-8 cm depth). Sediment geochemistry and pollen have been analyzed in the topmost 58 cm of the section. Tentative ages were assigned to the core by extrapolation of 210Pb dates. According to this preliminary chronology, the bottom part of the core (58-30 cm) records pre-Columbian sedimentation (1000-500 B.P.) and contains pollen evidence of intact, dry and mesic forest. Pre-Columbian deposits are rich in organic matter ($x = 30\%$) and

relatively poor in carbonates ($x = 15\%$ as CO_2). The top 30 cm of the core preserve the record since European contact (500 B.P. to present). Pollen data reveal two episodes of deforestation following European arrival. Consequent soil erosion is documented by a decrease in organic matter content ($x = 15\%$) and an increase in carbonates ($x = 27\%$ as CO_2). Surficial sediments reflect the widespread deforestation and soil loss that characterize the watershed today. © 1988 Kluwer Academic Publishers. Database: SCOPUS. ISSN/ISBN: 09212728.

Brenner, M. Curtis, J. H. Higuera-Gundy, A., et al. 1994. "Lake Miragoane, Haiti (Caribbean)." United Kingdom (GBR): Cambridge University Press, Cambridge, United Kingdom (GBR). Volume: 4, Descriptors: absolute age; Antilles; Arthropoda; biostratigraphy; C-14; carbon; Caribbean region; Cenozoic; climate; Crustacea; dates; ecology; fresh water; Greater Antilles; Haiti; Hispaniola; Holocene; IGCP; Invertebrata; isotopes; lacustrine environment; Lake Miragoane; lakes; levels; lithostratigraphy; Mandibulata; miospores; O-18/O-16; Ostracoda; oxygen; palynomorphs; pollen; Quaternary; radioactive isotopes; rift zones; stable isotopes; West Indies. Notes: SP: IGCP, International Geological Correlation Programme; IGCP Project No. 324. ISBN: 0521414520. Database: GeoRef. OCLC Accession Number: 1995-037250.

Breton, Anne-Marie R. Gorená, Temístocles and Organization of American States. Office of Regional Development. 1972. "Données Hydrologiques Et Utilisation des Eaux, République d'Haïti." Washington, D.C: Organisation des États Américains. Descriptors: Hydrology- Haiti- Maps; Water use- Haiti- Maps; Government publication; International government publication. Notes: Description: 1 map: col. 94 x 126 cm. Map Info: Scale 1:250,000; Note(s): Relief shown by shading. Includes indexed inset of "Bassins et zones hydrographiques" and numerous graphs. Responsibility: cette carte fait partie des travaux réalisés en 1968-70 par la Mission d'assistance technique intégrée du Secrétariat général de l'OEA en Haïti et a été préparée par le Bureau de développement régional de l'OEA; préparée et dessinée par la Bureau de développement régional du Secrétariat général de l'Organisation des états américains; cartographes, Anne-Marie Breton [et] Temístocles Gorená. National Library Cataloging: Program for Cooperative Cataloging (PCC). LCCN: 2003-623258. OCLC Accession Number: 52108652; 51276447.

Breusers, H. N. C. 1991. "Scour Below Low Head Structures." Scouring. Balkema, for IAHR, Hydraulic Structures Design Manual, 2: Pages 123-142. Descriptors: accretionary prism; cohesive strength; dam; frictional resistance; oblique convergence; scour; seafloor declivity; water level; weir; Dominican Republic; Germany; Haiti; Netherlands. Abstract: Considers flows over and under gates, weirs and low dams. Describes extensive work done in connection with the Netherlands Delta Project and parallel work in Germany. These include studies of the time dependence of the rates of scour which are characteristic of the fine sediments found in deltas. -from Author. Database: SCOPUS.

Brody, S. A. and Loriaux, D. L. 2003. "Epidemic of Gynecomastia among Haitian Refugees: Exposure to an Environmental Antiandrogen." Endocrine Practice: Official Journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists. Volume 9, Issue 5, Pages 370-375. Descriptors: androgen receptor; antiandrogen; insecticide; phenothrin; pyrethroid; adolescent; adult; animal; article; environmental exposure; epidemic; ethnology; fibroblast; gynecomastia; Haiti;

human; male; metabolism; middle aged; rat; refugee; United States; Androgen Antagonists; Animals; Disease Outbreaks; Fibroblasts; Humans; Insecticides; Pyrethrins; Rats; Receptors, Androgen; Refugees. Notes: Cited By (since 1996): 6. Abstract: Objective: To investigate an observed epidemic of gynecomastia among Haitian refugees in US detention centers in 1981 and 1982. Methods: All identifiable environmental exposures were investigated for estrogenic and antiandrogenic activity. Results: A high incidence of gynecomastia was observed among Haitian refugees in five detention centers in the United States. Of 284 men screened, 20 (from 18 to 53 years old) demonstrated new-onset gynecomastia (Tanner stages 2 to 5) in June 1982. The mean onset of gynecomastia was 130 +/- 12 days after arrival in the United States. Other symptoms included loss of libido (in all 20 patients) and decreased beard growth (in 10). Plasma concentrations of luteinizing hormone, follicle-stimulating hormone, prolactin, testosterone, and estradiol were not significantly different from those in 20 age-matched control subjects. Environmental substances, including tap water and the delousing agents Kwell shampoo and R&C Spray (applied to bedding and clothing), were tested for estrogenicity and androgenicity. None of these substances bound to cytosol estrogen receptors. The delousing agents were assayed for androgen binding by using genital skin fibroblasts. R&C Spray competed equally with testosterone for androgen-binding sites. Phenothrin, the "multi-cide" component of R&C Spray, reproduced this competitive binding result. When tested for antiandrogenic effects on prostate growth by using immature male rats treated with testosterone-filled Silastic capsules, phenothrin antagonized androgen action, as demonstrated by decreased prostate weights. Conclusion: The antiandrogenic activity of phenothrin may explain this unusual epidemic of gynecomastia. Database: SCOPUS. ISSN: 1530-891X.

Brown, David. 2010. "Haiti Indicators Studied; Geohazards Lurk in Familiar Places." AAPG Explorer. American Association of Petroleum Geologists, Tulsa, OK, United. March. Volume 31, Issue 3, Pages 6, 8. Descriptors: Africa; Antilles; Caribbean region; earthquakes; Enriquillo-Plantain Garden Fault; epicenters; faults; geologic hazards; Global Seismic Network; Greater Antilles; Haiti; Hispaniola; landslides; magnitude; mass movements; measurement; seismic intensity; seismotectonics; South Africa; Southern Africa; stress; tectonics; volcanoes; West Indies. Notes: FE: illus. incl. ports. Database: GeoRef. ISSN: 0195-2986. URL: <http://www.aapg.org/explorer/index.cfm>.

Brown, John Stafford. 1948. "Underground Water in Haiti." 2 Pp. Descriptors: Antilles; Caribbean region; Greater Antilles; ground water; Haiti; Hispaniola; West Indies. Notes: Assoc. Internat. Hydrol. Sci., Reunion, Washington, 1939, C. R., tome 2, Comm. des Eaux Souterraines, Enquete, Rpt. 9. Database: GeoRef.

Brown, John Stafford. 1924. "The Hot Springs of the Republic of Haiti." J. Geol. University of Chicago Press, Chicago, IL, United States: United States. Jul. Volume 32, Issue 5, Pages 384-399. Descriptors: Antilles; Caribbean region; Greater Antilles; ground water; Haiti; Hispaniola; hot springs; springs; thermal waters; West Indies. Database: GeoRef. ISSN: 0022-1376.

Bufe, Mary. "Restoring Lifelines in Haiti." 2010. Water Environ. Technol. 06. Volume 22, Issue 6, Pages 14-20. Descriptors: Sanitation; Water-supply; Disaster relief; Haiti; Catholic Relief Services (Company); World Health Organization; Mercy Corps (Organization). Abstract: The article offers information on the relief agencies that provide

relief and rebuilding efforts to Haiti. It details the problems these agencies such as Catholic Relief Services, World Health Organization, and Mercy Corps, encounter. The services they provide to the disaster area which include water and sanitation needs, disposal of household trash and building debris, and improvements to living conditions, are discussed. It also mentions the long term solutions for water and sanitation. ISSN: 1044-9493.

Burbank, Wilbur Swett; Loughlin, G. F. and Papers. 1905-1974. Papers, 1865-1974 (Bulk 1905-1974). Descriptors: Geology- Research- United States; Geology- Research- West (U.S.); Geology- Research- Colorado; Geology- Research- Montana; Geology- Research- Haiti; Minerals- Classification. Abstract: The collection is chiefly papers of Wilbur S. Burbank, with some materials from Gerald F. Loughlin. There are ten boxes of Burbank's research notes and files; field notebooks through 1962; correspondence from 1929-1974; photographic negatives and glass plate negatives; photographs; maps; charts and diagrams. Notes: 10 cubic ft; Genre/Form: Photographs. Negatives. Maps. Cross sections. Note(s): Bio/History: Wilbur Swett Burbank (1898-1975) was a field geologist for the United States Geological Survey for 35 years. After earning a Master's degree from MIT in 1920, he did a geological survey of Haiti before joining the USGS in 1922. Before and during World War II he was involved in searching for strategic minerals in the United States and abroad. Gerald Francis Loughlin (1880-1946) was Burbank's father-in-law. He held a Ph. D. in Geology from Yale (1906) and taught at MIT from 1906-1912, when he joined the United States Geological Survey where he remained until his death in 1946. He did field work in the mining districts of Utah and Leadville, Colorado, before moving on to administrative positions at USGS headquarters in Washington, D.C., where he was Chief Geologist from 1935-1944.; General Info: Organization: Topical. Occupation: Geologists. OCLC Accession Number: 27765266.

Burns, LV. 1955. Haiti - La politique forestiere et sa mise en oeuvre - Rapport au gouvernement. (Haiti - Forest policy and its implementation - Report to the government.). Language: French. Imprint: 1955. FAO 1955 - EPTA report no 349 - 125 pages, 1 tab. 5 annexes with 1 tab. 6 photos, 1 map. Fiche no: 50349. Report number(s): FO-EPTA 349 TA 57/S/4. FAO-AN: 050349.

Butterlin, Jacques. 1960. Géologie Générale Et Régionale de la République d'Haïti. Paris: Institut des hautes études de l'Amérique latine. Descriptors: Geology- Haiti; Paleontology- Haiti; Géologie- Haïti; Paléontologie- Haïti. Notes: 194 p. illus., maps (1 fold. col. in portfolio) profiles, tables. 29 cm. Note(s): Bibliography: p. [179]-186. Also issued online. LCCN: 63-27264. OCLC Accession Number: 2473824.

Butterlin, Jacques. 1960. Geologie Generale Et Regionale de la Republique d'Haiti. Paris: Institut des Hautes Etudes de l'Amérique Latine. Descriptors: Géologie- Haïti (île); Haïti- Géographie; Amérique latine- Histoire; Antilles; Caraïbe; Fossile; Geologie; Haiti; Lithologie; Mine; Paleontologie; Petrographie; Petrologie; Region; Republique; Resource; Ressource. Notes: 194 pages. Note(s): Illus., planches, carte (en pochette). Other Titles: Universite de paris. Institut des hautes etudes de l'amerique latine. OCLC Accession Number: 301613319.

Butterlin, Jacques. 1960. "Carte Géologique de la République d'Haïti. Par J. Butterlin. 1958. Echelle 1: 250,000." Paris: Institut des Hautes Études de l'Amérique Latine. Descriptors: HAITI (Republic).- Geology -- Maps and charts- 1960. Notes:

Description: 1207 x 945 mm.; Map Info: Scale 1: 250 000. General Info: In: Butterlin (J.) *Géologie générale et régionale de la République d'Haïti*. 1960. 8°. [Travaux et Mémoires de l'Institut des Hautes Études de l'Amérique Latine. No. 6]. National Library: 004855312. OCLC Accession Number: 557641850.

Butterlin, Jacques. 1958. *Géologie générale et régionale de la République d'Haïti*; Université de Paris III and Institut des hautes études de l'Amérique latine. 1958. "Carte Géologique de la République d'Haïti." Paris, France: Institut des hautes études de l'Amérique latine. Descriptors: Geology- Haiti- Maps; Maps- Haiti- 1958; Géologie- République d'Haïti- Cartes; Haiti- Maps; République d'Haïti- Cartes. Notes: Description: 1 map: col.; 95 x 120 cm. folded to 24 x 15 cm. Scale 1:250,000; (W 74030'--W 71052'/N 20005'--N 18000'). West longitude: W0743000 East longitude: W0715200 North latitude: N0200500 South latitude: N0180000; Note(s): Relief shown by contours. Accompanies: *Géologie générale et régionale de la République d'Haïti* par Jacques Butterlin. 194 p.; 29 cm. OCLC Accession Number: 13464081.

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l'île de la tortue. des datations radiométriques (u/th), réalisées sur les plus basses terrasses (entre 3 et 50 m), ont permis de les rattacher au dernier interglaciaire, c'est-à-dire entre 80 000 et 125 000 ans b.p (stades 5a à 5e). L'étude géomorphologique et sédimentaire des terrasses de la presqu'île du nord-ouest a permis de préciser l'ancienneté et l'évolution du bombement lithosphérique vraisemblablement associé à l'existence de la zone de convergence entre les plaques nord-américaine et caraïbe au début du quaternaire. Les terrasses ont subi un soulèvement et un basculement, aussi bien dans la presqu'île du nord-ouest que dans l'île de la tortue, c'est-à-dire de chaque côté de la fracture qui constitue la limite transpressive senestre de ces plaques. Ce bombement, depuis le pléistocène, serait atténué avec l'évolution de la limite convergente qui devient décrochante transpressive en raison du changement de direction de la plaque caraïbe dont le sens du déplacement est passé du nord-est à l'est. Notes: 260 P.; Dissertation: Thèse de doctorat: Terre, Ocean, Espace: Paris 11: 1997. Note(s): 1997PA112150. 104 REF.; Other Titles: Study of the presqu'île du nord-ouest and île de la tortue plio-quaternary marine terraces and their eocene-miocene substratum, haiti, greater antilles; Responsibility: OCLC Accession Number: 490164973.

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itself into a hospital with a surgical unit and a makeshift outdoor home for thousands of refugees. Database: SCOPUS. ISSN: 0036-8075.

Colburn, Tracy W. and Air Univ Maxwell AFB AL. 1997. Running on Empty: The Development of Helicopter Aerial Refueling and Implications for Future USAF Combat Rescue Capabilities. Ft. Belvoir Defense Technical Information Center. Page(s): 47. Descriptors: Military Aircraft Operations; Attack and Fighter Aircraft; Helicopters; Refueling in flight; Fuel systems; Flight testing; Military personnel; Combat effectiveness; Flight crews; Long range(time); Flow rate; Long range(distance); Somalia; Altitude; Psychology; Air transportation; Military budgets; Search and rescue; Airworthiness; Bosnia Herzegovina; Downed aircraft; Haiti; Prisoners of war; Liberia; Life saving; Vietnam war; HC-130 AIRCRFT. Abstract: By 1999 the total active United States Air Force fighter wing equivalents will have shrunk from 24 to 13 in only ten years. The declining defense budget means painful force structure decisions lie ahead. Even as funds are drying up, the armed forces are being called upon to execute contingencies in places such as Haiti, Somalia, Liberia, and Bosnia. The future appears very busy for Air Force rescue units as well. According to Strategic Assessment 1996 Instruments of U.S. Power by the National Defense University and the Institute for National Strategic Studies, U.S. armed forces will most likely be called upon to engage in numerous evacuation and rescue missions for Westerners over the next quarter of a century. It goes on to predict, The rescue of U.S. military personnel under combat conditions, particularly downed flight crews, will also continue to be carried out on a fairly frequent basis. Ultimately it concludes, The practice by certain societies of abusing U.S. military prisoners to put psychological pressure on the U.S. government and public will only make such rescue operations more imperative. To accomplish these long-range operations USAF rescue helicopters rely greatly on aerial refueling from HC-130 tanker aircraft. Unfortunately, the current fleet of HC-130s has many deficiencies that degrade mission performance. Worse yet, based upon current operations tempo these tankers will begin to lose airworthiness in 2005. Despite the budget crunch the time has come to modernize the HC-130 fleet. By tracing helicopter aerial refueling from its inception during the Vietnam War to the present, this paper will demonstrate the need to purchase new HC-130J aircraft. This should occur even if it means delaying other programs or further cutting active duty personnel. Notes: Report: AU/ACSC/0412/97-03; General Info: APPROVED FOR PUBLIC RELEASE. OCLC Accession Number: 227987492. DTIC purl: <http://handle.dtic.mil/100.2/ADA398604>.

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quality among a sample of PuR registered recipients. We interviewed representatives of 100 households in three rural communities who received PuR registered and PuR registered -related education. Water sources were tested for fecal contamination and turbidity; stored household water was tested for residual chlorine. All households relied on untreated water sources (springs [66%], wells [15%], community taps [13%], and rivers [6%]). After distribution, PuR registered was the most common in-home treatment method (58%) followed by chlorination (30%), plant-based flocculation (6%), boiling (5%), and filtration (1%). Seventy-eight percent of respondents correctly answered five questions about how to use PuR registered; 81% reported PuR registered easy to use; and 97% reported that PuR registered -treated water appears, tastes, and smells better than untreated water. Although water sources tested appeared clear, fecal coliform bacteria were detected in all sources (range 1 - >200 cfu/100ml). Chlorine was present in 10 (45%) of 22 stored drinking water samples in households using PuR registered . PuR registered was well-accepted and properly used in remote communities where local leaders helped with distribution and education. This highly effective water purification method can help protect disaster-affected communities from waterborne disease. Database: Aqualine. ISSN: 1477-8920.

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benefits of resource conservation remain out of reach in many of the poorer parts of the world. In Haiti, 90 percent of the forest cover has been destroyed, which has led to extreme soil erosion. As a result, two-thirds of the country's productive farmland has been destroyed, silting has caused the hydrological system to collapse, and floods cause considerable damage during the rainy season. In Haiti, 2,000 people died during catastrophic hurricanes due to recent hurricanes; in contrast, across the border in the Dominican Republic, where forests are largely intact, watersheds are functioning, and soils are productive, less than 10 people died in the hurricanes. ISSN: 0022-4561.

Crane, Pamela Ellen, Williams, Molly E. and Silliman, Stephen E. 2002. "Oral Survey as a Tool to Determine Health and Willingness to Pay in Southern Haiti; Geological Society of America, 2002 Annual Meeting." Abstracts with Programs - Geological Society of America. Oct. Volume 34, Issue 6, Pages 244. Descriptors: Antilles; Caribbean region; Greater Antilles; ground water; Haiti; Hispaniola; Leogane Haiti; levels; public health; southern Haiti; West Indies. Abstract: Two questions are being addressed in the region of Leogane, Haiti. The first involves the willingness of the local population to pay for water derived from hand-pumps (for the primary purpose of providing funding for hand-pump repair). The second involves the possible correlation between groundwater level and the incidence of vector-borne disease. These two questions are addressed through an oral survey conducted during the summer of 2002. Observations are discussed regarding the development of the survey, the strengths and weaknesses of the oral survey approach, and initial analysis of the survey results relative to the two central questions. Database: GeoRef. ISSN: 0016-7592.

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Mexico; Lake Peten-Itza, Peten, Guatemala; Lake Valencia, Venezuela; and Lake Miragoane, Haiti. By using these records, changes in evaporation to precipitation ratios for the region during the Holocene were reconstructed. Following arid conditions during the last Ice Age, climate in the Neotropics became wetter and lake basins filled between $\sim 10,500$ and $\sim 7,600$ yr BP . Holocene oxygen isotopic records for the six lakes, interpreted as a record of evaporation to precipitation changes, are broadly similar but regional differences do exist. In the majority of the lakes, the overall climatic pattern indicates that conditions were dry but becoming wetter during the earliest Holocene, followed by maximum moisture availability during the early to middle Holocene, and a return to drier conditions during the latest Holocene. This pattern may be explained by precessionally driven changes in the seasonal distribution of solar energy that controls the intensity of the annual cycle and rainfall abundances. Differences between records include variability in the timing and rates of initial lake filling and the occurrence of centennial to decadal climatic events (wet and dry periods). For example, the late Holocene history of the Yucatan Peninsula was marked by several periods of drought (centered on 585, 862, and 1391 AD) that coincided with major cultural discontinuities in the Classic Maya civilization. Some of the decadal- to centennial-scale differences in isotopic records are probably the result of local differences in a lake's response to climate forcing, such as lake volume, altitude, orography, basin morphology, and rates of filling. Abrupt climatic changes observed in the isotopic records can not be explained by orbitally driven forcing and must have roots in other mechanisms, such as solar variability, volcanism, ocean-atmosphere interactions, and natural unforced variability. OCLC Accession Number: 9802289. URL: <http://proquest.umi.com/pqdweb?did=736552191&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

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up vital communications services in the days after the devastating earthquake in Haiti. The first stage is to arrive in a disaster zone with a flyaway kit that will be used for data connectivity and Internet resources for aid agencies involved. It is also a basic strategy to be in the zone with a small, flexible team that can quickly meet immediate needs and then iteratively improve and extend the reach and quality of the networks as the relief effort builds up. The cluster aims to build voice and data networks for use by official aid organizations and provide free-of-charge communications for local people who need to contact friends and families. ISSN: 1750-9637.

DeMets, Charles; Mattioli, Glen; Jansma, Pamela; Rogers, Robert D.; Tenorio, Carlos and Henry L. Turner. 2007. "Present motion and deformation of the Caribbean plate: Constraints from new GPS geodetic measurements from Honduras and Nicaragua." *GSA Special Papers* 2007, v. 428, p. 21-36. Abstract: Velocities from six continuous and 14 campaign sites within the boundaries of the Caribbean plate, including eight new sites from previously unsampled areas of Honduras and Nicaragua at the western edge of the Caribbean plate, are described and tested for their consistency with Caribbean–North America plate motion and a rigid Caribbean plate model. Sites in central Honduras and Guatemala move $3\text{--}8\text{ mm yr}^{-1}$ westward with respect to the Caribbean plate interior, consistent with distributed east-to-west extension in Guatemala and the western two-thirds of Honduras. A site in southern Jamaica moves $8 \pm 1\text{ mm yr}^{-1}$ westward relative to the Caribbean plate interior, indicating that most or all of Jamaica is unsuitable for estimating Caribbean plate motion. Two sites in southern Hispaniola also exhibit anomalous motions relative to the plate interior, consistent with a tectonic bias at those sites. An inversion of the velocities for 15 sites nominally located in the plate interior yields a well-constrained Caribbean plate angular velocity vector that predicts motion similar to previously published models. Data bootstrapping indicates that the solution is robust to better than 1 mm yr^{-1} with respect to both the site velocities that are used to estimate the plate angular velocity and the site velocity uncertainties. That velocities at seven of eight GPS sites in eastern Honduras and Nicaragua are consistent with the motions of sites elsewhere in the plate interior indicates that much or all of eastern Honduras and Nicaragua move with the plate interior within the $1\text{--}2\text{ mm yr}^{-1}$ resolution of our data. It further suggests that the morphologically prominent, but aseismic Guayape fault of eastern Honduras is inactive. Tests for possible east-to-west deformation across the Beata Ridge and Lower Nicaraguan Rise in the plate interior establish a 95% upper bound of $\sim 2\text{ mm yr}^{-1}$ for any deformation across the two features, significantly slower than a published estimate of $9.0 \pm 1.5\text{ mm yr}^{-1}$ during the past 23 Ma for deformation across the Beata Ridge. URL: <http://specialpapers.gsapubs.org/content/428/21.abstract>

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Hispaniola; Laramide Orogeny; limestone; orogeny; Paleogene; sedimentary rocks; sedimentation; shallow-water environment; stratigraphy; tectonics; Tertiary; West Indies. References: 1 p. illus. incl. sketch map; Database: GeoRef.

Desroches, Reginald; Swann, Julie and Ergun, Ozlem. 2010. Haiti's Eternal Weight. New York: New York Times. July 8, 2010. Page(s): A25. Abstract: IT has been six months since the earthquake in Haiti left more than 300,000 people dead and destroyed 280,000 homes and businesses. Haiti still faces a long road to recovery, but one of the biggest things literally standing in its way is earthquake debris. The quake left an astonishing amount of debris, including concrete and rebar from collapsed buildings, destroyed belongings and human remains. Twenty million to 25 million cubic yards of debris fill the streets, yards, sidewalks and canals of Port-au-Prince- enough to fill five Louisiana Superdomes. According to our research and conversations with aid groups in Haiti, less than 5 percent of this has been removed since January, and even less has been properly disposed of. A draft of the United States Army Corps of Engineers' debris management plan says it would take a dump truck with a 20-cubic-yard bed 1,000 days to clear the debris, if it carried 1,000 loads a day- or about three years. But the current rate of removal is much lower. Based on our calculations, partially from the United States Agency for International Development's reports on debris removal programs, we estimate that it could take 20 years or more. URL: http://www.nytimes.com/2010/07/08/opinion/08desroches.html?_r=1&scp=2&sq=haiti&st=cse.

“Developpement Local et Amenagement des Terres Pour un Programme National De Securite Alimentaire et De Gestion des Ressources Naturelles, Haiti. Compte Rendu Final du Projet.” Translated title: Local Development and Land Development Program for a National Food Safety and Management of Natural Resources, Haiti. 2005. Rome (Italy): FAO, Div. de la Mise en Valeur des Terres et des Eaux. Volume: FAO-AG--TCP/HAI/2904, page(s): 14. Notes: Project: Developpement Local et Amenagement des Terres pour un Programme National de Securite Alimentaire et de Gestion des Ressources Naturelles - (Recoded to TCP/HAI/2804 - Return Flow), Haiti, HAI/2904. OCLC Accession Number: 422323.

Devi, Sharmila. 2010. “Helping Earthquake-Hit Haiti.” *The Lancet*. 1/23. Volume 375, Issue 9711, Pages 267-268. ISSN: 0140-6736.

Di Blasi, F. 1992. “What Hope for Haiti?” *People & the Planet / IPPF, UNFPA, IUCN*. Volume 1, Issue 4, Descriptors: environmental degradation; spatial distribution; article; Central America; Critique; deforestation; Demographic Factors; demography; developing country; economic development; Economic Factors; economics; environment; environmental protection; family planning; Family Planning Programs; fertility; Financial Activities; financial management; Foreign Aid; Geographic Factors; geography; Haiti; health care planning; High Fertility Population; international cooperation; migration; Natural Resources; North America; political system; pollution; population; population dynamics; population growth; poverty; Rural-urban Migration; Slums; socioeconomic; soil degradation; South and Central America; urban population; Urban Spatial Distribution; urbanization; water supply; Western Hemisphere; Americas; Caribbean; Colonialism; Developing Countries; Environmental Pollution; Latin America; Political Systems; Socioeconomic Factors; Caribbean Region; Conservation of Natural Resources; Emigration and Immigration; Evaluation Studies; Health Planning; Poverty

Areas; Residential Mobility. Abstract: The population, environmental, and economic problems of Haiti must be solved through a national change in attitude, an emphasis on the individual value of children, a social concern for urgent action on sustainable development, and shared responsibility in the international community. The impact of colonialism was to lay waste to subsistence practices which were ecologically balanced. This first nation of self-liberated slaves has problems deeply rooted in the past, which have been worsened by the ruling elite's exploitation. There is extreme poverty, boat people, deforestation, environmental degradation, civil liberty abuses, and a struggle for democracy. Population growth as well as, indirectly, death, hunger, and disease, have contributed to the immigration of Haitians to the US, Canada, France, and neighboring islands. Fertility has been high for the past 20 years. The family planning challenges are discussed in light of the 10% acceptance rate and met demand. The host country's ability to cope with the burden of supplying employment, social services, and legal protection accounts for the reluctance to accept greater numbers of Haitians. Rural-to-urban migration has created nightmares within Haiti. Cite Soleil has a population density of 25,000 people/sq. kilometer, and more than 33% of rural areas is unfit for habitation. The urban slums offer a substandard quality of life due to infiltration of sea water into the soil which prohibits vegetative growth, due to sanitation deficits, and due to inadequate clean water supplies. The example of a small sugar merchant with an income of \$40/month reflects the ability to survive but with no provision for empowerment or betterment for the future for the grandchildren in her care. Captain Jacques-Yves Cousteau attests to the difficulties and, maybe, impossibilities of turning around the process of environmental devastation and overpopulation. The ecological problems are primarily due to salinization and deforestation; the pressure for fuelwood has increased since the trade embargo, which prevents importation of butane and propane. Tree planting of 20 million/year yields 2-3 million actually surviving. Destructive fishing, quarrying, and agricultural techniques continue to waste resources. Database: SCOPUS. ISSN: 0968-1655.

"Dire Straits in Haiti." 1992. World Press Review. 09. Volume 39, Issue 9, Pages 37. Descriptors: Haiti- Social conditions. Notes: M3: Article; Accession Number: 9209213510; Source Info: Sep92, Vol. 39 Issue 9, p37; Subject Term: Haiti- Social conditions; Number of Pages: 1/5p; Document Type: Article; Full Text Word Count: 187. Abstract: Reports Haiti's deteriorating economic and environmental situation has spurred fresh pleas for international assistance, carried in recent press reports. All but the rich drinking contaminated water; Diarrhea the leading cause of death in children younger than five; Infant mortality rate 13 percent; Life expectancy only 54 years; Conditions are worst in northwest Haiti; Reported by Jose Maria Mayrink in 'Jornal do Brasil.' ISSN: 0195-8895.

Dix, Linda. 2005. "The Triad of Ethics, Science and Technology: A Threefold Literacy Venture in Haiti." Delta Kappa Gamma Bulletin. Delta Kappa Gamma Society International: Volume 71, Issue 3, Pages 37-42. Descriptors: Literacy programs; Hearing impaired children; Intercultural communication; Activity programs in education; Educational programs; Haiti; New Jersey. Subject Term: Literacy programs; Hearing impaired children; Intercultural communication; Activity programs in education; Educational programs; Haiti; New Jersey; Exam Preparation and Tutoring; Number of Pages: 6p; Illustrations: 2 bw. Abstract: This article describes how a bond between hearing-impaired Haitian children and students in Moorestown, New Jersey, formed

when the author traveled to Haiti in February 1999 as a member of a parish school literacy team to install solar panels to provide water and electricity to the Aisle Communal and Institute of Marie-Louise. This venture made possible a twinning relationship between two schools at a crucial time of conflict in Haiti. ISSN: 0011-8044.

Dixon, Martin. 2010. "From Havoc to Hope." *Containerisation International*. Volume 43, pages 45-46. Abstract: Rescue work on the earthquake-hit island of Haiti was initially hampered by the damage suffered to its main port, Port-au-Prince. But as Martin Dixon reports, cargo is now being handled at the port, with a range of shipping and freight logistics services assisting the island's rebuilding efforts. Database: TRIS. ISSN: 0010-7379.

Dixon, T., Ameluing, F., Harrison, C., Wdowinski, S. and Lin, G. 2010. "Rebuilding Haiti Smarter." *Science*. Volume 327, Issue 5971, Pages 1325. Abstract: R. Kerr's recent News of the Week story "Foreshadowing Haiti's catastrophe" (22 January) nicely summarized the geological and seismological knowledge behind the earthquake that struck Port-au-Prince on 12 January this year. However, he failed to draw an obvious conclusion. Why not take this opportunity to move the capital's critical infrastructure to safer ground? A large part of central Haiti is roughly equidistant from the two major plate boundary faults (Enriquillo in the south, Septentrional in the north), far enough from each to be much safer than the current location. Even relocating 10 to 20 km north of the current airport would be a big improvement because it would be outside^{of the} region of thickest sedimentary fill in Port-au-Prince's alluvial valley. We can't predict the timing of the next big earthquake, but most Earth scientists agree that another major event in Haiti is inevitable. Comparison of satellite imagery and aftershock patterns to historical descriptions of past ruptures suggests that the recent 12 January event ruptured only part^{of the} segment that last ruptured in 1751; if so, the likelihood of another major event close to Port-au-Prince in the next few decades is quite high. It is usually not feasible to relocate urban infrastructure, but one exception is immediately after a major disaster, when damaged infrastructure has to be rebuilt anyway, and there is heightened awareness among the public and government officials. Database: SCOPUS. ISSN: 0036-8075. DOI: 10.1126/science.327.5971.1325-a

Dolan, James F., Mullins, Henry T. and David J. Wald. 1998. "Active tectonics of the north-central Caribbean: Oblique collision, strain partitioning, and opposing subducted slabs." *GSA Special Papers* 1998, v. 326, p. 1-61. URL: <http://specialpapers.gsapubs.org/content/326/1.abstract>

Dolan, James F. and Mann, Paul. 1998. *Active Strike-Slip and Collisional Tectonics of the Northern Caribbean Plate Boundary Zone*. Boulder, Colo: Geological Society of America. Page(s): 174. Descriptors: Plate tectonics- Caribbean Area; Plate tectonics- South America; Plate tectonics- Hispaniola; Geology- Caribbean Area; Geology- South America; Geology- Hispaniola; Tectonique des plaques- Région caraïbe; Tectonique des plaques- Amérique du Sud; Tectonique des plaques- Haïti (île). Abstract: Active tectonics of the north-central Caribbean: oblique collision, strain partitioning, and opposing subducted slabs. James F. Dolan, Henry T. Mullins, and David J. Wald- Tectonic geomorphology and paleoseismology of the Septentrional fault system, Dominican Republic. Paul Mann .. [et al.]- Strike-slip tectonics and seismicity along the northern Caribbean plate boundary from Cuba to Hispaniola. E. Calais, J. Perrot, and B. Mercier de Lépinay- 1943-1953 north-central Caribbean earthquakes: active tectonic

setting, seismic hazards, and implications for Caribbean-North America plate motions. James F. Dolan and David J. Wald. Notes: xvi; ill., maps; 28 cm. Note(s): Includes bibliographical references and index. ISBN: 0813723264. LCCN: 98-28431. OCLC Accession Number: 39269657.

Dolisca, Frito. 2005. Population Pressure, Land Tenure, Deforestation, and Farming Systems in Haiti: The Case of Forêt des Pins Reserve. United States -- Alabama: Auburn University. Page(s): 213. Descriptors: Forestry; Agricultural economics; Population; Landowners; Deforestation; Farms; Perceptions; Socioeconomic factors; Cluster analysis; Environmental conditions; Studies. Abstract: Forêt des Pins Reserve, a state-owned natural forest in Haiti, has suffered severe degradation due to a land tenure system that does not guarantee security for farmers, illegal harvesting of trees for the production of firewood and charcoal, and an ongoing influx of people with varying backgrounds and different socioeconomic context seeking fertile land. This situation has resulted in environmental damage and posed a threat to the welfare of the inhabitants of this Reserve. Various approaches, essentially based on "participatory" and "command and control" regulations, have been unsuccessfully tried to persuade farm households to adopt conservation measures. Negative impacts on the welfare of farmers limit the efficiency of these approaches for forest conservation. The heterogeneity of conditions faced by farmers has also amplified the challenge for conceiving and implementing development strategies. This study addresses the effects of socioeconomic and institutional dynamics of land use change, and assesses the role of different policy instruments for forest conservation in the Forêt des Pins Reserve. First, this study investigates farmers' perceptions on the impact of the Forêt des Pins Reserve on the socioeconomic and environmental status of local people. Structural equation procedures reveal that farmers grant considerable importance to economic and environmental objectives, such as tourism and tree planting activities. Second, this study focuses on the causes of deforestation in Forêt des Pins Reserve. A Tobit model was used to test the hypotheses about the effects of household variables (socioeconomic and institutional) on deforestation. The results show that: (a) larger household size, insecure land tenure, and farm labor increase deforestation; (b) length of residency and higher education of the head of the household reduce clearance. However, the effects of land efficiency and age show no influence on land clearing. Third, cluster analysis was used to classify farm households in Forêt des Pins Reserve, based on socioeconomic and demographic variables. The results show that three types of farm households may be identified, namely, low-income, middle-income, and large-income farm households. Household size, forest dependency, and total family labor are the dominant factors in differentiating the groups. Finally, a linear programming model (LP) was built to evaluate the role of various policy instruments (land tax, cost sharing, input price, and cross compliance policies) for forest conservation on two groups of farm households in Forêt des Pins Reserve. This chapter investigates the social efficiency of such policies for forest conservation in Haiti. Results suggest that subsidies tied to environmental benefits seem to be promising for sustainable resource use in Forêt des Pins Reserve. OCLC Accession Number: 3201441.

Dolisca, Frito, Carter, Douglas R. and McDaniel, Joshua M. 2006. "Factors Influencing Farmers' Participation in Forestry Management Programs: A Case Study from Haiti." *For. Ecol. Manage.* December 1. Volume 236, Issue 2/3, Pages 324-331.

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Descriptors: Forest management/Haiti; Farmers/Haiti; Forests and forestry/Social aspects; Biological & Agricultural. Notes: Bibliography; Table. ISSN: 0378-1127.

Dorea, C. C. and Clarke, B. A. 2006. "Performance of a Water Clarifier in Gonaives, Haiti." *Waterlines*. Volume 24, Issue 3, Pages 22-24. Descriptors: equipment; water treatment; Atlantic islands; Atlantic Ocean; Caribbean Islands; Gonaives; Greater Antilles; Haiti. Notes: Cited By (since 1996): 1. Database: SCOPUS. ISSN: 0262-8104.

"Draft Environmental Report on Haiti." 1979. Washington, DC. Science and Technology Project; United States: Library of Congress. Jan. Volume: AIDPNAAG980; PB82131046, page(s): 70. Descriptors: Natural resources; Haiti; Environmental surveys; Water resources; Wildlife; Forestry; Agriculture; Mineral deposits; Economic factors; Soil erosion; Population growth; Pollution; Legislation; Developing country application. Abstract: Haiti's current, almost unparalleled environmental degradation is due to interrelated problems of overpopulation, deforestation, and soil erosion. This draft environmental report assesses Haiti's environmental problems, natural resources, economy, and the Government of Haiti's environmental agencies and legislation. Notes: Sponsored in part by National Committee for Man and the Biosphere, Washington, DC. Database: NTIS. NTIS Accession Number: PB82131046.

"Drilling in Haiti: One Woman's Story." 1997. *Water Well Journal*. Volume 51, Issue 4, Pages 58. Notes: Additional Info: Water Well Journal Pub. Co. Alt Journal: Key Title: Water well journal Preceding Title: Illinois well driller. ISSN: 0043-1443.

"Dry Toilets and Soil Health in Haiti." 2009. *Biocycle*. 07. Volume 50, Issue 7, Pages 12-14. Descriptors: Organic fertilizers; Recycling (Waste, etc.); Feces; Toilets; Haiti; Larsen, William. Notes: M3: Article. Abstract: The article relates the resource recovery programs which William Larsen, a professor at Rochester Institute of Technology (RIT) in New York, is assisting with in Haiti. It highlights the dry composting of toilets in communities in Northern Haiti, which segregate feces and urine for plant growth. It mentions the Sustainable Organic Integrated Livelihoods (SOIL) and the trends of using human waste as fertilizer in Haiti. ISSN/ISBN: 0276-5055.

Duke, W. F., Nordin, R. N., Baker, D. and Mazumder, A. 2006. "The use and Performance of BioSand Filters in the Artibonite Valley of Haiti: A Field Study of 107 Households." *Rural and Remote Health [Electronic Resource]*. Volume 6, Issue 3, Pages 570. Descriptors: silicon dioxide; article; developing country; *Escherichia coli*; filtration; Haiti; housing; human; hygiene; isolation and purification; methodology; microbiology; questionnaire; rural population; water supply; Developing Countries; Humans; Questionnaires; Water Microbiology. Notes: Cited By (since 1996): 4. Abstract: Introduction: Approximately one billion people world-wide lack access to adequate amounts of safe water. Most are in developing countries, especially in rapidly expanding urban fringes, poor rural areas, and indigenous communities. Methods: In February and March 2005, a field study of 107 households was conducted to evaluate the use and performance of the Manz BioSand filter in the Artibonite Valley of Haiti. Approximately 2000 filters had been installed in this area over the preceding 5 years by the staff in Community Development at Hospital Albert Schweitzer, Deschappelle, Haiti. Interviews, observations, and water samplings were carried-out by two teams of Haitian enumerators, each consisting of a nurse and a filter technician. Water analyses were performed by Haitian lab technicians using the membrane filtration method to determine *Escherichia coli* counts. The enumerators and the lab technicians completed a 2 week training

program before beginning the study; they worked under the direct supervision of the primary investigator. Laboratory quality was monitored by running 10% blank and 10% duplicate samples. Results: The households contained an average of 5.4 persons. Filters had been in use for an average of 2.5 years, and participants were generally satisfied with their filter's performance. Shallow, hand-dug wells provided the only source of water for 61% of the households, with 26% using water piped from springs or deep wells, and 13% having access to both. Only 3% had plumbing in their homes. Source water from shallow wells contained an average of 234 E. coli cfu/100 mL. Piped sources averaged 195 E. coli cfu/100 mL. of the source water samples 26% contained 0-10 E. coli cfu/100 mL. of the filtered water samples 97% contained 0-10 E. coli cfu/100 mL (80% with 0 cfu/100 mL, and 17% with 1-10 cfu/100 mL). Overall bacterial removal efficiency for the filters was calculated to be 98.5%. Turbidity decreased from an average of 6.2 NTU in source water samples to 0.9 NTU in the filtered water. None of the households treated the water after filtering; 91% used the filtered water only for drinking. No problems related to filter construction were observed; 13% were found to have significantly decreased flow rates (all restored by cleaning the filter). Recontamination was found to occur, with only 3% of the samples from the filters' spouts containing >10 E. coli cfu/100 mL and 22% of the stored filtered water samples at point-of-use containing >10 cfu/100 mL. Conclusion: The Manz BioSand filters are an attractive option for supplying water treatment to family units in rural areas of poorly developed countries. Database: SCOPUS. ISSN: 1445-6354.

Durso, Fred, Jr. 2010. "From the Rubble." NFPA Journal. March/April. Volume 104, Issue 2, Pages 17. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Building/Standards; Building/Repair and reconstruction; United States/National Institute of Building Sciences/Conferences; Applied Science & Technology. Abstract: The rebuilding of Haiti after the January 12, 2010, earthquake was discussed at the February 17 Haiti Toolkit Meeting in Washington, D.C. The meeting was organized by the National Institute of Building Sciences and was attended by representatives of more than 30 organizations, including the National Fire Protection Association. Participants discussed the reconnaissance of Haiti's construction materials, project oversight, design criteria, construction training, quality control, and feedback from the Haitian community regarding residential, commercial, and critical buildings. ISSN: 1054-8793.

"Dutch Companies Ship Water Treatment Systems to Haiti." 2010. Filtration Industry Analyst. 2. Volume 2010, Issue 2, Pages 4-4. Abstract: Dutch water company PWN and Norit X-Flow are supplying seven advanced Perfector-E compact water treatment systems to Haiti, following the recent earthquake. ISSN: 1365-6937.

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Earl, D.E. 1976. Reboisement et lutte contre l'érosion, Haiti. Le charbon de bois, combustible renouvelable - Rapport technique 1. Translated title: Reforestation and erosion control, Haiti. Charcoal, renewable fuel - (Technical report 1). FAO, Rome (Italy). Forestry Dept. 30 p. Languages: Chinese, English, Spanish, French, Arabic. 9 tables; Summary: French. Forests; Charcoal. Report Number: FAO-FO--DP/HAI/72/012-TR-1.

Earsom, S. D., Lombard, C., Schwagerl, J., Oland, J. P. and Miranda-Castro, L. 2008. "Avifauna and Human Disturbance Observations on Navassa Island." Caribbean Journal of Science. Volume 44, Issue 2, Pages 246-251. Descriptors: Ashy-face owl; Brown booby; Disturbance; Haiti; Magnificent frigatebird; Navassa; Red-footed booby; White-necked crew; avifauna; dominance; invasive species; native species; new species; seabird; Atlantic islands; Atlantic Ocean; Caribbean Islands; Greater Antilles; Aves; *Fregata magnificens*; Strigiformes; *Sula leucogaster*; *Sula sula*. Abstract: Navassa Island and waters surrounding it were designated a National Wildlife Refuge (NWR) in 1999, becoming the eighth unit of the Caribbean Islands NWR Complex. Five expeditions to the island between July 1998 and October 2006 yielded 18 new records of birds, bringing the species list to 58. Winter mist netting allowed for the banding of several new species. Five seabird species roost and nest on Navassa Island including hundreds and thousands of magnificent frigate birds, *Fregata magnificens*, and red-footed boobies, *Sula sula*, respectively. Several grassland-associated bird species are now common, suggesting that this habitat has become more dominant during the last century. Habitat disturbance appears to primarily be the result of human caused fires. Future management efforts will focus on regulation of unauthorized hunting, fishing, and other public use, as well as control of non-native invasive species and restoration of subtropical dry forest. Database: SCOPUS. ISSN: 0008-6452.

"Earthquake Assistance." 2010. PE&RS: Photogrammetric Engineering & Remote Sensing. Volume 76, Issue 3, Pages 245-245. Descriptors: HAITI Earthquake, Haiti, 2010; MERRICK & Co. Abstract: The article reports that GeoSpatial Solutions (GSS) division of Merrick & Co. will provide proprietary software for the lidar data acquisition for the relief and recovery efforts in Haiti. ISSN: 0099-1112.

Easley, Dale H. and Vaughn, Robert L. 2002. "Maintenance; a Challenge to Supplying Water in the Developing World; Geological Society of America, 2002 Annual Meeting." Abstracts with Programs - Geological Society of America. Oct., 2002. Volume 34, Issue 6, Pages 244. Descriptors: Antilles; Caribbean region; developing countries; Greater Antilles; ground water; Haiti; Hispaniola; policy; public health; rural environment; water supply; water wells; West Indies. Abstract: One of the biggest challenges to supplying safe water in developing countries is maintenance, particularly in rural areas. Funds are available for installation of new systems from a variety of donors, including governments, NGOs, and religious groups. However, once the system is installed, usually with expertise from outside the local community, maintenance is turned over to locals who have little funding, expertise, or sense of ownership. Many wells and water delivery systems stand abandoned, long forgotten by those who installed them and long unused by those who need them. To improve the situation, maintenance must be supported at the individual, community, national, and international levels through education and empowerment, policy changes in funding and democratization, and

increased international awareness. In addition, the politics that play havoc with human health must be reduced. Specific examples from Haiti will be given. Database: GeoRef. ISSN: 0016-7592.

Eau potable, assainissement at sante en milieu rural. Rapport. Translated Title: Water, Sanitation at rural health. Report. 1991. OMS, Geneva (Switzerland). Conf.: Groupe de Travail OMS: Eau, Assainissement, Sante. Consultation. 2. Geneva (Switzerland), 9-11 Apr 1991. Language: French. Imprint: Geneve (Switzerland). OMS/CWS. 1991. Groupe de Travail OMS: Eau, Assainissement, Sante. Consultation. 2. Geneva (Switzerland). 9-11 Apr 1991. OMS, Geneva (Switzerland). 1991. 43 p. Report number(s): WHO--CWS/91.5. FAO-AN: 315324.

Eberhard, M. L., Walker, E. M., Addiss, D. G. and Lammie, P. J. 1996. "A Survey of Knowledge, Attitudes, and Perceptions (KAPs) of Lymphatic Filariasis, Elephantiasis, and Hydrocele among Residents in an Endemic Area in Haiti." *American Journal of Tropical Medicine and Hygiene*. Volume 54, Issue 3, Pages 299-303. Descriptors: diethylcarbamazine; ivermectin; adolescent; adult; aged; article; attitude; disease severity; disease transmission; elephantiasis; endemic disease; female; filariasis; Haiti; health survey; human; hydrocele; infection control; major clinical study; male; Aged, 80 and over; Elephantiasis, Filarial; Health Knowledge, Attitudes, Practice; Humans; Middle Aged; Prevalence; Questionnaires; Testicular Hydrocele; Water. Notes: Cited By (since 1996): 18. Abstract: To assess knowledge, attitudes, and perceptions about bancroftian filariasis, 104 residents of an endemic area in Haiti were interviewed. Questions focused on 1) whether people understood the relationship between infection and disease, 2) recognition of the role that mosquitoes play in transmission, 3) perceived importance of hydrocele and elephantiasis in relation to other recognized diseases, and 4) the willingness of the community to participate in a control program. Fewer than 50% of residents had heard of filariasis and only 6% of those surveyed knew that it was transmitted by mosquitoes. In contrast, all persons knew of the clinical conditions of hydrocele and elephantiasis. Hydrocele was thought to be caused by trauma (60%) or trapped gas (30%); elephantiasis by walking bare foot on soil or water (37%) or by use of ceremonial powder that had been sprinkled on the ground (23%). Of 76 respondents, 53% and 38% thought that hydrocele could be treated through surgery or a drug, respectively, whereas of 86 respondents, 85% and 15% believed that either surgery or a drug could be used to treat elephantiasis. In this context, persons were not referring to a specific drug; rather, they believed a drug existed (possibly in some other country) that could cure these conditions. Hydrocele and elephantiasis ranked second to acquired immunodeficiency syndrome as perceived health problems, most likely because residents believed treatment for conditions such as malaria, intestinal worms, anemia, and diarrhea was easily obtained. Responses were influenced by age, sex, and symptoms, but none of these effects were statistically significant except that persons with hydrocele or elephantiasis were more likely to have sought treatment than persons without these conditions ($P = 0.0006$). The survey results indicate that awareness of the causes of disease, the relationship between infection and disease, and goals of treatment must be heightened through community-based education campaigns to increase the possibility of acceptance and support of control programs. Database: SCOPUS. ISSN: 0002-9637.

Effros, Michelle, Goldsmith, Andrea and Médard, Muriel. 2010. "The Rise of Instant Wireless Networks." *Sci. Am. Scientific American*: 04. Volume 302, Issue 4,

Pages 72-77. Descriptors: AD hoc networks (Computer networks); Wireless communication systems; Communication infrastructure; Emergency medical services -- Communication systems; Telecommunication systems -- Economic aspects; Haiti Earthquake, Haiti, 2010; Haiti. Notes: M3: Article. Abstract: The article discusses ad-hoc wireless networks, which are networks that do not require a fixed infrastructure and through which information passes from one device to another to form a web of connections. Topics include an overview of the strategies needed to avoid data loss and mitigate interference because of the fluctuating behavior of ad-hoc networks, an example of the importance of communication infrastructure during the relief effort in Haiti, as a result of the 2010 earthquake in which rescue and relief workers relied heavily on satellites phones as a primary method of communication, and the economic benefits of replacing traditional mobile telephone infrastructure with ad-hoc networks in remote areas. INSETS: Using Smart Redundancy to Send Messages; Vary the Volume to Avoid Interference. ISSN: 0036-8733.

Eisele, Thomas P., Keating, Joseph and Bennett, Adam. 2007. "Prevalence of Plasmodium Falciparum Infection in Rainy Season, Artibonite Valley, Haiti, 2006." *Emerging Infectious Diseases*. October. Volume 13, Issue 10, Pages 1494-1496. Descriptors: Epidemiology/Haiti; Plasmodium falciparum; Malaria; General Science. Notes: Bibliographic footnotes; Graph; Map; Table. Abstract: We conducted a population-based survey to estimate the prevalence of Plasmodium falciparum infection among persons older than 1 month in the Artibonite Valley of Haiti during the high malaria transmission season in 2006. Results from PCR for 714 persons showed a prevalence of 3.1% for P. falciparum infection. Reprinted by permission of the publisher. ISSN: 1080-6040. URL: Full Text PDF HTML:

[http://vnweb.hwwilsonweb.com/hww/jumpstart.jhtml?recid=0bc05f7a67b1790e9775431596744c6d71a36fc7493fdd003fea90a5f7affff0e0dc31a5e50ba16f&fmt=HPDF:](http://vnweb.hwwilsonweb.com/hww/jumpstart.jhtml?recid=0bc05f7a67b1790e9775431596744c6d71a36fc7493fdd003fea90a5f7affff0e0dc31a5e50ba16f&fmt=HPDF)

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Ellis, Gerald, M. 1987-1992. *The Hispaniola Report. Gold in the Dominican Republic and Haiti: The Island of Hispaniola, Emerging Gold District in the Americas*. Editora Amigo del Hogar). Page(s): 12. Descriptors: Gold mines and mining- Dominican Republic; Gold mines and mining- Hispaniola; Gold mines and mining- Haiti; Mines and mineral resources- Dominican Republic; Mines and mineral resources- Hispaniola; Mines and mineral resources- Haiti. Notes: ill., maps; 28 cm. Note(s): Cover title. "Author, Gerald M. Ellis"--P. 12. Other Titles: Hispaniola report, Gold in the Dominican Republic and Haiti. Gold in the Dominican Republic and Haiti. Island of Hispaniola, emerging gold district in the Americas. OCLC Accession Number: 26344868.

Ellis, Gerald M. 1986. "Dominican Republic and Haiti Continue to Explore their Alluvial Gold Deposits." *Mining Eng.* August. Volume 38, Pages 818-820. Descriptors: Gold ores/Hispaniola; Placer deposits; Applied Science & Technology. Notes: Map. ISSN: 0026-5187.

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Word Count: 507. Abstract: Discusses the United Nations' plans to launch a 1991 crash emergency aid program to help the new democratically-elected Government of Haiti improve roads and water supply, and rehabilitate school facilities and buildings. Role of UN Observer Group for the Verification of the Elections in Haiti (ONUVEH) in December 1990 elections. ISSN: 0251-7329.

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additives are being distributed by ship in an attempt to balance supply and demand on both a regional and global level. The Aumund Group has produced 3 terminals recently, in the Dominican Republic, Saudi Arabia and Haiti. Details of the terminals and their equipment, including handling and storage plant, are described. Database: CSA Technology Research Database. ISSN: 0263-6050.

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and quality and on residential density. What at first might seem a straightforward equity issue in planning may thus be an issue of economic efficiency as well. Failure to account for the fuller range of tangible benefits associated with improvements in water supply may lead to underestimation of returns to investment and therefore to economically inefficient investment. Database: SCOPUS.

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echocardiography, epidemiologic questionnaire interviews, and immunohaematologic testing. Findings revealed: increased parity in PPCM vs control mothers (4.6 vs 3.3, $p=0.0252$); 47% of the PPCM mothers had their initial diagnosis with the 5th or more pregnancy; increased number of patients with some hospital prenatal care in PPCM vs control mothers (42% vs 0%, $p=0.00001$); and increased valley unit PPCM vs control mothers with no formal schooling (54% vs 24%, $p=0.0054$). However, when hill-unit controls were included, there was no statistical difference in this category. Taking drinking-water from the river was found in 11% of the valley PPCM mothers vs 0% of the valley control mothers ($p=0.0509$). Although the first 59 PPCM cases identified came from the valley units, recent identification of PPCM mothers in the hill unit indicates similar incidence of PPCM in mothers of remote hill area compared to the valley mothers-approximately 1 per 350 to 400 livebirths. Although the cause of PPCM and reasons for increased incidence in the HAS district of Haiti remain unknown, initial data present emerging insights and avenues to pursue in subsequent studies. Database: SCOPUS. ISSN/ISBN: 16060997.

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at high risk for seroconversion to not breast feed; yet all women in Rwanda are at high risk. In Haiti, where all women are also at such risk and have no breast milk substitutes, the HIV transmission rate among breast fed infants is 25%, equalling that of non breast fed infants in the US and Europe. A European and Australian study also reveals a higher risk of HIV transmission via breast milk in mothers who acquired HIV postpartum than in those who acquired it prenatally. Some research shows that 24% of the colostrum of HIV infected mothers has P24 antigen, while there is no P24 antigen in 4-day postpartum breast milk. Policymakers should develop an algorithm for health providers to use to advise mothers about the relative benefits and risks of breast feeding concerning HIV transmission. Database: SCOPUS. ISSN/ISBN: 00933341.

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French, Jonathan. 2001. Managing Fatigue in Long Duration Airlift Operations 1994. Descriptors: Circadian Rhythms; Jet Lag; Position (Location); Sensory Feedback; Sleep; Rwanda; Haiti; Somalia; Air To Air Refueling; Analogies; Gulfs; Safety; Schedules; Warfare. Abstract: During September, 1994 the operational tempo for US Air Force C-5 transport crews was at a record high. Support flights were routinely sent to assist international efforts to bring peace to warring factions in Rwanda, Somalia and, in addition to their normal full time responsibilities, there were additional flights needed to reinstate the elected government in Haiti. I interviewed crews at Dover AFB to learn their perspectives of the sources and the extent of fatigue on these sustained missions. Many of these crews had participated in Operation Restore Hope II to Somalia which involved multiple 25 + hour flights from the US to Somalia before crew resting in Cairo. I learned the pace of C-5 operations has remained at record levels since the Gulf War. Important issues identified by the crews were cumulative sleep debt, circadian disruption and their impact on mission safety. I was able to accompany a crew throughout a planned 10 day

support mission. This report is based on my conversations with about 35 officers and enlisted transport crews. I was impressed with the similarity of the comments for the primary sources of frustration and fatigue in the conduct of C-5 missions. These are described more fully in the report but some deserve highlighting here. Many felt that once they did something demanding, like 20-hour plus missions or the then unprecedented three aerial refueling needed in Somalia, it becomes expected, not the "one time only effort" they were told. There is a strong feeling that there are too many crews on BRAVO alerts, perhaps unnecessarily and BRAVO alerts were too long. Many were convinced that better collaboration with schedulers and the Wing would provide more realistic mission schedules. Based on some objective data I collected, in-flight sleep on the C-5 may be less restful than previously thought. Analysis of the nutritional content available in the box meal were conducted and suggests good food is available but not often selected by crews. A decibel meter was used to sample sound frequencies at 6 locations on the C-5 and while louder than published in the C-5 operations manual, the Dash-1, is still within limits. Given that longer missions may be more frequent, noise limits may need to be reconsidered. It is my hope that this report will stimulate interest in a larger study of C-5 crew fatigue issues. Coping strategies for management of fatigue that are simple to follow and can be implemented in current operations are provided at the end of the report and were derived, in large part, from the experiences gained during this investigation. Dr French has left the USAF and is now a fatigue consultant for shift-work, jet lag and sustained duration operations. Notes: RP: RECON no. 20010032436; available from aerospace dispatch. Database: CSA Technology Research Database.

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Frenette, M., Nzakimuen, J. T. and Journier, P. J. 1982. "Cas Historique De Sedimentation du Barrage Peligre, Haiti. Translated Title: Case History of Sedimentation - the Peligre Dam, Haiti." Can. J. Civ. Engng. Volume 9, Issue 2, Jun. 1982, Pages 206-223. Abstract: The Peligre Dam in Haiti, on the Artibonite River, was built in 1956 for an expected life of about 180 years. Based on sedimentation data collected in 1925 and 1926, the average rate of silting in the reservoir was estimated at 3.45×10^{-6} m SUP 3/year. In 1979, however, an average sedimentation rate of 9.6×10^{-6} m SUP 3/year was established. Systematic observations were undertaken in 1961, 1977, and 1979 to

explain the phenomenon and to predict the future rate of silting in the reservoir. The studies led to simulation, by means of a mathematical model, of the processes and have permitted reconstruction of the hydro-sedimentological events since 1956 as well as prediction of the future rate of sedimentation. In order to develop a methodology that has widespread applicability for predicting the rate of sedimentation, the main physical processes responsible for the patterns of deposition were used as common denominators: degradation of watershed and rivers, effects of deforestation, urbanisation, and agriculture, effects of flocculation and consolidation, effect of the reservoir geometry, expected sediment inflow, water inflow versus outflow, etc. On the whole, the model indicated very well the acceleration of the silting rate with an average increase of about 18% per year. The study thus shows that the sediment inflow took the form of a quadratic or exponential growth curve instead of a straight line. After 23 years the average silting is three times that of the design. The results show in conclusion how we must be careful in predicting long-term sedimentation rates in a reservoir since the lifetime of the dam is notably reduced. Database: SCOPUS. ISSN: 0315-1468.

Frenette, M. Souriac, J. C. Tournier, J. P. and International Commission on Large Dams, Paris, France. 1982. *Modelisation De l'Alluvionnement de la Retenue De Peligre, Haiti. Modelling of Siltation of the Peligre Dam, Haiti*; Transactions of the Fourteenth International Congress on Large Dams; III, Reservoir Sedimentation and Slope Stability; Technical and Environmental Effects. France: Comm. Int. des Grands Barrages, Paris, France. 14th International Congress on Large Dams, Rio De Janeiro. Brazil Conference: May 3-7, 1982. Descriptors: alluvium; Antilles; Artibonite River; Caribbean region; clastic sediments; dams; engineering geology; erosion; Greater Antilles; Haiti; Hispaniola; hydrogeology; hydrology; mathematical models; runoff; sediments; siltation; water erosion; West Indies. Notes: FE: References: 6; illus. incl. sketch map. GeoRef Accession Number: 1983-044598.

Frenette, M., Tournier, J. P. and Nzakimuena, T. J. 1982. "(Case History of the Sedimentation of the Peligre Dam, Haiti)." *Canadian Journal of Civil Engineering*. Volume 9, Issue 2, Pages 206-223. Descriptors: degradation; erosion; lifetime; reservoir; sedimentation; simulation; watershed. Abstract: The Peligre Dam in Haiti, on the Artibonite River, was built in 1956 for an expected life of about 180 years. Based on sedimentation data collected in 1925 and 1926, the average rate of silting in the reservoir was estimated but in 1979 the rate was nearly 3 times as high. Systematic observations were undertaken to explain the phenomenon and to predict the future rate of silting in the reservoir. The studies led to simulation, by means of a mathematical model, of the processes involved and have permitted reconstruction of the hydro-sedimentological events since 1956 as well as prediction of the future rate of sedimentation. The study thus shows that the sediment inflow took the form of a quadratic or exponential growth curve instead of a straight line. Database: SCOPUS. ISSN: 0315-1468.

Frick, German. 1970. "Wassererschliessung in Haiti." Translated Title: "Development of Water Supplies in Haiti." *Wasser Boden*. Paul Parey, Hamburg, Federal Republic of Germany: Federal Republic of Germany. Volume 22, Pages 226-228. Descriptors: Antilles; Archaie plain; Caribbean region; Cul-de-Sac plain; Greater Antilles; ground water; Haiti; Hispaniola; hydrogeology; resources; West Indies. Abstract: Geologic setting, Cretaceous-Tertiary volcanic and marine sedimentary rocks,

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borings in Cul-de-Sac and Arcahaie plains, hydrogeologic data, fresh-salt-water interface. Database: GeoRef. ISSN: 0043-0951.

Fulghum, David A. 1994. "Massed Airborne Forces Aimed at Heart of Haiti." *Aviation Week & Space Technology*. October 10. Volume 141, Pages 71-2+. Descriptors: United States/Foreign relations/Haiti; Applied Science & Technology; Readers' Guide (Current Events); Business. Notes: Illustration. Abstract: The canceled armed invasion of Haiti was to have been the U.S.'s largest and most intricate airborne assault since operation Market Garden at Nijmegen, Holland, 50 years ago. Air Force and Army officers say that approximately 3,900 soldiers of the 82nd Airborne Div. were to land, depending on conditions, by parachute or in some of the 60 C-130s and 53 C-141s assembled for the initial airborne assault. The paratroopers would have been followed by 60 helicopters and 600 soldiers of the division's aviation brigade. The attack was canceled after Haiti's leaders agreed to relinquish power. ISSN: 0005-2175.

Fulghum, David A. 1994. "Controllers Over Haiti Ease Occupation Chaos." *Aviation Week & Space Technology*. September 26. Volume 141, Pages 18-19. Descriptors: United States/Foreign relations/Haiti; Applied Science & Technology; Readers' Guide (Current Events); Business; Search and navigation equipment (3812). Notes: PD: Illustration. Abstract: The agreement by Haiti's military rulers to voluntarily relinquish power left U.S. military commanders scrambling to improvise and implement new plans for the changed U.S. role in the troubled Caribbean nation. Over a 9-hour period on the night of September 18-19, the 18,000-man U.S. Joint Task Force-Haiti was transformed from an assault group to a peaceful entry and occupation force. A key in sorting out the confusion was a handful of U.S. Air Force aircraft in the air over Haiti: EC-130 Airborne Battlefield Command and Control Centers, E-3 AWACSS, AC-130 Specter gunships, refueling tankers, and RC-135 Rivet Joint aircraft. The efforts of these aircraft in facilitating the occupation are discussed. ISSN: 0005-2175.

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Gallagher, John. 2010. "From the Ground Up." *Fairplay International Shipping Weekly*. Volume 368, issue 6568. Pages 4-5. Descriptors: Disaster relief; Haiti; marine transportation; shipping. Abstract: Haiti's enormous rebuilding effort is slowly beginning. Long shunned by carriers, the island could now see new shipping markets open up. John Gallagher reports. Database: TRIS. ISSN: 0307-0220.

Gambel, J. M., Drabick, J. J. and Martinez-Lopez, L. 1999. "Medical Surveillance of Multinational Peacekeepers Deployed in Support of the United Nations Mission in Haiti, June-October 1995." *International Journal of Epidemiology*. Volume 28, Issue 2, Pages 312-318. Descriptors: Haiti; International health; Medical surveillance; Military medicine; United Nations' peacekeepers; drinking water; army; article; dengue; follow up; food processing; gastroenteritis; human; incidence; infection; language; major clinical study; normal human; periodic medical examination; priority journal; public health; sanitation; united nations; vector control; Female; Health Status; Humans; International Cooperation; Male; Military Personnel; Missions and Missionaries; Morbidity; Population Surveillance. Notes: Cited By (since 1996): 12. Abstract: Background. Multinational peacekeepers, both military and civilian, often deploy to areas of the world where significant health threats are endemic and host country public health systems are inadequate. Medical surveillance of deployed personnel enables leaders to better direct health care resources to prevent and treat casualties. Over a 5-month period, June to October 1995, a medical surveillance system was implemented in support of the United Nations Mission in Haiti (UNMIH). Information obtained from this system as well as lessons learned from its implementation and management may help decrease casualty rates during future multinational missions. Methods. Over 90% of UNMIH personnel (80% military from over 11 countries and 20% civilian from over 70 countries) stationed throughout Haiti participated in the MSS. A weekly standardized reporting form included the number of new outpatient visits by disease and non-battle injury (DNBI) category and number of personnel supported by each participating UN medical treatment facility (MTF). Previously, medical reporting consisted of simple counts of patient visits without distinguishing between new and follow-up visits. Weekly incidence rates were determined and trends compared within and among reporting sites. The diagnoses and numbers of inpatient cases per week were only monitored at the 86th Combat Support Hospital, the facility with the most sophisticated level of health care available to UN personnel. Results. The overall outpatient DNBI incidence rate ranged from 9.2% to 13% of supported UN personnel/week. of the 14 outpatient diagnostic categories, the three categories consistently with the highest rates included orthopaedic/injury (1.6-2.5%), dermatology (1.3-2.2%), and respiratory (0.9-2.2%) of supported UN personnel/week. The most common inpatient discharge diagnoses included suspected dengue fever (22.3%), gastro-enteritis (15%), and other febrile illness (13.5%). of the 249 patients who presented with a febrile illness, 79 (32%) had serological evidence of recent dengue infection. Surveillance results helped lead to interventions that addressed issues related to field sanitation, potable water, food preparation and vector control. Conclusions. Despite hurdles associated with distance, language, and communications, the MSS was a practical and effective tool for UNMIH force protection. UN requirements for standardized medical surveillance during deployments should be developed and implemented. Furthermore, planners should recognize that if ongoing medical surveillance and related

responses are to be effective, personnel should be trained prior to deployment and resources dedicated to a sustained effort in theatre. Database: SCOPUS. ISSN: 0300-5771.

Gambel, J. M., Drabick, J. J., Seriwatana, J. and Innis, B. L. 1997. "Seroprevalence of Hepatitis E Virus (HEV) among United Nations Mission in Haiti (UNMIH) Peacekeepers, 1995." *Clinical Infectious Diseases*. Volume 25, Issue 2, Pages 374. Abstract: Information about the prevalence of HEV infection is sparse in many countries. Following the identification of four cases of acute HEV infection with jaundice among Bangladeshi soldiers whose battalion had recently deployed to Haiti as peacekeepers, a cross-sectional survey to determine the level of Ig to HEV was conducted to assess the prevalence of past infection with HEV among other UNMIH personnel and Haitian civilians. The ELISA antigen was HEV (Burma) capsid protein expressed in the baculovirus system. of the 981 participants in the survey, 876 were soldiers from 8 UNMIH-participating countries representing Asia, Africa, and the Americas. The remaining 105 participants were Haitian civilians who had applied for local hire by the United Nations. The prevalence of HEV infection by country (from highest to lowest) included Pakistan (66%), India (39%), Nepal (39%), Bangladesh (30%), Djibouti (16%), Guatemala (8%), Honduras (8%), Haiti (6%), and the United States (3%). The wide range of prevalences of HEV infection that we observed were remarkably consistent with those published from those countries in which HEV has been studied. Safe water and sanitation practices will help prevent HEV transmission among military and civilian travelers, and local populations alike as other countermeasures are being developed. Future multinational missions like the UNMIH present unique opportunities to study health threats of widespread interest. Database: SCOPUS. ISSN: 1058-4838.

Gao, J., Ge, W., Hu, G. and Li, J. 2005. "From Homogeneous Dispersion to Micelles - A Molecular Dynamics Simulation on the Compromise of the Hydrophilic and Hydrophobic Effects of Sodium Dodecyl Sulfate in Aqueous Solution." *Langmuir*. Volume 21, Issue 11, Pages 5223-5229. Descriptors: Computer simulation; Dispersions; Interfaces (materials); Molecular dynamics; Molecular structure; Sodium compounds; Surface active agents; Atomistic models; Functional diversity; Microscopic simulation; Spatio-temporal scales; Micelles. Notes: Cited By (since 1996): 11. Abstract: The structural and functional diversity of surfactant systems has attracted simulation works in atomistic, coarse grain, and mesoscopic models (Bandyopadhyay, S. et al. *Langmuir* 2000, 16, 942; Senapati, S. et al. *J. Phys. Chem. B* 2003, 107, 12906; Haiti, P. K. et al. *Langmuir* 2002, 18, 1908; Srinivas, G. et al. *J. Phys. Chem. B* 2004, 108, 8153; Groot, R. D. et al. *J. Chem. Phys.* 1999, 110, 9739; Rekvig, L. et al. *Langmuir* 2003, 19, 8195). However, atomistic models have suffered from their tremendous computational cost and are, so far, not able to simulate the structural behaviors in sufficient spatio-temporal scales (Shelley, J. C. Shelley, M. Y. *Curr. Opin. Colloid Interface Sci.* 2000, 5, 101). The other two approaches are not microscopic enough to describe the configurations of the surfactants that determine their behaviors (Shelley and Shelley). In this study, we propose to simplify atomistic models based on the observation that the compromise of the hydrophilic and hydrophobic effects (Li, J. Kwauk, M. *Chem. Eng. Sci.* 2003, 58, 521-535) and molecular structures of surfactants are the dominant factors shaping their structures in the systems. With this simplification, we are able to simulate with moderate computing cost the whole process of micelle formation from an initially uniform

dispersion of sodium dodecyl sulfate (SDS) in aqueous solution. The resulting micelle structures are different from those predicted by atomistic simulations that started with a predefined micelle configuration at the same surfactant concentrations. However, if we use their initial micelle configuration, micelle structures the same as theirs are obtained. Analyses show that our results are more realistic and that the results of the atomistic simulations suffer from artificial initial conditions. Therefore, our model may serve as a reasonable simplification of atomistic models in terms of the general structure of micelles. Database: SCOPUS. ISSN: 0743-7463.

Garcia, Rebecca A. 2010. "Snapshot over Haiti: Air Force asset used to assess damage, needs." *Air Force Print News Today*. January 19, 2010. Abstract: After a devastating 7.0-magnitude earthquake rocked the capitol of Haiti, Port-au-Prince, last week leaving severe structural damage and an unknown death toll, the Air Force was tasked to provide imagery through the use of an observation aircraft. The OC-135B "Open Skies" aircraft, belonging to Air Combat Command's 55th Wing and stationed at Offutt Air Force Base, Neb., is specifically tailored for the enforcement of the "Open Skies" treaty of 1992, which allows unarmed flights over the territory of "Open Skies" signatories for observation of military forces and activities. Jan. 16, the aircraft was used for a different type of observation mission: to gather imagery over Haiti for a damage and resource requirement assessment. The aircraft left Joint Base Andrews to fly over Haiti, gathering images for approximately 3.5 hours on wet film before flying to Wright-Patterson Air Force Base, Ohio, where the film was processed, digitized and made available to the public. See: http://www.acc.af.mil/news/story_print.asp?id=123186247

Galand, A. 1981. *Perimetre irrigue des Gonaives, Haiti. Conception et gestion du reseau de distribution; propositions.* (Translated Title: *Irrigation scheme in Gonaives, Haiti. Design and management of distribution network; proposals.*) Language: French. Imprint: (np). Jul 1981. 33 p. Fiche no: 323831. Doc. Orig. Div: AGO. Project: Service Consultatif en Genie Rural, Gestion et Organisation de l'ODPG et de l'ODVA, Haiti, HAI/78/013. Report number(s): FAO-AGO--HAI/87/013. FAO-AN: 323831.

Garcia, Tony. 2010. "Recognizing and Treating Crush Syndrome." *Fire Eng.* May. Volume 163, Issue 5, Pages 26, 28, 31. Descriptors: Wounds and injuries; Emergency medical care; Port-au-Prince (Haiti) earthquake, 2010; Applied Science & Technology. Notes: Table. Abstract: The writer discusses the crush injury syndrome, a systemic manifestation of muscle cell damage resulting from pressure or crushing or a condition in which the pressure within the muscle compartment rises to critically high levels resulting in severe ischemia. It is frequently observed because of prolonged entrapment. Building collapses due to earthquakes have the highest incidence of crush syndrome. Early recognition of the possibility for this rare condition and aggressive management will reduce morbidity and mortality from crush syndrome. ISSN: 0015-2587.

Gaspard, S. A plan to quench Haiti's thirst. In: *World Health (WHO)*. p. 10-12. Language: English. FAO-AN: 264419.

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Republic of Haiti- (C) Aluminous lateritic soil of the Sierra de Bahoruco area, Dominican Republic, W.I. Notes: iv; ill., maps; 24 cm. + 9 maps (some col.); Note(s): Includes bibliographical references. Accompanying maps (folded) in back pocket. Includes bulletins 953 A-C. OCLC Accession Number: 48035990.

Geological Survey (U.S.). 1948. "Index Map of the Republic of Haiti Showing Areas Prospected and Known Occurrences of Aluminous Lateritic Soil." Washington, D.C.: Geological Survey. Bulletin; 954 Descriptors: Soils- Aluminum content- Haiti- Maps; Aluminum- Haiti- Maps; Haiti- Maps; Government publication; National government publication. Notes: Description: 1 map; 18 x 24 cm. Map Info: Scale [ca. 1:1,330,560]. OCLC Accession Number: 17913433.

"Geologische Karte der Gegend Zwischen Gros Morne und Borgne und Umgebung (Insel Haiti)." Translated Title: "Geological map of the area between Gros Morne and Borgne and the surrounding area." 1899. Gotha: Justus Perthes. Descriptors: Geology- Haiti- Maps; Haiti- Geology- Maps. Notes: Description: 1 map: color; Map Info: Scale 1:200 000. Note(s): Petermann's Geogr. Mitteilungen. Jahrgang 1899, Tafel 10. Responsibility: gezeichnet von L. Gentil Tippenhauer, ingenieur. Oktober 1896. National Library: 014769381. OCLC Accession Number: 500646407.

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"Geospatial Companies Support Haiti Earthquake Recovery Efforts." 2010. GeoWorld. March. Volume 23, Issue 3, Pages 6-7. Descriptors: Port-au-Prince (Haiti) earthquake, 2010/Rescue work; Disaster relief; GIS industry; Applied Science & Technology. Notes: Map. Abstract: Several geospatial companies have played an important role in assessing priorities to get resources and people to the most critical areas in Haiti, as a response to the aftermath of the Haiti earthquake that occurred on January 12, 2010. Commercial imagery providers DigitalGlobe and GeoEye offered commercial satellite imagery of post-earthquake Haiti to the National Geospatial Intelligence Agency. Also involved in the relief efforts were ESRI, GeoSpatial's Merrick & Co., DigitalGlobe's WorldView-1, QuickBird, Japan's ALOS, European Space Agency's ERS-2, Envisat, Canada's RadarSat-2, NVision Solutions, and LeadDog Consulting. ISSN: 1528-6274.

Gibbons, Ann. 2010. "Greening Haiti, Tree by Tree." Science. February 5. Volume 327, Issue 5966, Pages 640-641. Abstract: As the focus of relief efforts after Haiti's devastating earthquake begins to shift from immediate rescue to long-term rebuilding, the use of agro-forestry to boost Haiti's natural resources has taken on a new urgency. Many Haitians are leaving Port-au-Prince and pouring into rural areas such as the Artibonite valley, and the buzzword in the foreign aid community is to "decentralize" services from the capital. The Haiti Timber Re-Introduction Project aims to teach people in the Artibonite valley how to plant and nurture trees on their own small plots. The trees will provide wood to sell for lumber and charcoal, fruit to eat, and nitrogen to improve

the soil so they can grow crops for food. If they're lucky, enough trees will last long enough to improve the watershed for rivers and prevent erosion and flash floods. ISSN: 0036-8075.

Gillis, Chris. 2009. "Haiti Bound: Former Miami Port Director Starts Liner Service with Initial Focus on Island Market." *American Shipper*. Volume 51 (12), pages 34-35. December 2009. Database: TRIS. ISSN: 1074-8350.

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Giordano, G. 1994. *Cellule d'Appui a la Gestion de Plans d'Eau. Rapport de Mission, nov - dec 1994.* (Support unit for the management of water bodies. Mission report, Nov - Dec 1994). FAO, Rome (Italy). Dept. des Forets. Language: French. Imprint: (np). (No date given).FAO, Rome (Italy). Dept. des Forets. (No date given). vp. Doc. Orig. Div: FO. Project: Mise en Place d'une Cellule d'Appui au Projet PAM/2820, Haiti, HAI/89/024. Report number(s): FAO-FO--EQG/92/001. FAO-AN: 373857.

Girard, Philippe R. 2002. *The Eagle and the Rooster: The 1994 United States Invasion of Haiti.* Ohio: Ohio University. Page(s): 333. Descriptors: History; Latin American history; American history; International law; International relations. Abstract: This dissertation studies the 1994 U.S. intervention in Haiti, focusing on causation (why did Bill Clinton decide to intervene in Haiti?) and consequences (what did the United States and the United Nations achieve from 1994 to 2001?). Regarding U.S. motives, the dissertation argues that economics and ideology played secondary roles in convincing the Clinton administration to intervene in Haiti. Restoring U.S. and presidential credibility; stopping the flow of Haitian refugees; securing the political support of the Congressional Black Caucus; and responding to demands by Haitian President Jean-Bertrand Aristide were the decisive factors. Regarding consequences, the dissertation views the U.S./U.N. occupation as a political and economic failure. U.S. occupation forces, particularly during the first few months following the 1994 intervention, limited themselves to basic law and order, often with the help of former Haitian soldiers. Political strife soon resumed. A politically divided Haitian government refused to approve economic reforms requested by foreign donors and thus failed to seize this opportunity to better the economic lot of most Haitians. Sources for the dissertation are: World Bank, IMF, UN, OAS, U.S., and Haitian internal government documents; documents obtained under the Freedom of Information Act; interviews with participants; published government documents; U.S., Haitian, French, Canadian, and Venezuelan newspapers and magazines; and secondary literature. OCLC Accession Number: 3086331.

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Glass, B. P.; Bohor, Bruce F.; Betterton, William J. and Delaware Univ., Newark. Dept. of Geology. 1993. Cretaceous-Tertiary Boundary Spherules and Cenozoic Microtektites: Similarities and Differences (Abstract Only). Lunar and Planetary Inst., Twenty-Fourth Lunar and Planetary Science Conference. Part 2: G-M p 539-540 (SEE N94-16173 03-91); United States; Lunar and Planetary Inst., Twenty-Fourth Lunar and Planetary Science Conference. Part 2: G-M p 539-540 (SEE N94-16173 03-91); United States. Descriptors: Anomalies; Cretaceous-Tertiary Boundary; Iridium; Meteoritic Composition; Planetary Geology; Spherules; Tektites; Analogies; Clays; Glass; Haiti; Mexico. Abstract: Bohor and Betterton pointed out that the K-T spherules can be divided into three groups. Their Type 1 spherules appear to be found in or adjacent to North America, particularly the Western Interior and in Haiti and Mexico. The Type 1 spherules occur in the lower part of the K-T boundary clay below an Ir anomaly. It is the Type 1 spherules which are most similar to microtektites. The discovery of K-T boundary spherules in Beloc, Haiti, and Mimbral, Mexico, with residual tektite-like glass cores supports the hypothesis that the Type 1 spherules are diagenetically altered microtektites. The similarities and differences of the Type 1 K-T boundary spherules to previously described Cenozoic microtektites are discussed. (Author). Notes: Available from CASI HC A01/MF A06. Database: CSA Technology Research Database.

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sections. Inset: Areas represented by composite samples. Responsibility: by S.S. Goldrich and H.R. Bergquist. OCLC Accession Number: 17250133.

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Gonfiantini, R. and Simonot, M. 1987. "Isotopic Investigation of Groundwater in the Cul-De-Sac Plain, Haiti." *Isotope Techniques in Water Resources Development. Proc. IAEA Symposium, Vienna, 1987, (IAEA; Proceedings Series, STI/PUB/757)*. Pages 483-504. Notes: Cited By (since 1996): 1. Abstract: The major aquifer of the Cul-de-Sac plain consists of a Quaternary multilayer alluvial formation occupying a graben between two Eocene karst anticlinoria. Environmental isotopes clearly delineate the origin and major flow patterns of groundwater in this aquifer and its relationship with the karst systems. The major source of recharge is the Riviere Grise, but other sources from the SE karst are also important. The N karst does not contribute significantly. The origin of groundwater salinization in the northern part of the plain and in the zone of Port-au-Prince is also being investigated with isotopes. It appears that this is derived from mixing with a saline water which is slightly enriched in heavy isotopes with respect to fresh groundwater but obeys the same delta 18O-delta D relationship. Possible mechanisms of saline water formation are discussed which could account for the isotopic enrichment observed. Saline groundwater may derive from water submitted to evaporation in conditions of high relative humidity or it may have formed during a period when the isotopic composition of precipitation was slightly enriched in heavy isotopes in comparison to the present. Sea-water intrusion induced by exploitation is responsible for water salinization in wells close to the coast in the area of Port-au-Prince. Database: SCOPUS.

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"GreenCOM Sustainable Cities: Initiative for Sustainable Development Haitian Urban Sanitation Project." 1996. Washington, DC. Environmental Education and Communication Project; United States: Agency for International Development. Volume: PB2001101983, page(s): 38. Descriptors: Sustainable development; Haiti; Sanitation; Urban areas; Waste water; Potable water; Water supply; Environmental sanitation; Community planning; Communications; Lessons learned; Water treatment; Waste disposal; GreenCOM; Sustainable cities. Abstract: The objectives of the study are to help: (1) identify sanitation technologies to propose to the population, derived in part from the description of current practices, particularly those regarding the disposal of used water and human waste; and (2) understand the roles played by men and women in these activities. It also helps to design the educational messages to include in the education /communication strategy, taking into account the differences that may exist between the attitudes and beliefs of men and women. Special attention will be given to purchased water, and to the interest the population may have in guaranteeing the quality /safety of the treated water in the pipes and at home, and the practices adopted in this regard. Attitudes with respect to the use of collective/public installations will also be examined. It helps to design mechanisms that will enable residents to participate in the design and implementation of the potable water system; helps determine communication channels to use; and extracts lessons for completing similar studies in the poor neighborhoods of urban dwellers in the Third World. Contracts USAID-PCE-C-00-93-00068-00, USAID-PCE-Q-00-93-00069-00. Database: NTIS. NTIS Accession Number: PB2001101983.

Greene IV, G. 2004. "GPS Helps Speed Survey Work in Haitian Water Projects." *Water and Wastewater International*. Volume 19, Issue 2, Pages 20-21. Descriptors: Computer software; Cost effectiveness; Error analysis; Pressure drop; Signal receivers; Surveying; Wastewater treatment; Water resources; Global positioning survey (GPS); Survey accuracy; Survey training; Water problems; Global positioning system. Abstract: The use of global positioning survey (GPS) equipment by the non-profit organization Water Missions International (WMI) has resulted in time and money savings in Haiti. ProMark2 GPS unit has helped WMI by eliminating the need for second trips for projects by incorporating the entire survey into the initial visit. The ProMark2 includes two receivers that can be set up quickly and operated by a single person. ProMark2 is small, lightweight and affordable for a professional system, offering high quality results at the lowest cost under US\$4,000 for a two receiver configuration with software. Database: SCOPUS. ISSN: 0891-5385.

Griscom, D. L., Beltrán-López, V., Merzbacher, C. I. and Bolden, E. 1999. "Electron Spin Resonance of 65-Million-Year-Old Glasses and Rocks from the Cretaceous-Tertiary Boundary." *Journal of Non-Crystalline Solids*. Elsevier Science Publishers B.V.: Amsterdam, Netherlands. 5 July 1998 through 10 July 1998. Volume 253, Issue 1-3, Pages 1-22. Descriptors: Agglomeration; Calcite; Electron spin resonance spectroscopy; Ferrimagnetic materials; Limestone; Magnetite; Particle size analysis; Polycrystalline materials; Precipitation (meteorology); Quartz; Rocks; Weathering; Asteroids; Comets; Dolomite; Photomicroscopy; Single-domain titanomagnetite; Spherules; Meteoritic glass. Cited By (since 1996): 8. Abstract: Glasses and rocks produced or altered by the colossal impact of an asteroid or comet with the earth 65 million years ago have been studied by electron spin resonance (ESR) and thin-section photomicroscopy. The ESR spectra reveal the presence of 1.9 ± 0.5 wt% single-domain

(SD) titanomagnetite particles (sizes in the range approximately 10-60 nm) in shock-melted rocks drilled from the floor of the giant Chicxulub crater (≥ 180 km diameter) buried approximately 1 km below the surface of Mexico's Yucatan peninsula. These ferrimagnetic (ferrite) particles account for $37 \pm 9\%$ of the total iron in the once-vitreous crater-floor rocks. Similar ferrites in particle sizes approximately 3 nm and amounts 0.13 ± 0.03 wt% are found in coeval tektite glasses from Haiti. Additional SD titanomagnetite phases in particle sizes ranging from approximately 3 to approximately 4.5 nm and amounts 0.045 ± 0.020 wt% are identified by ESR as markers of the Cretaceous-Tertiary (K/T) boundary in limestones from two sites in Spain, where their ESR intensities rise above background by factors approximately 14. The latter K/T-boundary 'marker' ferrites are hypothesized to have precipitated in vitreous materials ejected from the Chicxulub crater and to have survived aqueous weathering which converted their original glassy matrices to clays. Spherules from K/T-boundary beds in Mexico and New Jersey were found to contain amounts of ferrites not exceeding background levels; rather, their ESR spectra exhibit spectral components characteristic of Fe^{3+} in glasses and of previously reported radiation-induced paramagnetic species in crystalline quartz and calcite ($CaCO_3$). Thin-section studies, including energy-dispersive spectroscopy, show the Mexican spherules to be fine-particle agglomerates (component grain sizes approximately 1-100 μm) of calcite, dolomite ($MgCa(CO_3)_2$), and glass, with interstitial flint (a polycrystalline form of quartz assumed to have been deposited hydrolytically after the spherules fell to earth). It is argued that the carbonate-containing spherules originally condensed within a 'warm fireball' composed of water vapor and approximately 2000 km³ of shock-vaporized limestone proposed by others to have been generated by the Chicxulub impact. Database: SCOPUS. ISSN: 0022-3093.

Guides panorama Haïti s.a and Société Haïtienne d'aménagements Concertés. 2005. "2006 Haïti, Port-Au-Prince, Carte Routière." Pétionville, Haïti: Guides Panorama Haïti. Descriptors: Roads- Haiti- Maps; Port-au-Prince (Haiti)- Maps. Notes: Description: 2 maps on 1 sheet: both sides, col. sheet 56 x 86 cm., folded to 19 x 11 cm. Map Info: Scale 1:500,000. Scale [ca. 1:18,000]. Note(s): "Imprimé .. juin 2005." Relief shown by shading, gradient tints, and spot heights. Title from panel. Includes index to Port-au-Prince, location map, 3 insets, and advertisements. Other Titles: 2006 Haïti, Port-au-Prince, road map; Haïti, Port-au-Prince, carte routière; Haïti, Port-au-Prince, road map; Responsibility: réalisation, Guides panorama Haïti s.a. Société haïtienne d'aménagements concertés s.a. (SHAC)/Patrick Sardin = 2006 Haïti, Port-au-Prince, road map production, Guides panorama Haïti s.a. Société haïtienne d'aménagements concertés s.a. (SHAC)/Patrick Sardin. Abstract: Haïti- Port-au-Prince, zone métropolitaine. ISBN: 9993528455; LCCN: 2008-621227. OCLC Accession Number: 191051707.

Guindo, Ousmane. 1989. "The Role of Adaptive Research in Increasing Agricultural Productivity: The Experience from Haiti." *Can. J. Agric. Econ.* Descriptors: Agricultural production/Haiti; Farm practice adoption research/Haiti; Biological & Agricultural. *Canadian Journal of Agricultural Economics* v. 37 (December 1989 pt2) p. 887-97; Bibliography; Illustration. ISSN: 0008-3976.

Guthrie, Richard L. Shannon, Dennis Alan; Auburn University and Soil Management Collaborative Research Support Program. 1995. *Soil Profile Descriptions for Steeplands Research Sites in Haiti*. Auburn, Ala.: United States Agency for International Development, Soil Management Collaborative Research Support Program,

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Auburn University. Page(s): 24. Descriptors: Soil profiles- Haiti; Soil surveys- Haiti; Soils- Haiti- Composition- Research; Soils- Haiti- Classification; Soils- Haiti- Analysis; Soils- Haiti- Testing; Soils- Haiti- Sampling; Soils- Research- Haiti; Soils- Haiti; Soil mineralogy- Research- Haiti. Notes: illustrations (some col.); 28 cm. Note(s): "March 2004." Includes bibliographical references (p. 22). Funding: Work performed under USAID (United States Agency for International Development) Grant no. LAG-G-00-97-00002-00 and the Productive Land Use Systems (PLUS) Project contract no. 521-0217-C-00-5031-00. OCLC Accession Number: 55485385.

Guthrie, Richard L. South-East Consortium for International Development and Auburn University; Haiti Productive Land Use Systems Project; Auburn University; United States and Agency for International Development. 1995. Soil Profile Descriptions for Agroforestry Research Sites in Haiti. Auburn, Ala.: Haiti Productive Land Use Systems Project, South-East Consortium for International Development and Auburn University. Descriptors: Soil profiles- Haiti; Soil surveys- Haiti; Soils- Haiti- Composition- Research; Soils- Haiti- Classification; Soils- Haiti- Analysis; Soils- Haiti- Testing; Soils- Haiti- Sampling; Soils- Research- Haiti; Soils- Haiti; Soil mineralogy- Research- Haiti; Agroforestry- Research- Haiti; Agroforestry projects- Haiti; Forest site quality- Research- Haiti; Site index (Forestry)- Haiti; South-East Consortium for International Development and Auburn University. Haiti Productive Land Use Systems Project. Notes: iv, 23, [4] l.: illustrations (some col.); 28 cm. Note(s): "December, 1995." Includes bibliographical references (l. 22). Funding: Work performed under USAID (United States Agency for International Development). Contract No: Contract. no. 521-0217-C-00-5031-00. Other Titles: Productive land use systems, Haiti; SECID/Auburn PLUS report, USAID/Haiti Economic Growth Office; Responsibility: by Richard L. Guthrie. OCLC Accession Number: 41673427.

Gutiérrez Domech, M. R. 1998. "El Karst En El archipiélago Cubano y La región Caribe-Antillana." Translated Title: Karst in the Cuban archipelago and the Caribbean-Antillean region." *Mineria y Geología*. Volume 15, Issue 3, Pages 39-52. Abstract: The ensemble phenomena and processes produced under the water action distinguished by the dissolution and corrosion, principally on carbonates rocks, at the Caribbean-Antillean region, particularly at the Cuban Archipelago, has a not calculate importance for live and economic development for this area's nations. The geological history of the Greater Islands and the continental areas, principally, the paleogeographic characteristics of the region, together with the relatively paleoclimatic stability to the Pleistocene, where the strong insolation - consequently with high temperatures - with heavy rainfalls, are combine, during this geological period with drought stages; the strong sea level movements and therefore the changing of the underground waters level, on the lands as a consequence of the glacioeustatic fluctuations, determinated the development and existence of karstic landscapes with a richness and a variety of forms quiet important, much more aggressive and of faster evolution than those of the classic Dinaric Alps area. The main karstic areas of the Cuban Archipelago, the Yucatan peninsula, and other Mexican areas; from Jamaica, Puerto Rico, Dominican Republic, Haiti, Venezuela, Guatemala, Belize and others are described. So are described those more typical karstic mesoforms, such as the Cuban mogotes and the similar Jamaica and Puerto Rico's karstic hills; the so called "cayos" from the flooded areas of Los Haitises, Dominican Republic; and San Juan "morros", from Venezuela, where the Precambrian quarcites "tepuis"

towers can be found; such as the Yucatan cenotes, also presents at Guatemala and Belize and their Cuban and Dominican equivalents the “casimbas”. Poljes and others karstics valleys from Cuba, and others Greater Antilles and Mexico, are described, and also these countries and others “karrenfelds”. In addition to the importance of the karstic areas for the region nations economy, because of the possibilities of operation of the underground aquifer, the necessity of karstic terrains for engineering works, prospecting of minerals deposits, etc., the interest for fossils deposits, mainly from Quaternary, and the ancient inhabitants remains are unquestionable, together with the fact of having ecosystems of great biodiversity and richness. Database: SCOPUS. ISSN: 0258-5979.

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Haiti 2010 Earthquake Response: Seismic, Geological and Building Hazards, Interim Risk Management Plan. 2010. United Nations and Republic of Haiti. March 4, 2010. Abstract: "This interim risk management plan has been produced by a joint United Nations, government and international academic team for use by all stakeholders present in Haiti and those outside of Haiti and engaged in the relief effort and recovery planning processes. In the context of the January 12th 2010 earthquake and relief programme, its purpose is to launch a programme of action to directly protect the population of Haiti and international visitors, the economy and the relief effort from ongoing major and life threatening seismic, geological and building hazards. It is also designed to inform decision makers engaged in the recovery and reconstruction process." 53 pages. URL: http://web.ics.purdue.edu/~ecalais/haiti/documents/Haiti_Interim_Seismic_Risk_Plan.pdf

Haiti. 1978. Development Credit Agreement (Provincial Towns Water Supply Project) between Republic of Haiti and International Development Association. Uniform Title: Treaties, etc. International Development Association, 1978 Jan. 23. Washington, D.C: International Development Association. Descriptors: Loans, Foreign- Haiti; Debts, External- Haiti; Economic assistance- Haiti; Water-supply- Finance- Haiti; International Development Association- Finance. Notes: 12 p. 28 cm. Note(s): "Conformed copy"-- Cover. Cover title. Other Titles: Provincial towns water supply. OCLC Accession Number: 52732950.

Haiti. Département de l'agriculture et de l'enseignement professionnel. Service technique. 1926. Translated Title: Report on the Soil Survey of the Artibonite Plain: An Investigation of the Physical and Chemical Properties of the Soils, the Occurrence and Composition of Alkali, of the Climate, and of the Native Vegetation, Crops, and Agricultural Practices of the Region: With Maps of the Distribution of the Soils and of the Alkali Salts in the Soils. Port-au-Prince: The Service. Page(s): 210. Descriptors: Soils- Haiti. Notes: illustrations 23 cm. + 2 folded maps. OCLC Accession Number: 13639839.

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in irrigated production in various countries. In Honduras, little use has been made of 20 cooperatives financed by the government of Japan and the FAO. Various countries and international agencies have financed resource inventories and project studies and have provided funds for development. However, World Bank experience indicates that favorable laws and policies frequently have more influence on development than the availability of financial assistance. Strength in the rule of law, a free market economy, local and user participation in planning and management, and encouragement of private enterprise are frequently more important than the amount of money available from loans. Some successful training courses are described. A World Water and Climate Atlas is now available and can be used for many planning and risk evaluation purposes. Database: SCOPUS. ISSN: 1531-0353.

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Higuera-Gundy, Antonia. 1991. Antillean Vegetational History and Paleoclimate Reconstructed from the Paleolimnological Record of Lake Miragoane, Haiti. United States- Florida: University of Florida. Descriptors: Ecology; Botany; Freshwater ecology; Paleocology. Abstract: Palynological analyses of sediments from Lake Miragoane, Haiti, provide a continuous record of the vegetational and climatic history of Hispaniola from the late Pleistocene to present. The demonstrated high sensitivity of Antillean plant communities to long-term climatic fluctuations has profound implications for West Indian biogeography. Available isotopic and geochemical records from Lake Miragoane were used in combination with the pollen results for reconstructing the ecological history of the lake and its watershed. Extremely dry conditions characterized Hispaniola during the late Pleistocene, 10,230-9,700 B.P., and early Holocene, 9,700-7,000 B.P., with temperatures cooler than today persisting until 8,600 B.P. During these dry phases, local and regional forest fires were rare. The vegetation around Miragoane, and possibly throughout Hispaniola, consisted of xeric and shrubby communities and small, fragmented forests. Lake Miragoane, with permanent fresh water standing 10 m below present as the Pleistocene ended, filled when the Holocene began. Deep-water conditions and a large littoral zone occupied by Chenopodiaceae/Amaranthaceae persisted until 2,800 B.P. Hispaniola's most mesic vegetation flourished in the mid Holocene (7,000-2,800 B.P.) under a wet, warm, seasonal climate. Successional mesic forests predominated until 4,800 B.P. and later co-existed with mature forests until 2,800 B.P. Forest fires became common in Hispaniola by 7,000 B.P. Climatically dry conditions returned around 2,800 B.P. Since then, the watershed's vegetation has consisted of dry communities and relict moist forests. Agricultural activity at Miragoane dates from 1,100 B.P., but the greatest deforestation took place during the last five centuries. Lake water levels, though fluctuating, have drastically declined since 3,700 B.P. Lacustrine sedimentation patterns in the past millennium have been strongly controlled by declining water levels, establishment of macrophyte beds, and human disturbance. A large marsh on the basin's east side has probably functioned as a sink for incoming clastics and as a net source of organic matter to the lake. Consequently, slow deposition of organic-rich sediments has coincided with severe human-induced disturbance of the watershed. OCLC Accession Number: 9209022. URL: <http://proquest.umi.com/pqdweb?did=745172861&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Hildebrand, Alan Russell. 1992. Geochemistry and Stratigraphy of the Cretaceous/Tertiary Boundary Impact Ejecta. United States- Arizona: The University of Arizona. Descriptors: Geology; Geophysics; Astronomy; Astrophysics. Abstract: An array of stratigraphic, chemical, isotopic, and mineralogical evidence indicates that an impact terminated the Cretaceous Period. The 180-km-diameter Chicxulub crater, which now lies buried on the Yucatan peninsula of Mexico, was probably formed by the impact. The impactor was probably a long-period comet. Shock devolatilization of the thick carbonate/evaporite sequence impacted at Chicxulub probably led to a severe and long-lasting greenhouse warming and a prompt pulse of sulfuric acid rain. The fallout of crater ejecta formed two layers: a lower layer which varies in thickness following a power-law relation based on distance from the Chicxulub crater and an upper, globally-distributed,

uniformly \sim 3-mm-thick layer. The upper layer probably represents the fallout of condensates and entrained solid and liquid particles which were distributed globally by the impact fireball. The lower layer consists of brecciated rock and impact melt near the crater and largely altered tektites far from the crater. The clasts of this layer were probably ballistically transported. The Raton, New Mexico K/T boundary section preserves the fireball and ejecta layers in a coal-free nonmarine environment. Siderophile, chalcophile, and lithophile trace element anomalies occur similar to those found at marine K/T boundary localities. Soot occurs peaking in the 3-mm-thick fireball layer and the immediately overlying 3 mm of sediment, implying prompt burning of the Cretaceous forests. The Brazos River, Texas continental-shelf K/T sections preserve coarse boundary sediments which were probably produced by impact waves. Siderophile and chalcophile trace-element anomalies occur suggesting that the fireball layer and possibly part of the ejecta layer are interbedded with the coarse boundary sediments. The Beloc, Haiti deep-sea K/T sections preserve a thick ejecta sequence including altered and unaltered tektites and shocked minerals capped by the fireball layer. The thick K/T ejecta preserved at this and other nearby K/T localities require a source crater of Chicxulub's size and location. The composition of the tektites and shocked grains require an impact into recently extracted continental crust with a carbonate/evaporite component as found at the Chicxulub crater. OCLC Accession Number: 9313009. URL: <http://proquest.umi.com/pqdweb?did=746501991&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Hildebrand, Alan R. and Boynton, William V. 1990. "Proximal Cretaceous-Tertiary Boundary Impact Deposits in the Caribbean." *Science*. May 18. Volume 248, Pages 843-847. Descriptors: Meteorite craters; Catastrophes (Geology); Paleopedology; Cretaceous-Tertiary boundary; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Bibliography; Illustration; Map. Abstract: Trace element, isotopic, and mineralogic studies suggest that the proposed asteroid or comet impact at the Cretaceous-Tertiary (K-T) boundary, which is believed to have caused a mass extinction of species, occurred in an ocean basin. The thickness of the K-T boundary ejecta layer in southern Haiti indicates an impact site within about 1,000 km. Boundary sediments in the Colombian Basin and Cuba may be deposits of a giant wave produced by the impact, and a buried structure that is visible in seismic reflection profiles of the Colombian Basin may be the impact crater. ISSN: 0036-8075.

Hodell, D. A., Curtis, J. H., Jones, G. A., et al. 1991. "Reconstruction of Caribbean Climate Change Over the Past 10,500 Years." *Nature*. Volume 352, Issue 6338, Pages 790-793. Descriptors: climate change; lake sediment; low latitude; low latitude lake; Milankovitch variation; ostracod; ostracod shell; sediment core; tropical climate; Younger Dryas; Haiti, Lake Miragoane. Notes: Cited By (since 1996): 113. Abstract: Sediment cores from low-latitude lakes provide some of the best records of tropical climate change since the late Pleistocene. Here we report a high-resolution reconstruction of Caribbean climate based on $18\text{O}/16\text{O}$ ratios in ostracod shells from Lake Miragoane, Haiti. Our results show that the climate was dry and the lake level low during the latter part of the Younger Dryas chronozone (10.5-10 kyr BP), but that water level in the lake rose at the end of the last deglaciation (\sim 10-7 kyr BP), reflecting the wetter conditions of the early Holocene which persisted for nearly 4,000 years. Lake level declined at \sim 3.2 kyr BP with the onset of a drier climate which generally prevailed

throughout the late Holocene. These long-term changes in Caribbean climate are generally similar to those found for Africa over the same period, and can be largely explained by orbitally induced (Milankovitch) variations in seasonal insolation which modified the intensity of the annual cycle. Superimposed on the orbitally forced climate trends are more abrupt climate events that result from complex, nonlinear interactions in the ocean - atmosphere system. The interpretation of Antillean biogeography and the development of Caribbean and Mesoamerican culture must be considered in the context of such shifts in climate. Database: SCOPUS. ISSN: 0028-0836.

Hodges, Carl N., Thompson, T. Lewis, Riley, James J. and Glenn, Edward P. 1993. "Reversing the Flow: Water and Nutrients from the Sea to the Land." *Ambio*. Allen Press on behalf of Royal Swedish Academy of Sciences: Nov. Volume 22, Issue 7, The Royal Colloquium, Pages 483-490. Abstract: One area of immediate planetary-scale concern is the increasing carbon level of the atmosphere. Another is the decreasing carbon level of the world's soils. These two phenomena are part of a single problem. We must increase the flow of carbon from the atmosphere into the soil. One technology to contribute to this is seawater-based agriculture whereby seawater and nutrients from the sea are brought onto the land for aquatic animal and halophyte farms. Further, these farms can be constructed as integral parts of new seawater-based communities which can be developed in many locations along the coastal regions of the earth. If the world population expands at projected rates before stabilizing, and if half of that increased population continues to live within 50 km of the world's seacoasts (as half of the present population does), seawater-based communities may be one of the best alternatives for developing new forms of environmentally-enhancing communities with the associated critically-needed wealth generation. ISSN: 0044-7447.

Hough, R. M., Wright, I. P., Sigurdsson, H., Pillinger, C. T. and Gilmour, I. 1998. "Carbon Content and Isotopic Composition of K/T Impact Glasses from Haiti." *Geochim. Cosmochim. Acta*. Apr. Volume 62, Issue 7, Pages 1285-1291. Descriptors: Cretaceous-Tertiary Boundary; Carbon Isotopes; Isotope Composition; Glass; Hypervelocity Impact; Meteoritic Composition; Haiti; Carbon Dioxide; Calcium Compounds; Spherules. Notes: NR: 31. Abstract: Bubbles in a dark impact glass from Haiti are studied to ascertain whether they represent entrapped gases from the Cretaceous /Tertiary impact 65 years ago. The CO₂ in the bubbles was probably produced by the thermal dissociation of the thick sequences of the carbonate-rich sediments at the Chicxulub impact site, which subsequently became entrapped within the impact melt droplet. (AIAA). Database: CSA Technology Research Database. ISSN: 0016-7037.

Houlberg, Marilyn. 1996. "Sirens and Snakes: Water Spirits in the Arts of Haitian Vodou." *African Arts*. UCLA James S. Coleman African Studies Center: Spring. Volume 29, Issue 2, Special Issue: Arts of Vodou, Pages 30-101. ISSN: 0001-9933.

Huber, B. A., Fischer, N. and Astrin, J. J. 2010. "High Level of Endemism in Haiti's Last Remaining Forests: A Revision of *Modisimus* (Araneae: Pholcidae) on Hispaniola, using Morphology and Molecules." *Zool. J. Linn. Soc.* Volume 158, Issue 2, Pages 244-299. Abstract: This study describes the remarkable radiation of *Modisimus* on Hispaniola. During two short trips to the island, more species have been collected than are known from any comparable area on the mainland. We redescribe three of the four previously known Hispaniolan species, and describe 22 new species. Most Haitian species are local endemics, either of the severely threatened forests in one of the two

national parks (La Visite National Park and Macaya Biosphere Reserve) or of their surrounding areas. Phylogenetic analysis indicates that most of these species together represent a species group that is restricted to the paleogeographically distinct southern 'paleoisland', and that is otherwise known neither from Hispaniola nor from any other island. Two mitochondrial markers, 16S and cytochrome oxidase I (COI), were sequenced in 21 species to test for their performance as barcoding genes within this group of partly closely related species. Both markers unambiguously corroborated the morphospecies, with small but distinct gaps between the intra- and interspecific genetic distances. The absence of *Modisimus* in South America argues against colonization of the West Indies over a 'landspan' connecting South America to the Greater Antilles. Overwater dispersal is supported by two lines of evidence (unusual radiation and reduced higher-level diversity), but further data (especially time estimates for the separation of mainland and island taxa) are needed to evaluate the third major model, continent-island vicariance as a result of plate tectonics. The species diversity of the genus, combined with the presence of habitat specialists, suggests that this system may have the potential to complement the classic studies on adaptive radiation in Caribbean *Anolis* lizards. Database: SCOPUS. ISSN: 0024-4082.

Hughes, C. J. 2010. "Architects Eagerly Await Opportunities to Help Haiti." *Archit. Rec.* Volume 198, Issue 3, Pages 33. Database: SCOPUS. ISSN: 0003-858X.

"Human Suffering." 1992. *People Count*. Volume 2, Issue 11, Pages 1-4. Descriptors: article; comparative study; Economic Factors; economics; health; Health Status Indexes; health survey; human rights; methodology; poverty; quality of life; research; social welfare; socioeconomics; Standard Of Living; Studies; World; Comparative Studies; Research Methodology; Socioeconomic Factors; Health Status Indicators. Abstract: 10 measures of quality of life are used to rank 141 countries in the International Human Suffering Index (HSI). The Index differentiates between extreme, high, moderate, and minimal levels of human suffering. Social welfare is the sum of 10 measures: life expectancy, daily caloric intake, clean drinking water, infant immunization, secondary school enrollment, gross national product per capita, the rate of inflation, communication technology (i.e., telephones), political freedom, and civil rights. Each measure is ranked between 0 and 10. The highest score indicates the greatest country stress, with the worst possible score being 100. About 1 billion people live in desperate poverty. Living conditions are the worst in Mozambique (93), followed by Somalia, Afghanistan, Haiti, and Sudan. Most of these countries also have high population growth. The most comfortable countries are Denmark (1), the Netherlands, Belgium, Switzerland, and Canada, which have low population growth. Total scores of 75 or greater (extreme human suffering) occur in 27 countries (20 in Africa, 16 in Asia, and Haiti) with 8% of the world's population (432 million people). High human suffering scores range between 50 and 74 and include 56 countries (24 in Africa, 16 in Asia, 15 in the Western Hemisphere, and 1 in Oceania) with 3.5 billion people. The number of countries in this grouping increased from 44 countries with 58% of world population in 1987. Moderate suffering scores range from 25-49. Countries with moderate suffering number 34 countries (9 in Europe, 13 in Asia, 8 in the Western Hemisphere, and 2 in Oceania and 2 in Africa) with 11.8% of world population (636 million). Over the preceding 5-year period the number of countries increased from 29 countries with 10% of world population. Minimal human suffering occurs in 24 countries (17 in Europe, Israel

and Japan in Asia; Canada, the US, and Barbados in the Western Hemisphere; and Australia and New Zealand in Oceania) with 14.8% of world population (797 million). Five years ago 27 countries with 21% of world population were in the minimal suffering group. Database: SCOPUS. ISSN: 0117-5602.

Hunter, Danita L. and Transportation Command Scott AFB IL. 1997. United States Transportation Command: 10 Years of Excellence, 1987-1997. Ft. Belvoir Defense Technical Information Center. Page(s): 47. Descriptors: Military Forces and Organizations; Logistics, Military Facilities and Supplies; Military Operations, Strategy and Tactics; Military forces (United States); Military operations; Military exercises; Military transportation; Organizational realignment; History; Iraq; Air transportation; Panama; Sealift operations; Persian gulf war; Haiti; Bosnia herzegovina; Airlift operations; Somalia; Russia; Land transportation; Rail transportation; Ustranscom(United States Transportation Command); Mac(Military Airlift Command); Amc(Air Mobility Command); Mtmc(Military Traffic Management Command); Msc(Military Sealift Command); Organizational Change; Desert Storm Operation; Desert Shield Operation; Disaster Relief; Humanitarian Assistance. Abstract: Throughout the history of the United States, when the need arose for the nation to move its military forces from point A to point B, the Army, Navy, Marines and Air Force deployed unilaterally. There was no single point of contact for transportation. If an Army unit had to move from Fort Bragg, NC, to Stuttgart, Germany, for example, their equipment might go by rail to Charleston, SC, where it would be taken by sea to Antwerp, Belgium. There, it would be unloaded from the ship and placed on a train and taken by rail to Stuttgart. From there it would be again unloaded and reloaded on a truck to be taken to the final destination. The people in the unit would travel by bus to the airport, fly to Frankfurt, get bussed to Stuttgart, and wait for their equipment to arrive. For many, many years a move such as this, which happens routinely, required the unit transportation officer to coordinate with people in the other services and civilian transportation companies to route the passengers and equipment from the origin through many transportation systems to arrive at the final destination. Whether or not it would all arrive safely could not readily be determined while the cargo was in transit. Today, that whole scenario is taken care of with one phone call. The transportation officer simply picks up the phone and dials 1-800- USTRANSCOM to arrange for all of the people and cargo to be transported from Fort Bragg to Stuttgart. All of the coordination still must be accomplished for the equipment and people to reach their final destination, but now the professionals at U.S. Transportation Command (USTRANSCOM) and its Transportation Component Commands- the Air Force's Air Mobility Command, the Army's Military Traffic Management Command, and the Navy's Military Sealift Command- take care of the details. This monograph chronicles the creation of USTRANSCOM and its involvement in military operations, military exercises, and humanitarian and relief efforts from 1987 to 1997. Notes: Note(s): The original document contains color images. General Info: APPROVED FOR PUBLIC RELEASE. OCLC Accession Number: 227932927.

Huppert, W. and Urban, K. 1994. "Service Analyses in Irrigation Development." Quarterly Journal of International Agriculture. Volume 33, Issue 3, Pages 260-275. Descriptors: infrastructure development; irrigation; irrigation sector; methodological approach; service interaction analysis; service management; water management. Abstract: In infrastructure development the construction of the infrastructure itself tends

to be considered the core activity. The services to be provided by the infrastructure were largely regarded as a natural output, that came by itself after construction. In reality however, infrastructure is developed in a complex multiorganisation network, irrigation development in particular. The article presents an analytical instrument, the service interaction analysis (SIA) that helps to identify role players, services and the interaction between service providers and their clients in a multiorganisational network. It also allows the analysis of problems that occur in the provision of individual services. The instrument has been applied throughout the years 1992-94 in ten different project settings in countries as different as Bolivia, Haiti, Germany, South Africa, Tanzania, and Mali; two of the cases (Bolivia and Germany) are presented in the text. -from Authors.
Database: SCOPUS.

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"Impacts, Tsunamis, and the Haitian Cretaceous-Tertiary Boundary Layer." 1991. *Science*. June 21, 1991. Volume 252, Pages 1690-1693. Descriptors: Geology/Haiti; Tsunamis; Catastrophes (Geology); Cretaceous-Tertiary boundary; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Bibliography; Illustration. Abstract: Studies of the marker bed at the Cretaceous-Tertiary boundary of the Beloc Formation in southern Haiti and of the distribution of planktonic foraminifera suggest that the bed formed from a complex sequence of events that could have involved a catastrophic extraterrestrial meteor or meteorite impact. The Beloc bed, which contains the thickest ejecta layer and has the largest micro-tektites known to date, became sparsely consolidated when vaporized materials with anomalously high extraterrestrial components settled along with carbonate sediments. The initial deposit was partly reworked by another major disruptive event, possibly a giant tsunami. The lithology, sedimentary structures, and faunal content of the Beloc marker bed are discussed. ISSN: 0036-8075.

"In Brief." 2010. *Water*. Magazine of the International Water Association. 04. Pages 5-9. Descriptors: Water -- Management; Water quality management; Energy consumption; Sewage disposal plants; Earthquake relief; Haiti Earthquake, Haiti, 2010. Abstract: This section offers world news briefs related to water management. A grant worth 19 million U.S. dollars has been awarded by USAID to World Vision to help victims of the January 2010 earthquake in Haiti. ISSN: 1561-9508.

"Inundated." 2004. *Economist*. Economist Newspaper Limited: 09/25. Volume 372, Issue 8394, Pages 48-48. Descriptors: disaster relief; natural disasters; flood; hurricanes; storms; poor; peacekeeping forces; United Nations; Haiti; United Nations-Peacekeeping forces. Notes: M3: Article; Accession Number: 14530185; Source Info: 9/25/2004, Vol. 372 Issue 8394, p48; Subject Term: Disaster relief; Natural disasters; floods; hurricanes; storms; poor; peacekeeping forces; United Nations; Haiti; Company/Entity: United Nations- Peacekeeping forces; NAICS/Industry Codes: 624230 Emergency and Other Relief Services; NAICS/Industry Codes: 922190 Other Justice, Public Order, and Safety Activities; Number of Pages: 7/9p; Illustrations: 1 map, 1 color; Document Type: Article; Full Text Word Count: 671. Abstract: The article looks at conditions in Haiti as of September 2004. Though tropical storm Jeanne was less fierce than the preceding Atlantic hurricanes, it killed far more people: in hapless Haiti, more than 1,000 died and another 1,000 were missing after heavy rains triggered mudslides and flash floods. In Haiti, natural disasters are both cause and consequence of the indescribable misery of the country's poor majority. On September 22, 2004, half the city of Gonaives was under fetid water and a thick layer of mud. The United Nations, which has a peacekeeping force in the country, began to deliver food and drinking water to Gonaives. The latest disaster adds to the difficulty of reconstructing Haiti's economy and government. ISSN: 0013-0613.

Institut Géographique National (France); Haiti; Ministère des travaux publics, transports et communications; Haiti and Service de Géodésie et de Cartographie. 1999. "Haïti 1:300 000 Échelle: 1:300 000, 1 Cm." Paris: I.G.N. Ed. 1. Pays et villes du monde; Les spéciales de l'IGN. Descriptors: Haiti- Remote-sensing images; Haiti- Maps, Tourist; Haiti- Road maps; Remote-sensing image. Notes: Description: 1 map: col. 78 x 103 cm. folded to 23 x 12 cm. Map Info: Scale 1:300 000. 1 cm. = 3 km. Note(s): Panel title. At

foot of title: Coopération Française; Institut Géographique National; République d'Haïti. Ministère des Travaux Publics, Transports et Communications. Relief shown by shading and spot heights. Includes ancillary map showing departments and inset map of Ile de la Navasse. "Fond mosaïque de 16 scènes SPOT XS sur Haïti de 1990 réalisé par ERIM (US)." "3615 IGN"--Back panel. Responsibility: [réalisé et édité par l'Institut Géographique National pour le compte du Service de Géodésie et de Cartographie de la République d'Haïti]. OCLC Accession Number: 223009510.

Institut Géographique National (France); Haiti and Service de Géodésie et de Cartographie. 1999. "Les Spéciales De l'IGN, Pays Et Villes du Monde. Haïti, Échelle 1:300 000, 1 Cm." Paris: IGN. Ed. 1. Descriptors: Roads- Haiti- Maps; Haiti- Maps; Haiti- Maps, Tourist; Haiti- Remote-sensing maps. Notes: Description: 1 map: col. 78 x 104 cm., folded to 22 x 12 cm. Map Info: Scale 1:300,000. 1 cm. = 3 km. Note(s): Relief shown by satellite imagery and spot heights. Panel title: "Fond mosaïque de 16 scènes SPOT XS sur Haïti de 1990 réalisé par ERIM (US) et édité avec l'aimable autorisation du PNUD en Haïti-Projet ECMU-et de la société SPOT Image." "3615 IGN." Includes ancillary map of Haiti showing administrative and political divisions and inset of Navasse Island. Other Titles: Haïti, échelle 1:300 000, 1 cm=3 km. Responsibility: réalisé et édité par l'Institut géographique national pour le compte du Service de géodésie et de cartographie de la République d'Haïti. ISBN: 2118505019; 9782118505011. LCCN: 2003-626132. OCLC Accession Number: 51494997; 43347475.

Institut géographique national (France); Haiti and Service de Géodésie et de Cartographie. 1990. "Carte Touristique, Haïti, 1:300 000-1 Cm." Paris: IGN. Ed. 1. Descriptors: Roads- Haiti- Maps; Haiti- Maps, Tourist. Notes: Description: 1 remote-sensing image: col. on sheet 96 x 110 cm., folded to 24 x 11 cm. Map Info: Scale 1:300,000; universal transverse Mercator proj. Note(s): "Fond mosaïque de 16 scènes SPOT XS sur Haïti de 1990 réalisé par ERIM (US) et édité avec l'aimable autorisation du PNUD en Haïti - et de la société SPOT image." Relief shown by spot heights. Title from panel. Includes col. ill., location map, and ancillary maps of administrative divisions and Ile de la Navasse. On spine of panel: 85050 Haïti (1). Responsibility: réalisé et édité par l'Institut géographique national; pour le compte du Service de Géodésie et de Cartographie de la République d'Haïti. OCLC Accession Number: 231749180.

Institut Interaméricain des Sciences Agricoles de l'OEA. 1974. Contrôle De l'Érosion au Morne l'Hôpital, Pour la Protection de la Ville de Port au Prince. Port au Prince: Institut Interaméricain des Sciences Agricoles. Descriptors: Sols- Érosion- Haïti. Notes: 100 p. + annexes. 27 cm. Institut interaméricain des sciences agricoles de l'OEA. OCLC Accession Number: 495544862.

Inter-American Development Bank. 1980. Inter-American Bank Approves \$1,560,000 in Technical Cooperation to Finance Road Studies in Haiti. Washington, D.C.: Inter-American Development Bank. Descriptors: Roads- Haiti- Finance; Feasibility studies- Haiti; Transportation and state- Haiti; Technical assistance- Haiti. Notes: 2 p. 28 cm. Note(s): Caption title. "October 31, 1980." "News release... NR-68/80." OCLC Accession Number: 53229348.

Inter-American Development Bank and Pan American Health Organization. 1990s. Informe de la Conferencia: San Pedro De Sula, Honduras, 29 De Septiembre Al 1o De Octubre De 1996. Washington, D.C.: Banco Interamericano de Desarrollo; Organización Panamericana de la Salud. Page(s): 289. Descriptors: Water-supply-

Central America- Congresses; Water-supply- Haiti- Congresses; Water-supply- Mexico- Congresses; Water-supply- Dominican Republic- Congresses; Sanitation- Central America- Congresses; Sanitation- Haiti- Congresses; Sanitation- Mexico- Congresses; Sanitation- Dominican Republic- Congresses; Conference; International government publication (igp). Notes: illustrations 28 cm. Note(s): Conference co-sponsored by Inter-American Development Bank and Pan American Health Organization. OCLC Accession Number: 39454971.

International Crisis Group. 2010. Haiti: Stabilization and Reconstruction after the Quake. Port-au-Prince/Bogotá/Brussels, 31 March 2010. Abstract: This report, published by the International Crisis Group, provides recommendations for the stabilization and reconstruction of Haiti after its 2010 earthquake. "Haiti's earthquake produced enormous devastation that threatens political and socio-economic stability and poses huge recovery and reconstruction challenges. Historical institutional and governance weaknesses and deep poverty compound a major humanitarian crisis that could become very difficult to control if the security environment deteriorates further with the approaching rainy and hurricane seasons. The disaster prompted postponement of legislative elections and casts uncertainty over whether presidential elections can be held at year's end as planned. After mid-May, the legislature will have left office, and the country will be missing critical parts of its institutional anatomy. The government must thus reach out now to civil, political and economic society to forge a robust consensus on how democracy can be upheld until elections without sacrificing the incumbent's ability to take tough and urgent decisions on reconstruction. These need to be based on a Haitian-led long-term strategy supported by all sectors of society and the international community and pay due attention to restoring security and rule of law." Latin America/Caribbean Report No. 32. Database: HDSL. URL: <https://www.hsdl.org/?view&doc=121377&coll=documents>

International Development Association. 1978. Project Agreement (Provincial Towns Water Supply Project) between International Development Association and Service National d'Eau Potable. Washington, D.C: International Development Association. Descriptors: Loans, Foreign- Haiti; Water-supply- Haiti- Finance; International Development Association- Finance; Government publication (gpb); International government publication. Notes: 15 p. 28 cm. Note(s): Title from cover. "Credit number 757 HA." "Dated January 23, 1978." "Conformed copy." OCLC Accession Number: 70868720.

International Travel Maps and ITMB Publishing Ltd. 2007. "Dominican Republic; Haiti." Vancouver: International Travel Maps, a division of ITMB Publishing. 4th. International Travel Maps. Descriptors: Roads- Dominican Republic- Maps; Roads-Haiti- Maps; Dominican Republic- Maps; Haiti- Maps. Notes: Description: 1 map: both sides, col. on sheet 68 x 99 cm. Map Info: Scale 1:350,000. Note(s): Map of Dominican Republic and Haiti showing roads, cities and towns, railways, ferries, distances and tourist information. Relief shown by gradient tints and spot heights. Panel title. Other Titles: Haiti. Inset; Port-au-Prince; Santo Domingo. ISBN: 1553411919; 9781553411918. OCLC Accession Number: 225401106.

Isaac, Lionel; South-East Consortium for International Development and Auburn University; Haiti Productive Land Use Systems Project; Auburn University; United States and Agency for International Development. 1996. The Effects of Alley Cropping and Other Soil Conservation Practices on Maize (*Zea Mays*) Yields Over Two Years of

Cropping. Auburn, Ala.: Haiti Productive Land Use Systems Project, South-East Consortium for International Development and Auburn University. Descriptors: Corn-Yields- Haiti; Crop yields- Haiti; Hedgerow intercropping- Haiti; Intercropping- Haiti; Cropping systems- Haiti; Soil conservation projects- Haiti; Soil conservation- Research- Haiti; Soil productivity- Haiti; Soil productivity- Research- Haiti. Notes: illustrations 28 cm. Note(s): "September 1996." Includes bibliographical references (p. 34-37). Funding: Work performed under USAID (United States Agency for International Development). Contract No: Contract. no. 521-0217-C-0004-00. Other Titles: Productive land use systems, Haiti; Responsibility: by Lionel Isaac [et al.]. OCLC Accession Number: 41627723.

Isaac, Lionel; South-East Consortium for International Development and Auburn University; Haiti Productive Land Use Systems Project; Auburn University; United States and Agency for International Development. 1995. The Effects of Leucaena Hedgerow Management on Maize and Hedgerow Biomass Yields Over Two Years of Cropping. Auburn, Ala.: Haiti Productive Land Use Systems Project, South-East Consortium for International Development and Auburn University. Descriptors: Leucaena- Control- Environmental aspects- Haiti; Corn- Yields- Haiti; Crop yields- Haiti; Hedgerow intercropping- Haiti; Intercropping- Haiti; Cropping systems- Haiti; Soil conservation projects- Haiti; Energy crops- Yields- Haiti; Energy crops- Environmental aspects- Haiti; Integrated agricultural systems- Haiti. Notes: illustrations 28 cm. Note(s): "September 1995." Includes bibliographical references (p. 39-42). Funding: Work performed under USAID (United States Agency for International Development). Contract No: Contract. no. 521-0217-C-5031-00. Other Titles: SECID/Auburn PLUS report, USAID/Economic Growth Office; Productive land use systems, Haiti; Responsibility: by Lionel Isaac [et al.]. OCLC Accession Number: 41658288.

"ITT, Mercy Corps Provide Safe Water and Sanitation to Haiti." 2010. Filtration Industry Analyst. 3. Volume 2010, Issue 3, Pages 3-4. Abstract: ITT Corp has donated five portable water treatment systems to Haiti, providing enough potable water each day for up to 200 000 victims of the January earthquake. ISSN: 1365-6937.

"IWA Delivers WASH Coordinator for Emergency Response in Haiti." 2010. Water. Magazine of the International Water Association. 04. Pages 64-64. Descriptors: Sanitary engineering; Water-supply; Haiti Earthquake, Haiti, 2010. Notes: M3: Article. Abstract: The article reports that International Water Association (IWA) has delivered a suitable water and sanitation engineer for emergency response in Haiti following a devastating earthquake in January 2010. ISSN: 1561-9508.

Izett, G. A. 1991. "Tektites in Cretaceous-Tertiary Boundary Rocks on Haiti and their Bearing on the Alvarez Impact Extinction Hypothesis." *Journal of Geophysical Research*. American Geophysical Union, Washington, DC, 20009-1277. Volume 96, Pages 20, 879-20, 905. Descriptors: Cretaceous-Tertiary Boundary; Extinction; Impact Melts; Rare Earth Elements; Tektites; Geochemistry; Haiti; Platinum; Rocks; Spherules. Abstract: Observational and geochemical data for glass objects recently discovered, by Izett et al. (1990), in K-T boundary rocks on the island of Haiti are presented. The presence of tektites, which are of terrestrial impact origin, in the same bed with a Pt-metal abundance anomaly and shocked mineral grains enormously strengthens the impact component of the Alvarez K-T impact extinction hypothesis. Shocked quartz grains in samples of the Haitian K-T boundary marker bed are about the same size as those at the

K-T boundary sites in western North America. Petrographic observations indicate that the K-T marker bed on Haiti is not a primary air fall unit composed entirely of impact ejecta. It contains a small volcanogenic component of locally derived material admixed with the impact ejecta during deposition on the seafloor. The major and trace element composition of the Haitian tektites, in particular, the high Rb and REE content, suggests that the target material melted during the K-T impact was sedimentary with an average composition of andesite, not mafic or ultramafic oceanic crust. ISSN: 0148-0227.

Izett, G. A., Snee, L. W. and Dalrymple, G. B. 1991. "AR-40/AR-39 Age of Cretaceous-Tertiary Boundary Tektites from Haiti." *Science*. American Association for the Advancement of Science, Washington, DC, 20005. 14 June. Volume 252, Pages 1539-1542. Descriptors: Geochronology; Haiti; Sedimentary Rocks; Tektites; Coal; Isotopic Labeling; Marine Environments; Montana; Spectral Methods. Abstract: AR-40/AR-39 dating of tektites discovered recently in Cretaceous-Tertiary (K-T) boundary marine sedimentary rocks on Haiti indicates that the K-T boundary and impact event are coeval at 64.5 ± 0.1 million years ago. Sanidine from a bentonite that lies directly above the K-T boundary in continental, coal-bearing, sedimentary rocks of Montana was also dated and has an AR-40/AR-39 age of 64.6 ± 0.2 million years ago, which is statistically indistinguishable from the age of the tektites. (Author). Database: CSA Technology Research Database. ISSN: 0036-8075.

Izett, Glen Arthur. 1990. Tektites in Cretaceous-Tertiary boundary rocks on Haiti. Denver, Colo.: U.S. Geological Survey, 1990? U.S. Geological Survey open-file report, 90-635. Cover title. Distributed to depository libraries in microfiche. 31 pages: ill.; 28 cm. Descriptors: Tektite- Haiti; Geology, Stratigraphic- Cretaceous; Geology, Stratigraphic- Tertiary. OCLC: 28266412.

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Jacinthe, P.A. 1989. Relations eau, sol, plante. Translated title: "Relationships of water, soils and plants." Language: French. Imprint: Limbe, Haiti. Feb 1989. Limbe (Haiti). Feb 1989. 22 p. Fiche no: 332613. Doc. Orig. Div: FO. Project: Centre de Formation en Aménagement Integre des Mornes, Haiti, HAI/011/SWI. Report number(s): FAO-FO--GCP/HAI/011/SWI. FAO-AN: 332613.

James, Erica Caple. 2010. "Ruptures, Rights, and Repair: The Political Economy of Trauma in Haiti." Soc. Sci. Med. 1. Volume 70, Issue 1, Pages 106-113. Descriptors: Haiti; Human rights; Humanitarian intervention; Gender; Trauma; Security; Insecurity; Rape. Abstract: This article analyzes the unintended consequences of humanitarian and development interventions in Haiti implemented to facilitate its postconflict transition following the period of military rule between 1991 and 1994. International and national governmental and nongovernmental initiatives to provide redress and healing to victims of human rights abuses from this period inadvertently contributed to the growth of a political economy of trauma. I argue that state-sponsored and non-state interventions aimed at truth seeking, acknowledging past ruptures, and reparations have intersected with the politics of local communities in ways that contribute to the commoditization of suffering in the political economy of trauma. The experience of a woman whose bodily integrity and personal sovereignty were violated by members of Haiti's terror apparatus demonstrates the presence of a terror economy. My witnessing of her interactions with the international and national humanitarian and development aid organizations that assisted her in the aftermath of violation revealed the contours of the compassion economy. ISSN: 0277-9536.

Jansme, Pamela E and Glen S. Mattioli. 2005. "GPS results from Puerto Rico and the Virgin Islands: Constraints on tectonic setting and rates of active faulting." GSA Special Papers 2005, v. 385, p. 13-30. Abstract: Puerto Rico and the northern Virgin Islands define the eastern terminus of the Greater Antilles, which extend eastward from offshore eastern Central America to the Lesser Antilles volcanic arc and mark the boundary between the Caribbean and North America plates. In Hispaniola, Puerto Rico, and the northern Virgin Islands, the Puerto Rico trench and the Muertos trough define the northern and southern limits of the plate boundary zone, respectively. Three microplates lie within the boundary zone: (1) the Gonave in the west; (2) the Hispaniola in the center; and (3) the Puerto Rico–northern Virgin Islands in the east. Results from Global Positioning System (GPS) geodesy conducted in the region since 1994 confirm the presence of an independently translating Puerto Rico–northern Virgin Islands microplate whose motion is 2.6 ± 2.0 mm/yr toward $N82.5^\circ W \pm 34^\circ$ (95%) with respect to the Caribbean. Geodetic data are consistent with east-west extension of several mm/yr from eastern Hispaniola to the eastern Virgin Islands. Extension increases westward with the most, 5 ± 3 mm/yr, accommodated in the Mona rift, confirming earlier GPS geodetic results. East-west extension of 3 ± 2 mm/yr also is observed across the island of Puerto Rico, consistent with composite focal mechanisms and regional epicentral distributions. Although the loci of extension are not known, similarity of GPS-derived velocities among sites in eastern Puerto Rico suggests the active structures lie west of the San Juan metropolitan area. Reactivation of the Great Northern and Southern Puerto Rico fault zones as oblique normal faults with right-lateral slip is a possibility. East-west extension of 2 ± 1 mm/yr also must exist between eastern Puerto Rico and Virgin Gorda, which

likely is attached to the Caribbean plate. These extensional belts allow eastward transfer of slip between North America and the Caribbean from the southern part of the plate boundary zone in the west to the northern segment in the east. Motions along or across any of the individual subaerial structures of Puerto Rico are ≤ 2 mm/yr. The Lajas Valley in the southwest, where microseismicity is greatest, is the locus of highest permissible on-land deformation. Northwest-southeast to east-west extension of 2 ± 1 mm/yr is also observed across the Anegada Passage. doi: 10.1130/0-8137-2385-X.13.

Jean-Louis, Martin. 2001. *Demande En Eau Et Evaluation du Modele d'Analyse d'Utilisation De l'Eau: Avenues d'Amelioration*. Translated title: *Application and Evaluation of the Water Model for Analysis of Water Use: Avenues for Improvement*. Canada: Ecole Polytechnique, Montreal (Canada). Descriptors: Civil engineering. Abstract: This study mainly concerns the water demand and the Water Use Analysis Model (WUAM). In the first section, the principal components, the forecast methods and the management modes of the water demand were presented and analyzed. An illustration of the various components of the WUAM and two of its applications (the cases of the Yamaska and Saskatchewan-South rivers) are the focus of the second section. The third section of this paper relates to the water pricing of the Yamaska river basin. Having discussed the strengths and weaknesses of the WUAM in section four, two approaches are proposed for the design of a new water demand model. In the last section, dedicated to the examination of the WUAM potential to be applied to Haiti basins, it reveals that its application could be very useful in economic planning and in water resources management of watersheds but the model limits, the Haitian climatic context as well as the lack of socio-economic and climatic data could constitute a major handicap to the application of model. URL: <http://proquest.umi.com/pqdweb?did=766164741&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Jean-Pierre, Joël Desrosiers. 1984. *L'Aménagement De Bassins Versants Face Aux Contraintes Économiques Paysannes: Une Analyse Empirique de la Problématique de la Lutte Anti-Érosive en Haïti*. Translated title: *The Watershed Planning in response to the economic Peasant: An Empirical Analysis of the Problem of the erosion control in Haiti*. Descriptors: Bassins hydrographiques- Haïti; Sols- Conservation- Haïti; Paysannerie- Haïti; Travailleurs agricoles- Haïti- Conditions économiques; Thesis/dissertation; Manuscript. Notes: x, [4], 162 f. 29 cm. Dissertation: Thèse (M.Sc.) - Université Laval, 1984. Note(s): Bibliogr.: f. [121]-125. Other Titles: Thèse. Agriculture. Reproduction: Microfiche du ms dactylographié. Ottawa: Bibliothèque nationale du Canada, Service des thèses canadiennes, 1986. 2 fiches; 11 x 15 cm. (Thèses canadiennes). Responsibility: Joël Desrosiers Jean-Pierre. ISBN: 0315226188. OCLC Accession Number: 77447162.

Jehanno, C., Boclet, D., Froget, L., et al. 1992. "The Cretaceous-Tertiary Boundary at Beloc, Haiti - no Evidence for an Impact in the Caribbean Area." *Earth Planet. Sci. Lett. Mar.* Volume 109, Issue 1-2, Pages 229-241. Descriptors: Caribbean Region; Cretaceous-Tertiary Boundary; Meteorite Collisions; Sedimentary Rocks; Haiti; Obsidian Glass; Stratigraphy; Tektites. Database: CSA Technology Research Database. ISSN: 0012-821X.

Jerome, G. and Ivers, L. C. 2010. "Community Health Workers in Health Systems Strengthening: A Qualitative Evaluation from Rural Haiti." *AIDS*. Volume 24, Issue

SUPPL. 1, Abstract: background: Haiti is among the countries facing serious shortages in human resources for healthcare. In rural Haiti, the need for daily, long-term adherence to medication for HIV and TB was initially the driving factor for recruitment of community health workers (CHW) during scale-up of HIV services. Their role became broader over time. This qualitative study evaluated the role of CHW in the health system as a whole in both HIV and non-HIV-related services in rural Haiti and investigated the challenges and facilitating factors for their work. Methods: We used qualitative methods including focus group discussions and group interviews in four sites in rural Haiti. Data from 462 CHW were analysed for themes and content according to standard ethnographic methods. Results: CHW contributed to a wide range of primary health services and non-HIV-related activities. Recognition from the community, status, satisfaction of contributing to the well-being of others and remuneration were facilitating factors to performing their work. Challenges included insufficient materials to cope with the obstacles on the ground, lack of diagnostic and treatment roles in their activities, high work load, and desire for ongoing training and a higher salary. Conclusion: CHW initially hired for HIV care represent an important part of the health system in rural Haiti in both HIV-related and primary healthcare services. CHW programmes have important potential for building capacity in the health workforce and thereby contributing to strengthening of the health system as a whole. Attention must be paid to adequate remuneration, training and provision of materials. Database: SCOPUS. ISSN: 0269-9370.

Joachim, G. and Loaurissaint, Y. 2005. "TROP8 Application De l'échographie dans le Domaine de la Filariose Lymphatique Scrotale a l'hôpital Ste Croix De Leogane (Haiti)." Translated title : TROP8 Application of ultrasound for Scrotal Lymphatic Filariasis at the hospital Ste Croix de Leogane. *Journal De Radiologie*. 10. Volume 86, Issue 10, Pages 1587-1587. Descriptors: Lymphatiques, parasitose; Tropical. Abstract: Objectifs L'hôpital Ste Croix de Léogane, centre national de référence pour le programme d'élimination de la filariose d'ici à 2020, dénombre plus d'un million de personnes infectées par le parasite filarien *Wuchereria bancrofti*. Pour au moins un quart de la population vivant dans les régions hyperendémiques, les manifestations de cette maladie, comme le lymphœdème, l'éléphantiasis et l'hydrocèle scrotale, entraînent souvent un grave stigmate social parce qu'invalidantes. Matériels et méthodes L'échographie utilisée comme méthode de diagnostic pour l'identification directe in vivo des filaires adultes dans le scrotum qui montrent "un signe de danse filariale », complète le diagnostic sérologique et clinique. Résultats L'importance de l'ultrason permet également de distinguer une variété de manifestation de pathologie scrotale, d'aider les chirurgiens dans la planification pré-opératoire pour la réparation de l'hydrocèle, de localiser les parasites adultes chez les enfants et surtout de mieux comprendre la pathogénèse. La résistance des vers adultes à la masse de médicaments antifilariens administrée à la population infectée exige une surveillance facilitée par les ultrasons pour son élimination définitive et rompre la chaîne de transmission. Conclusion Les ultrasons sont également appréciés pour mesurer la valeur thérapeutique des candidats macrofilaricides par l'observation directe des nids de vers à la suite du traitement médicamenteux. ISSN/ISBN: 0221-0363.

Joinet, Louis and UN. Commission on Human Rights. Independent Expert on the Situation of Human Rights in Haiti. 2006. *Situation of Human Rights in Haiti: Report*. Geneva: UN. Descriptors: Human Rights; Fact-Finding Missions; Administration Of

Justice; Technical Cooperation; Haiti; Human Rights Violations; Internal Security; Right To Security Of Person; Rights of the Child; Women's Rights; Gender-Based Violence; Involuntary Repatriation; Dominican Republic; Deportation; Police; Detained Persons; Arbitrary Detention; Economic, Social And Cultural Rights; Land Administration; Water Supply; UN. Commission on Human Rights. Independent Expert on the Situation of Human Rights in Haiti- Recommendations. Notes: 22 p. Provides an account of the Independent Expert's 6th, 7th and 8th visits to Haiti in 2005. UN Job no.: G0610454 E. Material type: Reports/studies. Issued under agenda item 19, agenda document E/CN.4/2006/1. General Info: Distribution: General. Responsibility: prepared by the Independent Expert, Louis Joinet. OCLC Accession Number: 153317135. URL: <http://daccess-ods.un.org/access.nsf/Get?Open&DS=E/CN.4/2006/115&Lang=A>

Jolibois, Sylvan Clement; University of California, Berkeley and Institute of Transportation Studies. 1993. State Versus Nongovernmental Organization Management of Transportation Resources: A Comparison of Rural Development Projects in Haiti. Berkeley: Institute of Transportation Studies, University of California. Page(s): 143. Descriptors: Transportation- Haiti- Planning; Transportation- Developing countries- Planning; Non-governmental organizations- Haiti; Non-governmental organizations- Developing countries; Rural development- Haiti; Thesis/dissertation. xii; ill.; 28 cm. Dissertation: Thesis (Ph. D.)--University of California, Berkeley, 1993. Note(s): "May 1993." Includes bibliographical references. Series 0192-4109. OCLC Accession Number: 28444408.

Jones, D. 2002. "Community-Managed Standpipes in Port-Au-Prince, Haiti." *Waterlines*. Volume 21, Issue 2, Pages 12-14. Descriptors: partnership approach; pipe; service provision; water supply; Haiti. Abstract: Through a partnership between the French NGO GRET, the public water utility and local community-based organizations, water services have been brought to over 500 000 people in 35 previously unserved shanty towns in Port-au-Prince. Database: SCOPUS. ISSN: 0262-8104.

Jones, Geoffrey P. 2007. "DC-3s and Decay at Cap-Haïtien." *Airways: a Global Review of Commercial Flight*, v. 14, no. 7 (Sept. 2007), p. 8-10: ill., map. Subject headings: Airports- Haiti- Cap Haitien. Database: TRIS.

Joseph, G., Chokmani, K., Ouarda, T. B. M. J. and Saint-Hilaire, A. 2007. "An Evaluation of the Robustness of Canonical Kriging for Regional Analysis of Streamflows." *Revue des Sciences De l'Eau*. Volume 20, Issue 4, Pages 367-380. Descriptors: Canonical kriging; Hydrology; Linear regression; Mean annual streamflow; Regional estimation; Catchments; Estimation; Watersheds; Stream flow; canonical analysis; error analysis; estimation method; hydrological modeling; kriging; regression analysis; streamflow; watershed. Notes: Cited By (since 1996): 1. Abstract: The objective of this study was to test the general application and the robustness of canonical kriging, a new approach regional hydrological estimation. The evaluation of the robustness was carried out for the estimation of mean annual streamflow over the continental territory of Haiti, under a tropical climate and under non-optimal conditions of data quality and availability. The performances of canonical kriging were studied using cross validation. The results were compared to those of the linear regression between the mean annual streamflow and the watershed area applied for the same conditions. In general, canonical kriging yields slightly higher performances. It produces less biased estimates (mean relative bias of - 13% against - 20% for regression) with slightly less significant relative

errors (54.4% against 59.6% for regression). However, the linear regression produced better estimates for the largest basins although the global performances of canonical krigage remained acceptable. In addition, considering the very unfavourable conditions in which the method was applied, it was not possible to connect the decrease in the performances of canonical krigage to a lack in the general application of the approach and/or its robustness. Database: SCOPUS. ISSN: 0992-7158.

Joseph, Myrtho and Wang, Fahui. 2010. "Population Density Patterns in Port-Au-Prince, Haiti: A Model of Latin American City?" *Cities*. Volume 27, Issue 3, Pages 127-136. Descriptors: Port-au-Prince; Population density functions; Monocentric model; Polycentric model; Latin American city model. Abstract: This paper examines the population density patterns in Port-au-Prince, Haiti, by both the monocentric and polycentric models, based on the 2003 census data at the SDE (Section d'énumération) and district levels. The regression results show a poor fitting power of monocentric functions, and improved but less than satisfactory R² by the polycentric functions. Port-au-Prince bears some resemblance to the Griffin–Ford (1980) model for Latin American cities with its own identity. The city has five zones: (1) a commercial quarter around the city center, (2) a transitional zone with mixed land uses, (3) a high-income residential zone with the best amenities in the southeastern area, (4) a disamenity (squatters) zone with the highest population density in the north area, and (5) another disamenity (squatters) zone with the second highest population density in the south and southwest areas. A regression model validates the five-zone model for Port-au-Prince. This structure is mainly shaped by the absence or lack of institutional enforcement of land use regulations and urban planning. ISSN: 0264-2751.

Juhl, Jorgen; Sasso, R. Harvey; Blankenship, Timothy; Joyner, Brian and Bjorn Johansen. 2001. "Mooring Buoys for the Largest Cruise Ship in the World." *Ports '01: America's Ports- Gateways to the Global Economy*. ASCE. Proceedings of Ports Conference 2001. Abstract: A mooring system consisting of two catenary type opposing mooring buoys has been designed and installed in Labadee Bay, Haiti. The mooring system was designed to accommodate Royal Caribbean International's first Voyager Class cruise ship, *Voyager of the Seas*, which is the largest cruise ship in the world. The paper describes the field investigations, the analyses and numerical modeling performed for establishing the design loads, the engineering design, and finally the installation of the two mooring systems by a specialized anchor-handling vessel. The focus is on the specific challenges encountered in mooring a ship of this size in a very confined area, with soft soil conditions and sudden locally generated winds. Permalink: [http://dx.doi.org/10.1061/40555\(2001\)46](http://dx.doi.org/10.1061/40555(2001)46)

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Kachrillo, Jean-Jacques; Samama, Jean-Claude; Dir; Institut National Polytechnique de Lorraine and Université de Soutenance. 1976. Etude Géologique des Indices De Type Porphyre Cuprifère des Montagnes De Port Margot (Massif du Nord-Haïti). Translated title: Geological Survey of Indices porphyry copper Margot From Port Of Mountains (Massif du Nord-Haiti). Descriptors: Géologie- Haïti (île)- Thèses et écrits académiques; Métallogénie- Haïti (île)- Thèses et écrits académiques; Porphyre (pétrologie)- Haïti (île)- Thèses et écrits académiques; Thesis/dissertation. Notes: 141 - [6] p.-XIV pl.; 30 cm. Dissertation: Thèse de 3e cycle: Géologie: Vandoeuvre-les-Nancy, INPL: 1976. Note(s): Bibliogr. pages 138-141. Responsibility: Jean-Jacques Kachrillo; [sous la dir. de J.-C. Samama]. OCLC Accession Number: 492162210.

Kaimowitz, David. 2004. "The Great Flood Myth." *New Sci.* Reed Business Information Limited (New Scientist); Reed Business Information Limited (New Scientist): 06/19. Volume 182, Issue 2452, Pages 18-18. Descriptors: Deforestation; Floods; Soil erosion; Homelessness; Dominican Republic; Haiti. Abstract: Cutting down trees contributes to local flooding and soil erosion. But the claim that deforestation leads to big floods is bad science, and it is ruining the lives of poor farmers. When massive flooding in Haiti and the Dominican Republic killed 3000 people and left tens of thousands homeless, everyone seemed sure who was to blame. Haiti's deforestation allows flood water to run unchecked. Haiti's prime minister pointed the finger at poor farmers for cutting down trees for fuel and to make charcoal. ISSN: 0262-4079.

"K-T Wallop: Through the Looking Glass." 1991. *Science News*. February 23. Volume 139, Pages 125. Descriptors: Glass; Catastrophes (Geology); Geology/Haiti; General Science; Readers' Guide (Current Events). Abstract: In the February 7, 1991, issue of *Nature*, Haraldur Sigurdsson of the University of Rhode Island in Narragansett and colleagues provide evidence to support the theory that a catastrophic impact, rather than intense volcanic eruptions, played a role in mass extinctions 66 million years ago at the end of the Cretaceous period. The geologists found rounded pieces of glass in a Haitian rock layer dating to the time of the Cretaceous-Tertiary (K-T) boundary, which was when dinosaurs and many other life forms were killed off. The structures of the glass spherules are almost entirely free of crystals. Sigurdsson notes that glass drops created when meteorites strike Earth usually do not develop crystals, but drops formed during volcanic eruptions always contain some crystals. The Haitian findings, which contain clues to where the meteorite or comet crashed, also support theories on the K-T impact site. ISSN/ISBN: 0036-8423.

Kalantri, M. 2010. "Lessons Learned from Haiti [1]." *Archit. Rec.* Volume 198, Issue 4, Pages 16. Database: SCOPUS. ISSN: 0003-858X.

Kambesis, Patricia. 2008. "Reconnaissance of Southwest Coast of Haiti; Selected Abstracts from the 2008 National Speleological Society Convention, Lake City, Florida." *J. Cave Karst Stud.* National Speleological Society, Huntsville, AL, United States. Dec. Volume 70, issue 3, Pages 183. Descriptors: Antilles; Caribbean region; caves; coastal environment; ecosystems; exploration; geomorphology; Greater Antilles; Grotte Marie-Jeanne Cave; Haiti; Hispaniola; Karst; Massif de la Hotte; Solution features; Southwestern Haiti; West Indies. Notes: GeoRef in Process. After editing and indexing, the record will be added to GeoRef. ISSN: 1090-6924.

Kamo, Sandra L. and Krogh, Thomas E. 1995. "Chicxulub Crater Source for Shocked Zircon Crystals from the Cretaceous-Tertiary Boundary Layer, Saskatchewan: Evidence from New U-Pb Data." *Geology*. March. Volume 23, Pages 281-284. Descriptors: Zircon; Radioactive dating; Meteorite craters; Cretaceous-Tertiary boundary; General Science; Applied Science & Technology. Notes: Bibliography; Illustration; Map. Abstract: The authors extend the geographic coverage of previous U-Pb zircon studies on the Chicxulub crater in Mexico to a new sample site of the Cretaceous-Tertiary (K-T) boundary fireball layer in Saskatchewan. New U-Pb data for 5 of 6 individual shocked zircon grains from this site yielded a source age of 548.6 Ma. Collinear data points were found to be variably discordant in proportion to the intensity of shock metamorphism exhibited by each zircon. A strong temporal and genetic link with K-T distal ejecta from the fireball layer at the Berwind canyon site in the Raton Basin, Colorado, was indicated by the age and zircon shock features. At that site, texturally similar zircons from a previous study provided an indistinguishable source age of 544.5 Ma. These ages agree with independent ages obtained from a previous study for single-shocked zircons from the Chicxulub crater and from Beloc, Haiti. The data unequivocally support a meteorite impact origin for the global K-T boundary layer and indicate that the Chicxulub crater is the sole North American target source. ISSN: 0091-7613.

Karto + Grafik Verlagsgesellschaft. 1985. "Hispaniola (Haiti, Dominikanische Republik)." Frankfurt/Main: Karto + Grafik Verlagsgesellschaft mbH. Hildebrand's Urlaubskarte; 1-34-1. Descriptors: Hispaniola- Road maps; Dominican Republic- Road maps; Haiti- Road Maps; Microfilm. Notes: Description: 1 map: col.; 38 x 84 cm. + 1 cover. --; Map Info: Scale 1:816,000. Note(s): Cover title. Relief shown by shading and spot heights. 6 classes of roads with distances; cultural detail; insets: [Gross-Antillen]-Port-au-Prince- Cap Haitien- Santo Domingo; text. OCLC Accession Number: 225439719.

Karto und Grafik Verlagsgesellschaft (Frankfurt am Main, Federal Republic of Germany). 1985. "Hispaniola." Frankfurt am Main, Federal Republic of Germany: Karto & Grafik. Hildebrand's travel map; no. 34; Variation: Hildebrand's travel map; no. 34. Descriptors: Maps; Road Maps; Dominican Republic; Haiti. Notes: Description: 1 map: col.; 39 x 84 cm. Map Info: Scale 1:816,000.; Note(s): Some geographical place names in German, English and French. - Inset: Location map. - Includes tourist information in English and street maps of Port-au-Prince, Cap-Haïtien and Santo Domingo. - Series title from folder cover. OCLC Accession Number: 80192182.

Kean, S. 2010. "From the Bottom Up." *Science*. Volume 327, Issue 5966, Pages 638-639. Abstract: Rebuilding the cities of Haiti to withstand natural disasters seems both simple and impossible. Engineers in the United States, Europe, and Japan have known for decades how to buttress buildings against earthquakes. The 1989 quake near San Francisco, California, for example- although it had the same magnitude as the Haiti tremor (7.0)- killed only 63 people. But Haiti simply doesn't have the money to adopt first-class solutions. Although various governments pledged to support Haiti over the next decade at a meeting in Montreal, Canada, in late January (Haiti is seeking \$3 billion), Haiti has very little time to develop a rebuilding plan. With perhaps 170,000 dead and most survivors living outdoors and scared to enter standing structures, Port-au-Prince cannot wait. Nevertheless, scientists do see quick and cheap ways to rebuild—if

Haiti is willing and able to accept foreign ideas. Database: SCOPUS. ISSN: 0036-8075. DOI: 10.1126/science.327.5966.638.

Keller, G., Macleod, N., Lyons, J. B. and Officer, C. B. 1993. "Is there Evidence for Cretaceous-Tertiary Boundary-Age Deep-Water Deposits in the Caribbean and Gulf of Mexico." *Geology*. Volume 21, Issue 9, Pages 776-780. Descriptors: Cretaceous/Tertiary boundary; deep water deposit; gravity-flow deposits; hiatus; reworking; stratigraphy; turbidite; turbidites; Caribbean Sea; Gulf of Mexico. Notes: Cited By (since 1996): 26. Abstract: Over most of the Gulf of Mexico and Caribbean a hiatus is present between the lower upper Maastrichtian and lowermost Tertiary deposits. Current-bedded volcanoclastic sedimentary rocks at DSDP Sites 536 and 540, which were previously interpreted as impact-generated megawave deposits of K-T boundary age, are biostratigraphically of pre-K-T boundary age and probably represent turbidite or gravity-flow deposits. Absence of continuous sediment accumulation across the K-T boundary in the 16 Gulf of Mexico and Caribbean sections examined prevents their providing evidence of impact-generated megawave deposits in this region. The most complete trans-K-T stratigraphic records may be found in onshore marine sections of Mexico, Cuba, and Haiti. The stratigraphic records of these areas should be investigated further for evidence of impact deposits. Database: SCOPUS. ISSN: 0091-7613.

Keller, Gerta. 2008. "Impact Stratigraphy; Old Principle, New Reality; the Sedimentary Record of Meteorite Impacts." *Special Paper – Geological Society of America*. Volume 437, Pages 147-178. Descriptors: Antilles; Atlantic Ocean; Bass River; Belize; Belic Haiti; biostratigraphy; Blake Nose; Blake Plateau; Brazos River; Caribbean region; Cenozoic; Central America; Chicxulub Crater; cores; correlation; Cretaceous; Cuba; Danian; Drosion; Foraminifera; Greater Antilles; Guatemala; Haiti; Hispaniola; impact stratigraphy; impacts; Invertebrata; iridium; K-T Boundary; Lower Paleocene; mass extinctions; Mesozoic; Metals; Mexico; Microfossils; New jersey; North Atlantic; Paleocene; Paleogene; platinum group; Protista; reworking; spherules; stratigraphic boundary; Tertiary; Texas; United States; Upper Cretaceous; West Indies. Abstract: Impact stratigraphy is an extremely useful correlation tool that makes use of unique events in Earth's history and places them within spatial and temporal contexts. The K-T boundary is a particularly apt example to test the limits of this method to resolve ongoing controversies over the age of the Chicxulub impact and whether this impact is indeed responsible for the K-T boundary mass extinction. Two impact markers, the Ir anomaly and the Chicxulub impact spherule deposits, are dealt because of their widespread presence. Evaluation of the stratigraphic occurrences reveals the potential and the complexities inherent in using these impact signals. For example, in the most expanded sedimentary sequences; (1) The K-T Ir anomaly never contains Chicxulub impact spherules, whereas the Chicxulub impact spherule layer never contains an Ir anomaly. (2) The separation of up to 9 m between the Ir anomaly and spherule layer cannot be explained by differential settling, tsunamis, or slumps. (3) The presence of multiple spherule layers with the same glass geochemistry as melt rock in the impact breccia of the Chicxulub crater indicates erosion and redeposition of the original spherule ejecta layer. (4) The stratigraphically oldest spherule layer is in undisturbed upper Maastrichtian sediments (zone CF1) in NE Mexico and Texas. (5) From central Mexico to Guatemala, Belize, Haiti, and Cuba, a major K-T hiatus is present and spherule deposits are reworked and redeposited in clearly Danian (zone P1a) sediments. (6) A second Ir anomaly of

cosmic origin is present in the early Danian. This shows that although impact markers represent and instant in time, they are subject to the same geological forces as any other marker horizons—erosion, reworking, and redeposition—and must be used with caution and applied on a regional scale to avoid artifacts of redeposition. For the K-T transition, impact stratigraphy unequivocally indicates that the Chicxulub impact predates the K-T boundary, that the Ir anomaly at the K-T boundary is not related to the Chicxulub impact, and that environmental upheaval continued during the early danian with possibly another smaller impact and volcanism. Database: GeoRef. ISBN: 9780813424379.

Keller, G., Adatte, T., Berner, Z., et al. 2007. "Chicxulub Impact Predates K-T Boundary: New Evidence from Brazos, Texas." *Earth Planet. Sci. Lett.* 30 Mar. Volume 255, Issue 3-4, Pages 339-356. Descriptors: Article Subject Terms: Storms; Marine sediment cores; Foraminifera; Stratigraphy; Erosion; Ocean floors; Meteorite impact effects; Geochemistry; Tsunamis; Carbon isotopes; Cosmic spherules; Cretaceous; Fossil Foraminifera; Zoobenthos; Ocean floor; Mass extinctions; Burrowing organisms; Article Taxonomic Terms: Foraminifera; Ophiomorpha; Thalassinoides; Article Geographic Terms: Mexico; Texas, Brazos R.; Caribbean Sea, Greater Antilles, Haiti; Mexico Gulf, Chicxulub Crater. Object Subject Terms: Basal conglomerate; Bedded mudstones; Brazos spherule samples; Burrowed sandstone units; CMA-B new core; CMA-B outcrops; Calcareous claystone; Cheto smectite clay; Chicxulub ejecta fallout; Chicxulub impact glass spherules; Chicxulub impact spherules; Event deposit; Granulometric data; Lithology of event deposit; Low oxygen environment; Maastrichtian marine sedimentation; Maastrichtian sea level fall; Normal marine deposition; Outcrop sequences; Outcrops CMA-B across event deposit; River bed section; Sand deposition; Sandstone of event deposit; Smectite altered spherules; Smectite spherules; Storm deposition; Tochetto smectite; Yellow clay. Abstract: Multidisciplinary studies, including stratigraphy, sedimentology, mineralogy and geochemistry, of the new core Mullinax-1 and outcrops along the Brazos River and Cottonmouth Creek, Falls County, Texas, reveal the complex history of the Chicxulub impact, the event deposit and the K-T boundary event. The K-T boundary, as identified by the negative $\delta^{13}C$ shift, first occurrence of Danian planktic foraminifera and palynomorphs occurs 80 cm above the event deposit in core Mullinax-1. The underlying 80 cm interval was deposited in a shallow low oxygen environment during the latest Maastrichtian, as indicated by high stress microfossil assemblages, small shells and burrows infilled with framboidal pyrite. The underlying event deposit, commonly interpreted as K-T impact tsunami, consists of a basal conglomerate with clasts containing Chicxulub impact spherules, repeated upward fining units of spherule-rich sands, followed by hummocky cross-bedded and laminated sands, which are burrowed by Thalassinoides, Planolites and Ophiomorpha and truncated by erosion. This suggests a series of temporally separated storm events with re-colonization of the ocean floor by invertebrates between storms, rather than a series of waning tsunami-generated waves. The lithified clasts with impact spherules at the base of the event deposit provide strong evidence that the Chicxulub impact ejecta layer predates the event deposit, but was eroded and re-deposited during the latest Maastrichtian sea level lowstand. The original Chicxulub ejecta layer was discovered in a 3 cm thick yellow clay layer interbedded in undisturbed late Maastrichtian clay- and mudstones 40 cm below the base of the event deposit and near the base of planktic foraminiferal zone CF1, which spans the last 300 kyr of the Maastrichtian. The yellow clay consists of cheto

smectite derived from alteration of impact glass, as indicated by rare altered glass spherules with similar chemical compositions as reworked spherules from the event deposit and Chicxulub impact spherules from NE Mexico and Haiti. The Brazos sections thus provide strong evidence that the Chicxulub impact predates the K-T boundary by about 300 kyr, consistent with earlier observations in NE Mexico and the Chicxulub crater core Yaxcopoil-1. Database: Illustrata: Technology. ISSN: 0012-821X.

Keller, G., Stinnesbeck, W., Adate, T. and Stüben, D. 2003. "Multiple Impacts Across the Cretaceous-Tertiary Boundary." *Earth-Science Reviews*. Volume 62, Issue 3-4, Pages 327-363. Descriptors: Ir; Maastrichtian-Danian; Microkrystites; Microtektites; Multiple impacts; PGE anomalies; Cretaceous-Tertiary boundary; Deccan Traps; ejecta; impact; mass extinction; primary production; tektite. Notes: Cited By (since 1996): 32. Abstract: The stratigraphy and age of altered impact glass (microtektites, microkrystites) ejecta layers from the Chicxulub crater are documented in Late Maastrichtian and Early Danian sediments in Mexico, Guatemala, Belize and Haiti. In northeastern Mexico, two to four ejecta layers are present in zone CF1, which spans the last 300 ky of the Maastrichtian. The oldest ejecta layer is dated at 65.27 ± 0.03 Ma based on sediment accumulation rates and extrapolated magnetostratigraphy. All younger ejecta layers from the Maastrichtian and Early Danian *Parvularugoglobigerina eugubina* zone Pla(1) may represent repeated episodes of reworking of the oldest layer at times of sea level changes and tectonic activity. The K/T boundary impact event (65.0 Ma) is not well represented in this area due to widespread erosion. An Early Danian Pla(1) Ir anomaly is present in five localities (Bochil, Actela, Coxquihui, Trinitaria and Haiti) and is tentatively identified as a third impact event at about 64.9 Ma. A multiimpact scenario is most consistent with the impact ejecta evidence. The first impact is associated with major Deccan volcanism and likely contributed to the rapid global warming of 3-4 °C in intermediate waters between 65.4 and 65.2 Ma, decrease in primary productivity and onset of terminal decline in planktic foraminiferal populations. The K/T boundary impact marks a major drop in primary productivity and the extinction of all tropical and subtropical species. The Early Danian impact may have contributed to the delayed recovery in productivity and evolutionary diversity. Database: SCOPUS. ISSN: 0012-8252.

Kerr, Richard A. 2010. "Foreshadowing Haiti's Catastrophe." *Science*. January 22. Volume 327, Issue 5964, Pages 398. Abstract: Before last week, it had been 240 years since the last major earthquake on the fault that ruptured in Haiti. Stress had been building, but no big quakes had relieved it. When a section of the plate boundary finally did rupture, it did so with devastating fury. When the east-west, San Andreas-like fault ruptured, tens of thousands likely perished in what may be the Western Hemisphere's worst disaster in a century. But the devastation was more the result of lack of infrastructure than the strength of the quake itself, which barely qualified as major. ISSN: 0036-8075.

Kerr, Richard A. 1992. "Huge Impact Tied to Mass Extinction." *Science*. August 14. Volume 257, Pages 878-880. Descriptors: Meteorite craters; Radioactive dating; Mass extinction of species; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Illustration. Abstract: New radioisotope data strongly support the theory that an asteroid impact caused the extinction of the dinosaurs and many other groups of organisms at the end of the Cretaceous period. Carl Swisher of the Institute of Human Origins in Berkeley and coworkers used the argon-argon method to

obtain an age of 64.98 million years, 0.06 million years, for rock samples from the Chicxulub crater on Mexico's Yucatan peninsula. Using the same method, Glen Izett of the U.S. Geological Survey has determined that the age of impact debris from Haiti is 65.06 million years, 0.18 million years. The 2 ages are close enough to convince some former skeptics that the Chicxulub structure is the impact crater that scientists have been seeking. The next step will be to demonstrate that the impact's environmental effects were lethal to many forms of life throughout the world. ISSN: 0036-8075.

Kerr, Richard A. 1990. "Dinosaurs' Death Blow in the Caribbean Sea?" *Science*. May 18. Volume 248, Pages 815. Descriptors: Catastrophes (Geology); Paleontology; Haiti; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Map. Abstract: Two cosmochemists have found evidence that the Caribbean region is the site of the comet or asteroid impact that is believed to have caused the mass extinction of species at the end of the Cretaceous period. A thin, worldwide layer of iridium-rich material has convinced most scientists that such an impact took place. Now Alan Hildebrand and William Boynton of the University of Arizona have found a second, thicker layer of debris in the upper Cretaceous deposits of Haiti. The debris contains shocked quartz grains and altered tektites, both indicative of a large impact. They have also found that uppermost Cretaceous marine deposits between North and South America contain evidence of a gigantic tsunami, which could have been triggered by an impact. Furthermore, seismic surveys of the Colombia Basin indicate the presence of a 300-km depression that Hildebrand and Boynton believe may be the impact crater. Some other researchers think the impact site may lie near Cuba. ISSN: 0036-8075

Kesler, Stephen Edward. 1966. *The Geology and Ore Deposits of the Meme-Casseus District, Haiti; Mines and mineral resources- Haiti- Meme-Casseus District; Biography*. United States- California: Stanford University. Descriptors: Geology. OCLC Accession Number: 6704380. URL: <http://proquest.umi.com/pqdweb?did=756051771&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Ketchie, Karen and Breuilly, Elizabeth. 2010. "Our Experience in Earthquake-Ravaged Haiti: Two Nurses Deployed with a DMAT Team." *Journal of Emergency Nursing*. Volume In Press, Corrected Proof, ISSN: 0099-1767.

Kettrup, B., Deutsch, A., Ostermann, M. and Agrinier, P. 2000. "Chicxulub Impactites: Geochemical Clues to the Precursor Rocks." *Meteoritics and Planetary Science*. Volume 35, Issue 6, Pages 1229-1238. Descriptors: Cretaceous-Tertiary boundary; geochemistry; impact structure; impactite; Mexico. Notes: Cited By (since 1996): 25. Abstract: The 65 Ma Chicxulub impact structure, Mexico, with a diameter of ~180 km is the focus of geoscientific research because of its link to the mass extinction event at the Cretaceous-Tertiary (K/T) boundary. Chicxulub, now buried beneath thick post-impact sediments, is probably one of the best-preserved terrestrial impact structures known. Because of its inaccessibility, only limited samples on the impact lithologies from a few drill cores are available. We report major element and Sr-, Nd-, O-, and C-isotopic data for Chicxulub impact-melt lithologies and basement clasts in impact breccias of drill cores C-1 and Y-6, and for melt particles in the Chicxulub ejecta horizon at the K/T boundary in Beloc, Haiti. The melt lithologies with SiO₂ ranging from 58 to ~63 wt% show significant variations in the content of Al, Ca, and the alkalis. In the melt matrix samples, $\delta^{13}\text{C}$ of the calcite is about -3‰. The $\delta^{18}\text{O}$ values for the siliceous melt

matrices of Y-6 samples range from 9.9 to 12.4‰. Melt lithologies and the black Haitian glass have rather uniform $^{87}\text{Sr}/^{86}\text{Sr}$ ratios (0.7079 to 0.7094); only one lithic fragment displays $^{87}\text{Sr}/^{86}\text{Sr}$ of 0.7141. The Sr model ages T_{Sr}UR or most lithologies range from 830 to 1833 Ma; unrealistic negative model ages point to an open Rb-Sr system with loss of Rb in a hydrothermal process. The $^{143}\text{Nd}/^{144}\text{Nd}$ ratios for all samples, except one basement clast with $^{143}\text{Nd}/^{144}\text{Nd}$ of 0.5121, cluster at 0.5123 to 0.5124. In an $\epsilon\text{Nd}-\epsilon\text{Sr}$ diagram, impactites plot in a field delimited by ϵNd of -2 to -6, and ϵSr of 55 to 69. This field is not defined by the basement lithologies described to occur as lithic clasts in impact breccias and Cretaceous sediments. At least one additional intermediate to mafic precursor component is required to explain the data. Database: SCOPUS. ISSN: 1086-9379.

Kientz, B., Tyler, W. A. and Rivard, L. A. 1984. "Biophysical Mapping of the Republic of Haiti through the use of Enhanced Landsat Imagery." (Environmental Research Institute of Michigan, NOAA, NASA, Et Al., International Symposium on Remote Sensing of Environment, 17th, Ann Arbor, MI, may 9-13. 1983) IN: Papers selected for presentation at the Sixteenth International Symposium on Remote Sensing of Environment. Volume 1 (A84-40151 19-43). Ann Arbor, MI. Volume Environmental Research Institute of Michigan, Pages 393-405. Descriptors: Biomass; Geomorphology; Landsat Satellites; Satellite Imagery; Thematic Mapping; Classifications; Erosion; Haiti; Image Processing; Photo-interpretation. Notes: 24 ref. Database: CSA Technology Research Database.

Kinley, D. 1986. "Haiti Adopts Low-Cost Solutions to its Water Problems." *Waterlines*. Volume 4, Issue 3, Pages 21-23. Abstract: Describes two programmes which have had unusual success in meeting the drinking water needs of Haiti's rural poor, by using low cost appropriate technologies and achieving genuine community participation in programme planning and implementation.-from Author. Database: SCOPUS. ISSN: 0262-8104.

Kirkpatrick, S. M. and Cobb, A. K. 1990. "Health Beliefs Related to Diarrhea in Haitian Children: Building Transcultural Nursing Knowledge." *Journal of Transcultural Nursing: Official Journal of the Transcultural Nursing Society and the Transcultural Nursing Society*. Volume 1, Issue 2, Pages 2-12. Descriptors: treatment; adult; Agricultural Workers--women; article; attitude; Beliefs; breast feeding; Central America; Child Mortality--prevention and control; Child Survival; cultural anthropology; cultural factor; Demographic Factors; developing country; diarrhea; Diarrhea, Infantile--prevention and control; Diseases; Dominican Republic; Economic Factors; epidemiology; ethnic group; ethnology; Family And Household; Family Relationships; family size; female; fluid therapy; Haiti; health; health care delivery; health service; human; Human Resources; incidence; infant nutrition; Labor Force; Length Of Life; measurement; medicine; mortality; mother; North America; nursing; nutrition; oral rehydration therapy; parent; population; population dynamics; psychological aspect; Research Methodology; self care; South and Central America; Studies; Surveys; Survivorship; traditional medicine; Western Hemisphere; Americas; Caribbean; Culture; Delivery Of Health Care; Developing Countries; Family Characteristics; Folklore; Health Services; Latin America; Medicine, Traditional; Mothers; Oral Rehydration; Parents; Sampling Studies; Attitude to Health; Cultural Characteristics. Notes: Cited By (since 1996): 3. Abstract: Regardless of where they live or under what circumstances, mothers throughout the world seem to have

a compelling desire to provide the best possible health care for their children (Huston, 1979). Haitian mothers living in the Dominican Republic were no exception. The health beliefs and practices of these mothers related primarily to diarrhea among their children which demonstrated a concern and resourcefulness that is commendable. The results of this study clearly indicate the importance of transcultural nurses conducting culturally relevant research as a basis to develop sound health programs in developing countries. Diarrhea was identified as the single most important threat to a child's health in these communities. That mothers did not know about the correct ingredients and/or proportions for oral rehydration solutions (Western views) was of interest. Although the Dominican government makes some commercial packets of ORS, most of the women interviewed did not have ready access to this product. This finding reflected the need for transcultural nurses to offer to teach mothers how to make ORS using the sugar, salt, and water they had available. Since the mothers' perception that diarrhea was a dangerous threat to their children's health, was verified by childhood mortality statistics in the bateys, it would seem that ORS could make a significant impact on the health status of the children. Breastfeeding also was a major health belief factor associated with the treatment of diarrhea. Even though the majority of mothers believed breast feeding should be continued if a child had diarrhea, a number believed it should be discontinued. Nurses working with CHWs will need to emphasize the importance of breastfeeding and help them to develop creative ways of communicating this information to the mothers. The second most dangerous threat to the child identified by the mothers was respiratory ailments. This suggests a new area of concentration for future research and training of CHWs. A host of new questions related to respiratory problems such as health beliefs, causative factors, course of disease, traditional treatments, mortality rate, etc. need to be investigated. When transcultural nurses plan health care programs for women and children in other cultures, it is important to recognize the concerns mothers have for their children, and their intense desire to nurture and care for them. In this study, mothers willingly participated and demonstrated active interest in learning to use methods to improve the health and well being of their children. It is well documented (Lieban, 1977) that established health beliefs are not automatically discarded when new knowledge is made available, but that exploration and incorporation of new information when presented in a culturally relevant framework does occur. An understanding of local beliefs surrounding health is fundamental to the development of appropriate transcultural nursing interventions. Database: SCOPUS. ISSN/ISBN: 10436596.

Knowles, Robert B. Buckalew, James O. Markley, Bruce and Waite, Laura. 1999. "Water Resources Assessment of Haiti." United States: Descriptors: Antilles; aquifers; Caribbean region; developing countries; drinking water; Greater Antilles; ground water; Haiti; Hispaniola; hydrogeologic maps; hydrology; maps; pollution; rainfall; surface water; waste water; water management; water quality; water resources; water supply; watersheds; West Indies. Abstract: Haiti is one of the most densely populated countries in the world and one of the poorest in the Western Hemisphere. The population has already outstripped domestic food production, and it is estimated that the population will be 8 million by the year 2000. One-third of the population lives in the Departement de l'Ouest where Port-au-Prince is located. Heavy migration from rural areas to towns and cities occurring over the past decade has adversely affected the distribution of the water supply. Access to water and sanitation facilities is inadequate, contributing to poor living

conditions, disease, and a high mortality rate. In 1990 only 39 percent of the 5.9 million residents had adequate access to water and only 24 percent to sanitation. The lack of potable water for basic human needs is one of the most critical problems in the country. Given the rainfall and abundant water resources, there is adequate water to meet the water demands, but proper management to develop and maintain the water supply requirements is lacking. However, the water supply sector is undergoing complete transformation. Although currently there is no comprehensive water policy, progress is being made towards establishing a national water resources management policy. Numerous agencies and non-government organizations (NGO's) are working to provide water, many of which conduct their missions with little or no coordination with other agencies, which creates duplication of work and inefficient use of resources. The Reform Unit for Potable Water (URSEP) is a special agency created recently to help organize the efforts of the various agencies in the water sector. Pollution of the water resources is a significant problem. Contamination of surface water and shallow ground water aquifers are prevalent throughout the country. Domestic wastewater and agricultural runoff causes biological contamination of water near and downstream of populated places. Currently there is no public system for the collection and treatment of wastewater. Indications are that contamination is increasing rapidly, especially for surface water. The amount of water pollution is important because much of the population still uses surface water and ground water from shallow aquifers for their water supply. Deforestation, with its devastating environmental consequences, is a serious problem in Haiti. Lac de Peligre, the only major reservoir in the country, has lost 30 percent of its storage capacity due to sedimentation caused by deforestation. Deforestation accelerates soil erosion, decreases the amount of recharge to aquifers by increasing surface runoff, damages barrier reefs and ecosystems, increases turbidity which affects mangroves, decreases agricultural production, and causes problems and increased maintenance of water systems and impoundments. Hydrologic data is lacking also. As of April 1998, only 3 of the 35 gaging stations and 25 percent of the hydrometeorological gages were functional. The technical information obtained from such a network is critical for effective water resources management. If the recommendations for watershed management are adopted, if progress is made toward reducing the untreated waste entering the nation's waterways, and if a national water resources management policy is implemented, positive, immediate, and long-term benefits could be realized. Notes: Includes appendices; References: 71; illus. incl. 7 tables; colored hydrogeologic maps. Database: GeoRef. U. S. Army Corps of Engineers, Mobile, AL, United States. GeoRef Accession Number: 2005-008377.

Koeberl, C. and Sigurdsson, H. 1992. "Geochemistry of Impact Glasses from the K/T Boundary in Haiti: Relation to Smectites and a New Type of Glass." *Geochimica Et Cosmochimica Acta*. Volume 56, Issue 5, Pages 2113-2129. Descriptors: Cretaceous/Tertiary boundary; geochemistry; impact glass; smectite; Haiti, Beloc. Notes: Cited By (since 1996): 35. Abstract: We have individually analyzed twelve black and seven yellow glasses from the K/T boundary section at Beloc, Haiti, plus three smectite mantles around black glasses. The main chemical differences between black and yellow glasses are higher S, Ca, Mg, Zn, As, Br, Sb, and Au, but lower K, Na, and Si abundances in the yellow glasses. We have found high-CaO yellow glasses with low S contents (0.08, 0.17 wt%), which may be explained by fusion of carbonate-rich sediments. Microprobe studies of individual glasses show that the black glasses are very homogeneous in their

composition at the 10-100 μm level, while yellow glasses show much more variability and different intra-sample elemental correlations. One of the black glasses has higher SiO_2 and K_2O abundances, but lower concentrations of all other major elements. This suggests the existence of a third glass type, which we have named the high Si-K variety (HSi,K glass). The glass shows areas consisting of pure SiO_2 (maybe lechatelierite) and some schlieren with lower SiO_2 content. The chemical composition indicates that the HSi,K glass may have originated from melting of a sedimentary source rock, such as shale or argillite. Severe changes in major and trace element composition occur during alteration of the glass, as documented by analyses of adhering smectites. The REE patterns in the glass are similar to average upper crust, but the smectites exhibit much lower abundances and flat patterns, not unlike the patterns observed in claystones at numerous K/T boundary sites. The suggestion that the Chicxulub structure in Yucatan may be the source crater for the K/T impact glasses is not fully supported by the currently available data. Impact glasses and tektites are produced from the surface layers of their targets. At Chicxulub, the target stratigraphy comprised mainly carbonates and evaporites. Although we cannot exclude Chicxulub as a source, the present data do not provide any firm chemical evidence for a connection. We conclude, however, that the Haiti glasses have formed by impact and have later undergone alteration by low-temperature hydrothermal processes to produce clays. The boundary claystones at K/T boundary sites may very well be alteration products of these impact glasses. © 1992. Database: SCOPUS. ISSN: 0016-7037.

Koeberl, Christian. 1992. "Water Content of Glasses from the K/T Boundary, Haiti: An Indication of Impact Origin." *Geochimica et Cosmochimica Acta*. 12. Volume 56, Issue 12, Pages 4329-4332. Abstract: The water content in seven glass samples from the K/T boundary on Haiti was determined by micro-infrared spectrometry. These glasses are thought to result from impact melting associated with the K/T boundary impact, although this interpretation is not unanimous. The results of the water determinations, 0.013–0.021 wt% H_2O , show that the Haiti glasses are water-poor. This is a common characteristic of impact glasses and tektites, which usually have water contents below 0.05 wt%, and is not in agreement with interpretations that the Haitian glasses are of volcanic origin. ISSN/ISBN: 0016-7037.

Koelling, Martin, Webster, Jody Michael, Camoin, Gilbert, Iryu, Yasufumi, Bard, Edouard and Seard, Claire. "SEALEX — Internal Reef Chronology and Virtual Drill Logs from a Spreadsheet-Based Reef Growth Model." *Global and Planetary Change*. Volume In Press, Corrected Proof, Descriptors: model; reef; coral; sea level; Tahiti; Huon Peninsula; Haiti; Hawaii; spreadsheet; forward model; reef growth. Abstract: A reef growth model has been developed using an Excel spreadsheet. The 1D forward model is driven by a user definable sea-level curve. Other adjustable model parameters include maximum coral growth rate, coral growth rate depth dependence and light attenuation, subaerial erosion and subsidence. A time lag for the establishment of significant reef accretion may also be set. During the model run, both, the external shape and the internal chronologic structure of the growing reef as well as the paleo-water-depths are continuously displayed and recorded. ISSN: 0921-8181.

Koohafkan, A. P.; Lilin, Ch and F.A.O. Centre de formation et aménagement des bassins versants. 1989. *Arbres Et Arbustes De Haiti: Utilisation des Espèces Ligneuses En Conservation des Sols Et En Aménagement des Bassins Versants*. Translated title :

Trees and Shrubs in Haiti: Use of woody species in soil conservation and Development in the Watershed. Port-au-Prince, Haiti: F.A.O. Centre de formation en aménagement des bassins versants. Page(s): 133. Descriptors: Trees- Haiti; Shrubs- Haiti; Soil conservation- Haiti. Notes: ill.; 30 cm. Note(s): "Décembre 1989." "GCP/HAI/011/SWI." Includes bibliographical references (p. 133) and index. Responsibility: A.P. Koohafkan et Ch. Lilin. French National Library: FRBNF39985546000002. OCLC Accession Number: 25044566; 470333452. Notice et cote du catalogue de la Bibliothèque nationale de France. URL: <http://catalogue.bnf.fr/ark:/12148/cb39985546q>.

Konyukhov, AI. 2008. "Geological Structure, Evolution Stages, and Petroliferous Complexes of the Gulf of Mexico Basin." *Lithol. Miner. Resour. Jul.* Volume 43, Issue 4, Pages 380-393. Descriptors: Article Subject Terms: Continental slope; Lithology; Mineral resources; Bottom topography; Oceanic crust; Permian; Escarpments; Geological structures; Palaeo studies; Article Geographic Terms: Caribbean Sea, Greater Antilles, Cuba; Caribbean Sea, Greater Antilles, Haiti; Mexico, Yucatan Peninsula; Mexico, Campeche; Mexico Gulf, Mississippi Fan; Caribbean Sea, Greater Antilles; USA, Mississippi; Marine. Notes: Object Subject Terms: Basic; Basins; Coastal; Continental Margin; Diapirs; Endothelin; Heterogeneous; Indexing in process; Mesozoic; Miocene; Pliocene; Salt; Sheets; Structure; deep-sea; TR: CS1015170. Abstract: The Gulf of Mexico basin occupies a vast region encompassing the southern continental margin of North America, a considerable part of the Greater Antilles, and the intervening Sigsbee Deep with the oceanic crust. In the north, the basin is contiguous with spurs of the Hercynian Appalachians, the Mississippi Interior and Permian basins. The Mississippi Fan, one of the largest in the world, governs the bottom topography and structure in the eastern Gulf of Mexico. The abyssal basin is surrounded in many areas by steep continental slopes passing in places into escarpments: Sigsbee, Campeche, and others. It is only in the Yucatan Peninsula region that the continental slope merges with a wide shelf. The Cuban-North Haiti meganticlinorium frames the basin on the Cuba Island side. Database: *Illustrata: Technology.* ISSN: 1608-3229.

Koshel, P.; Allen, E. L.; Cecelski, E.; Dougher, R. and Ring, L. 1981. "Opportunities for Energy Conservation in the Developing Countries." TN. Sponsor: Department of Energy, Washington, DC; United States: Oak Ridge Associated Universities, Inc. Mar. Volume: ORAU/IEA811(M), page(s): 230. Descriptors: Developing countries; Haiti; Sri Lanka; Commercial sector; Cost; Data compilation; Domestic supplies; Energy conservation; Energy consumption; Energy demand; Energy policy; Financial data; Fuel substitution; Government policies; Industry; Power generation; Renewable energy sources; Reserves; Residential sector; Transportation sector. Abstract: Energy problems faced by developing countries are explored and opportunities for saving energy and for using fuels other than petroleum in the modern sector are assessed. Specific resources assessed include oil and gas, coal, hydropower, and traditional fuels. Trends in commercial energy consumption by the developing countries are assessed and the domestic fuel resources of these countries are examined. Patterns of commercial energy use in several LDCs including Sri Lanka, Haiti, India, Kenya, Egypt, the Philippines, the Republic of Korea, and Brazil are examined. Sri Lanka and Haiti are the subjects for case studies reported in the appendixes. Opportunities for conservation in the modern sector, which include most industrial activities, transportation, and electric power generation as well as some agricultural

activities and large residential and commercial buildings, are discussed. The concluding section explores policies which might be initiated by LDC governments to encourage energy conservation. NTIS Accession Number: ORAUIEA811(M).

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Development (USAID) through the Office of Foreign Disaster Assistance (OFDA) is the lead agency within the U.S. government responding to this disaster. On January 14, the Administration announced \$100 million in humanitarian assistance to Haiti to meet the immediate needs on the ground. As of March 4, 2010, total humanitarian funding provided to Haiti for the earthquake was \$712.9 million. Currently, there is no funding specifically for Haiti earthquake relief in the FY2011 budget or supplemental requests. Reportedly, the Administration is putting together details of a proposed assistance package to Haiti. The Department of Homeland Security has temporarily halted the deportation of Haitians and granted Temporary Protected Status for 18 months to Haitian nationals who were in the United States as of January 12, 2010. Congressional concerns include budget priorities and oversight, burden-sharing, immigration, tax incentives for charitable donations, trade preferences for Haiti, and helping constituents find missing persons, speed pending adoptions, and contribute to relief efforts. Several congressional committees held hearings on Haiti in January and February. The focus of this report is on the immediate crisis in Haiti as a result of the earthquake, the U.S. and international response to date, and long-term implications of the earthquake. Related legislation includes P.L. 111-117, P.L. 111-126, H.R. 144, H.R. 264, H.R. 417, H.R. 1567, H.R. 3077, H.R. 4206, H.R. 4577, H.R. 4616, S. 2949, S. 2961, and S. 2978." Report number: CRS Report for Congress, R41023. Database: HDSL. URL: <https://www.hsdl.org/?view&doc=119980&coll=limited>

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[a boy growing up in China, a 7.8-magnitude earthquake near the city of Tangshan killed more than 242,000 people and severely injured 170,000 more. More than 7,000 families perished entirely. It was the deadliest quake of the 20th century. The quake left an imprint on me and my generation that is perhaps as profound and indelible as Sept. 11 is on today's generation. It encouraged me to become a geophysicist and to seek to understand the fundamental physics of earthquakes. My research has focused on many seismically vulnerable areas of the world, most recently including Haiti and Chile, and we have come to learn some simple lessons: 1. Poorly constructed buildings are the primary cause of deaths from earthquakes, and 2. People who live in areas of high seismic hazard must be educated about earthquake preparedness. While the earthquake in Chile on Feb. 27, 2010, released 500 times more energy than the previous month's quake near Port-au-Prince, the death toll and devastation in Haiti was 200 times worse because, as a very poor nation, Haiti does not mandate building codes, and its structures are inadequately built. Furthermore, unlike in Chile, which has frequently felt earthquakes, Haiti experienced its last major quake 240 years ago. It affected long-gone ancestors but had dimmed in the memory of their descendants." URL: <http://www.who.edu/oceanus/viewArticle.do?id=74566§ionid=1021>](#)

Lin, Jian; Stein, Ross S.; Sevilgen, Volkan and Toda, Shinji. 2010. "USGS-WHOI-DPRI Coulomb Stress-Transfer Model for the January 12, 2010, M (Sub w) =7.0 Haiti Earthquake." United States (USA): U. S. Geological Survey, Reston, VA, United States (USA). Open-File Report - U.S. Geological Survey. 2010. Volume: OF 2010-1019, page(s): 7. Descriptors: active faults; Coulomb stress; earthquakes; Enriquillo Fault; faults; geologic hazards; Haiti earthquake 2010; magnitude; models; probability; risk assessment; rupture; seismic risk; statistical analysis; stress; thrust faults; USGS. Abstract: Using calculated stress changes to faults surrounding the January 12, 2010, rupture on the Enriquillo Fault, and the current (January 12 to 26, 2010) aftershock productivity, scientists from the U.S. Geological Survey (USGS), Woods Hole Oceanographic Institution (WHOI), and Disaster Prevention Research Institute, Kyoto University (DPRI) have made rough estimates of the chance of a magnitude (Mw) > or =7 earthquake occurring during January 27 to February 22, 2010, in Haiti. The probability of such a quake on the Port-au-Prince section of the Enriquillo Fault is about 2 percent, and the probability for the section to the west of the January 12, 2010, rupture is about 1 percent. The stress changes on the Septentrional Fault in northern Haiti are much smaller, although positive. Notes: USGS, Publications of the U. S. Geological Survey. ISSN: 0196-1497. Database: GeoRef. OCLC Accession Number: 2010-053878. URL: <http://pubs.usgs.gov/of/2009/1019/>.

Longstaffe, Fred J. 2000. "An Introduction to Stable Oxygen and Hydrogen Isotopes and their use as Fluid Tracers in Sedimentary Systems; Fluids and Basin Evolution." Short Course Handbook. Mineralogical Association of Canada, Ottawa, ON, Canada (CAN): Canada (CAN). Volume 28, Pages 115-159. Descriptors: Alberta; Antilles; Appalachian Basin; Ariake Bay; Asia; basins; C-13/C-12; Canada; carbon; Caribbean region; chemical fractionation; chlorite; chlorite group; clay mineralogy; Clearwater Formation; Cretaceous; D/H; deuterium; Eastern Canada; Far East; fluid dynamics; geochemistry; Greater Antilles; Haiti; Hispaniola; hydrochemistry; hydrogen; illite; isotope ratios; isotopes; Iwaizumi Deposit; Japan; Kyushu; Lower Cretaceous; Mesozoic; meteoric water; North America; O-18/O-16; Ontario; oxygen; pore water; S-

34/S-32; sea water; sedimentary basins; sedimentary rocks; sheet silicates; silicates; stable isotopes; sulfur; tracers; West Indies; Western Canada. Database: GeoRef. ISSN: 0381-1743.

Lopez, A. S., Bendik, J. M., Alliance, J. Y., et al. 2003. "Epidemiology of Cyclospora Cayetanensis and Other Intestinal Parasites in a Community in Haiti." *Journal of Clinical Microbiology*. Volume 41, Issue 5, Pages 2047-2054. Descriptors: well water; adolescent; adult; age distribution; aged; article; *Ascaris lumbricoides*; case control study; child; controlled study; *Cryptosporidium parvum*; *Cyclospora cayetanensis*; developing country; epidemiological data; feces analysis; female; follow up; *Giardia lamblia*; Haiti; health survey; hookworm; human; infection risk; intestine parasite; major clinical study; male; multivariate analysis; parasitemia; prevalence; priority journal; *Trichuris*; water sampling; Animals; Case-Control Studies; Child, Preschool; Cross-Sectional Studies; *Cyclospora*; *Cyclosporiasis*; Feces; Humans; Infant; Infant, Newborn; Middle Aged; Polymerase Chain Reaction; Risk Factors; Water; Water Supply; *Ancylostomatoidea*; *Ascaris*; *Cryptosporidium*; *Giardia*; *Giardia intestinalis*; Protozoa. Notes: Cited By (since 1996): 7. Abstract: We conducted an exploratory investigation in a community in Haiti to determine the prevalence of *Cyclospora cayetanensis* infection and to identify potential risk factors for *C. cayetanensis* infection. In 2001, two cross-sectional stool surveys and a nested case-control study were conducted. In 2002, a follow-up cross-sectional stool survey was conducted among children ≤ 510 years of age. Stool specimens from study participants and water samples from their wells were examined for *Cyclospora* and other intestinal parasites. In stools, the prevalence of infection with *Cyclospora* in persons of all ages decreased from 12% (20 of 167 persons) in February 2001 to 1.1% (4 of 352 persons) in April 2001, a 90.8% decrease. For children ≤ 10 years of age, the prevalence rates were 22.5% (16 of 71 children) in February 2001, 3.0% (4 of 135 children) in April 2001, and 2.5% (2 of 81 children) in January 2002. Use of the water from the artesian well in the northern region of the community versus the one in the south was the only risk factor associated with *Cyclospora* infection in multivariate analyses (odds ratio, 18.5; 95% confidence interval, 2.4 to 143.1). The water sample from one of the nine wells or water sources tested (one sample per source) in January 2001, shortly before the investigation began, was positive for *Cyclospora* by UV fluorescence microscopy and PCR. None of the water samples from the 46 wells or water sources tested during the investigation (one sample per source per testing period, including the artesian wells) were positive for *Cyclospora*. Further studies are needed to assess the role of water as a possible risk factor for *Cyclospora* infection in Haiti and other developing countries. Database: SCOPUS. ISSN: 0095-1137.

López, Víctor M. 1945. Informe Geológico-Económico Preliminar Sobre Las Posibilidades De Instalación De Una Planta De Cemento En La República De Haití. Translated title: Economic Preliminary Geological Report on the possibilities of installing a cement plant in the Republic of Haiti. Caracas: Tipografía americana. Descriptors: Geology- Haiti; Cement industries- Haiti. Notes: 77 p., [11] leaves of plates: maps, diags. 23 cm. Language: Spanish. Note(s): "Trabajo publicado en la Revista de fomento, número 60, julio a setiembre 1945, año vii." Bibliography: p. 77. Responsibility: por Victor M. López. LCCN: as 46-213. OCLC Accession Number: 15092744.

Louca, Kyriacos. 1990. "Geological Setting and Base and Precious Metal Deposits of Northern Haiti; Transactions of the 12th Caribbean Geological Conference."

Transactions of the Caribbean Geological Conference = *Memorias - Conferencia Geologica Del Caribe*. [publisher varies], [location varies], United States. Dec. Volume 12, Pages 200-216. Descriptors: Antilles; base metals; carbonate rocks; Caribbean region; copper ores; Cretaceous; economic geology; exploration; gold ores; Greater Antilles; Haiti; Hispaniola; hydrothermal alteration; limestone; Loma de Cabrera Batholith; Massif du Nord; Mesozoic; metal ores; metallogeny; metals; metasomatism; mineral deposits, genesis; mineralization; models; northern Haiti; occurrence; ophiolite; porphyry copper; precious metals; production; resources; sedimentary rocks; silver ores; stockwork deposits; stratabound deposits; Tennier Rouge Series; Upper Cretaceous; volcanism; West Indies. Database: GeoRef. ISSN: 0576-758X.

Louis, Pierre Antoine. 1985. Properties of Soils in a Toposequence on Cap Rouge Plateau, Haiti. Descriptors: Soils- Haiti; Thesis/dissertation; Manuscript. Notes: ix, 91 leaves: illustrations 29 cm. Dissertation: Thesis (M.S.)--Texas A & M University, 1985. Note(s): Typescript (photocopy). Vita. Includes bibliographical references (leaves 69-74). "Major subject: Soil Science." OCLC Accession Number: 15182046.

Lovell, Leonard A. 1935-1976. Papers, 1935-1976. Descriptors: Dams; Irrigation; Soils- Composition; Water resources development- Nebraska; Water resources development- Haiti; Water resources development- Pakistan; Water resources development- Philippines. Abstract: Collection contains correspondence (1939-1976); subject files on dams, irrigation and soil composition; blueprints of the Artibonite Valley Development Peligre Dam Project in Haiti and the Elkhorn Water Power Project in Nebraska (1930, 1953); reports (some in Spanish) on the Tarbela Dam in Pakistan and the Philippines, (1935-1955); and newspaper clippings (1945-1948). Notes: 1.8 cubic ft. (4 boxes); Named Corp: Artibonite Valley Development Peligre Dam Project. Elkhorn Water Power Project. Genre/Form: Blueprints. Geographic: Philippines- History- 1946-1986. Pakistan- History. Nebraska- History. Haiti- History- 1934-1986. Tarbela Dam (Pakistan) Peligre Dam (Haiti); Note(s): Bio/History: Leonard A. Lovell (1907-1977), an engineer, graduated from the University of Nebraska in 1930 and was an assistant city engineer for Grand Island, Nebraska, from 1930-1934. From 1934-1939 he was an engineer for the Platte Valley Public Power and Irrigation District in North Platte, Nebraska. Lovell worked as a consulting engineer for the firm of Parsons, Brickerhoff, Logan and MacDonald from 1939-1945, and from 1945-1972 he was a partner with the consulting engineering firm of Tippetts-Abbett-McCarthy-Stratton of New York City, directing their hydraulic and hydroelectric projects in Haiti, the Philippines, Taiwan, and Pakistan. General Info: Occupation: Engineers. OCLC Accession Number: 28289111.

Lucchi, Elena. 2010. "Between War and Peace: Humanitarian Assistance in Violent Urban Settings." *Disasters*. Abstract: Cities are fast becoming new territories of violence.¹ The humanitarian consequences of many criminally violent urban settings are comparable to those of more traditional wars, yet despite the intensity of the needs, humanitarian aid to such settings is limited. The way in which humanitarian needs are typically defined, fails to address the problems of these contexts, the suffering they produce and the populations affected. Distinctions between formal armed conflicts, regulated by international humanitarian law, and other violent settings, as well as those between emergency and developmental assistance, can lead to the neglect of populations in distress. It can take a lot of time and effort to access vulnerable communities and implement programmes in urban settings, but experience shows that it is possible to

provide humanitarian assistance with a significant focus on the direct and indirect health consequences of violence outside a traditional conflict setting. This paper considers the situation of Port-au-Prince (Haiti), Rio de Janeiro (Brazil) and Guatemala City (Guatemala). ISSN: 1467-7717. URL: <http://dx.doi.org/10.1111/j.1467-7717.2010.01178.x>.

Lyons, John B. And Officer, Charles B. 1992. "Mineralogy and Petrology of the Haiti Cretaceous/Tertiary Section." *Earth Planet. Sci. Lett. Mar.* Volume 109, Issue 1-2, Pages 205-224. Descriptors: Cretaceous-Tertiary Boundary; Haiti; Mineralogy; Petrology; Sedimentary Rocks; Igneous Rocks; Obsidian Glass; Stratigraphy; Tektites. Notes: NR: 80. Abstract: The mineralogy and petrology of the Haiti Cretaceous/Tertiary section are studied in detail in order to elucidate the origin of the Haiti layer. The five major constituents of each section are characterized. On the basis of various mineralogic, petrologic, and sedimentologic factors it is concluded that the layers were of an original volcanic origin. Database: CSA Technology Research Database. ISSN: 0012-821X.

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MacPhee, R. D. E. and Woods, C. A. 1982. "A New Fossil Cebine from Hispaniola." *American Journal of Physical Anthropology*. Volume 58, Issue 4, Pages 419-436. Descriptors: bone; fossil; Haiti; monkey; nonhuman; Animal; Cebidae; Cebus; Evolution; Fossils; Jamaica; Paleontology; Saimiri; Support, U.S. Gov't, Non-P.H.S. Notes: Cited By (since 1996): 4. Abstract: An incomplete mandibular fragment of a cebine monkey from an early Holocene Haitian cave deposit adds to the small but growing list of fossil Antillean primates. The jaw is of the correct size to belong to the same taxon as the partial maxilla of 'Saimiri' bernensis from the Dominican Republic. Both finds probably represent a single species whose proximate ancestry lay closer to Cebus than to Saimiri, although more evidence will be required to substantiate this. No close relationship of the Hispaniolan fossils to the Jamaican platyrrhine *Xenothrix* is indicated. How monkeys managed to penetrate the West Indies is a biogeographical puzzle of the first order. Geographical vicariance events, island-hopping, and purposeful or inadvertent introduction by humans seem rather implausible devices. On the whole, long-distance, over-water rafting from the Americas remains the most likely mechanism for past land vertebrate immigration into the Caribbean. Database: SCOPUS. ISSN: 0002-9483.

MacRae, Duncan; Whittington, Dale; University of North Carolina at Chapel Hill and Curriculum in Public Policy Analysis. 1987. *Assessing Preferences in Cost-Benefit Analysis: Reflections on Rural Water Supply Evaluation in Haiti*. Chapel Hill, N.C: Public Policy Analysis Program, University of North Carolina at Chapel Hill. Descriptors: Water-supply, Rural- Haiti- Cost effectiveness; Water-supply, Rural- Cost effectiveness- Case studies; Cost effectiveness- Case studies. Notes: 33 leaves; 28 cm. Note(s): Includes bibliographical references. Responsibility: by Duncan MacRae, Jr. and Dale Whittington. OCLC Accession Number: 28920206.

Madfis, Josh, Martyris, Daryl and Triplehorn, Carl. 2010. "Emergency Safe Spaces in Haiti and the Solomon Islands." *Disasters*. Volume 34, Issue 3, Pages 845-864. Abstract: This paper provides background information on emergency Safe Spaces for children and specific information for responses in Haiti and the Solomon Islands. In 2007, both countries experienced natural disasters that resulted in internal displacement of thousands of people. The Save the Children Alliance created Safe Spaces for children living in camps for internally displaced persons. The project sought to accomplish 'B-SAFE' strategies through emergency education, psychosocial, and protection interventions. The B-SAFE strategies are to (B)uild relationships, cooperation, and respect among peers; to (S)creen for high-risk children and youth; (A)ctive, structured learning and life saving information; to (F)acilitate children's natural resilience and a return to normalcy; and to (E)stablish a sense of security and self-esteem. The project made use of child and parent surveys and observation tools that measured B-SAFE indicators. Analysed data demonstrated an improvement in children's behavior participating in the programme. ISSN: 1467-7717. URL: <http://dx.doi.org/10.1111/j.1467-7717.2010.01172.x>.

"Malaria Acquired in Haiti - 2010." 2010. *Morbidity & Mortality Weekly Report*. Volume 59, Issue 8, Pages 217-219. Database: SCOPUS. ISSN: 0149-2195.

Malone, David Henry. 1990. *Precious Metal Mineralization of the Meme Deposit, Southeast Terre Neuve District, Haiti*. United States: University of Wisconsin at

Madison, Madison, WI, United States. Descriptors: Antilles; Caribbean region; chalcopyrite; copper ores; disseminated deposits; geologic maps; gold ores; Greater Antilles; Haiti; haloes; Hispaniola; hydrothermal alteration; hydrothermal processes; inclusions; iron oxides; maps; massive deposits; Meme Deposit; metal ores; metals; metamorphic rocks; metasomatic rocks; metasomatism; mineral deposits, genesis; mineral exploration; ore grade; oxides; paragenesis; polymetallic ores; porphyry copper; precious metals; pyrite; reserves; silver ores; skarn; sulfides; Terre Neuve mining district; Terre Neuve Stock; veins; West Indies; xenoliths. Abstract: The Terre Neuve Cu-Au-Ag district is the largest ore district in Haiti and one of the largest in the Caribbean. Ore is localized in a series of mineralized contact skarns that developed within xenoliths of Cretaceous limestone that were stoped into the 66.2 m.y. Terre Neuve stock. The Meme skarn is the largest and most productive deposit in the district; over 2 million tons of ore were produced from 1975-1971. The deposit historically has been an important source of copper. Small amounts of gold and silver were recovered as by-products of copper mining. The Meme skarn is a porphyry-related copper skarn that contains both vein/veinlet and disseminated/replacement copper mineralization. Chalcopyrite is the most abundant ore mineral, averaging 13% of skarn by volume, and is the principal phase that is extracted. Pyrite to chalcopyrite ratios are low compared with other porphyry-related copper skarns, averaging from 2:1 to 1:10 for individual samples. Precious metal concentrations of samples collected from the underground workings average 3.9 ppm and 21.7 ppm (N = 48) for gold and silver, respectively. The Meme skarn has suffered a lengthy mineral paragenesis. Main stage skarn formation of hydrograndite garnet+ or - tremolite and diopside was followed by skarn retrogradation and destruction as the operating hydrothermal system cooled and chemically evolved. Early retrograde epidote and chlorite were followed by calcite and quartz. Skarn metallization accompanied retrogradation, and included early deposition of massive iron oxides followed by vein and disseminated copper and iron sulfides. Precious metals were introduced late in the lifetime of the hydrothermal system, and they occur as microscopic veinlets and disseminations within chalcopyrite as alloys with base metals. Gold and silver concentrations are positively correlated with modal chalcopyrite, but are not evenly distributed throughout the body. Gold and silver vary according to the style of occurrence. The highest precious metal concentrations are associated with chalcopyrite+pyrite+quartz veins and veinlets. The veins/veinlets average 15.4 ppm gold and 64.1 ppm silver. Although volumetrically the most significant, massive replacement and disseminated ore have relatively low precious metal concentrations, averaging 1.8 ppm and 14.2 ppm for gold and silver, respectively. There is a minimum of 6.5 million tons (1000 kg/ton) of probable reserves at Meme, which includes 25,350 kg of gold, 141,050 kg of silver and 130,000 tons of copper. At today's commodity prices of \$380/oz for gold and \$1/lb for copper, both gold and copper can be economically recovered. The Terre Neuve stock adjacent to the Meme skarn is composite in nature, containing both quartz monzonite and porphyry phases. The intrusive rocks apparently lack the low grade copper mineralization that is commonly associated with porphyry systems. Alteration and field studies indicate that only the uppermost portions of the porphyry system are currently exposed by erosion, and a potentially mineralized core is yet unroofed. Notes: References: 32; illus. incl. 6 plates; Map Scale: 1:5000. Type: geologic map. GeoRef Accession Number: 1994-056593.

Malow, Robert, Rosenberg, Rhonda, Lichtenstein, Bronwen and Dévieux, Jessy G. 2010. "The Impact of Disaster on HIV in Haiti and Priority Areas Related to the Haitian Crisis." *Journal of the Association of Nurses in AIDS Care*. 6. Volume 21, Issue 3, Pages 283-288. Descriptors: disaster; earthquake; HIV infection; Haiti; priorities. ISSN: 1055-3290.

Manaker, D. M.; Calais, E.; Freed, A. M.; Ali, S. T. et al. 2007. "Interseismic Plate coupling and strain partitioning in the Northeastern Caribbean." *Geophys. J. Int.* (2008) 174, 889–903. Summary: The northeastern Caribbean provides a natural laboratory to investigate strain partitioning, its causes and its consequences on the stress regime and tectonic evolution of a subduction plate boundary. Here, we use GPS and earthquake slip vector data to produce a present-day kinematic model that accounts for secular block rotation and elastic strain accumulation, with variable interplate coupling, on active faults. We confirm that the oblique convergence between Caribbean and North America in Hispaniola is partitioned between plate boundary parallel motion on the Septentrional and Enriquillo faults in the overriding plate and plateboundary normal motion at the plate interface on the Northern Hispaniola Fault. To the east, the Caribbean/North America plate motion is accommodated by oblique slip on the faults bounding the Puerto Rico block to the north (Puerto Rico subduction) and to the south (Muertos thrust), with no evidence for partitioning. The spatial correlation between interplate coupling, strain partitioning and the subduction of buoyant oceanic asperities suggests that the latter enhance the transfer of interplate shear stresses to the overriding plate, facilitating strike-slip faulting in the overriding plate. The model slip rate deficit, together with the dates of large historical earthquakes, indicates the potential for a large (Mw7.5 or greater) earthquake on the Septentrional fault in the Dominican Republic. Similarly, the Enriquillo fault in Haiti is currently capable of a Mw7.2 earthquake if the entire elastic strain accumulated since the last major earthquake was released in a single event today. The model results show that the Puerto Rico/Lesser Antilles subduction thrust is only partially coupled, meaning that the plate interface is accumulating elastic strain at rates slower than the total plate motion. This does not preclude the existence of isolated locked patches accumulating elastic strain to be released in future earthquakes, but whose location and geometry are not resolvable with the present data distribution. Slip deficit on faults from this study are used in a companion paper to calculate interseismic stress loading and, together with stress changes due to historical earthquakes, derive the recent stress evolution in the NE Caribbean. doi: 10.1111/j.1365-246X.2008.03819.x.

Manbeck, D. M. and Chitty, J. P. 1982. *Water Resources Study for Haiti; Water for Human Consumption, Man and His Environment; a Selection of Papers Prepared for the IVth World Congress of the International Water Resources Association (IWRA). Ireland (IRL): Tycooly Int. Publ., Dublin, Ireland. Volume: 2, Water for Human Consumption, Man and His Environment, Fourth World Congress of the International Water Resources Association, Buenos Aires. Argentina Conference: Sept. 3-12, 1982.* Descriptors: Antilles; Caribbean region; economic geology; Greater Antilles; Haiti; Hispaniola; hydrogeology; hydrology; water resources; water supply; West Indies. ISBN: 0907567606. GeoRef Accession Number: 1986-018868.

Mann, Paul. 2005. "Introduction to Active Tectonics and Seismic Hazards of Puerto Rico, the Virgin Islands, and Offshore Areas." Geological Society of America Special Paper 385, p. 1-12. doi: 10.1130/0-8137-2385-X.1.

Mann, Paul, et al. 2005. "Reconnaissance study of Late Quaternary faulting along Cerro Goden fault zone, western Puerto Rico." GSA Special Papers 2005, v. 385, p. 115-137. Abstract: The Cerro Goden fault zone is associated with a curvilinear, continuous, and prominent topographic lineament in western Puerto Rico. The fault varies in strike from northwest to west. In its westernmost section, the fault is ~500 m south of an abrupt, curvilinear mountain front separating the 270- to 361-m-high La Cadena de San Francisco range from the Rio Añasco alluvial valley. The Quaternary fault of the Añasco Valley is in alignment with the bedrock fault mapped by D. McIntyre (1971) in the Central La Plata quadrangle sheet east of Añasco Valley. Previous workers have postulated that the Cerro Goden fault zone continues southeast from the Añasco Valley and merges with the Great Southern Puerto Rico fault zone of south-central Puerto Rico. West of the Añasco Valley, the fault continues offshore into the Mona Passage (Caribbean Sea) where it is characterized by offsets of seafloor sediments estimated to be of late Quaternary age. Using both 1:18,500 scale air photographs taken in 1936 and 1:40,000 scale photographs taken by the U.S. Department of Agriculture in 1986, we identified geomorphic features suggestive of Quaternary fault movement in the Añasco Valley, including aligned and deflected drainages, apparently offset terrace risers, and mountain-facing scarps. Many of these features suggest right-lateral displacement. Mapping of Paleogene bedrock units in the uplifted La Cadena range adjacent to the Cerro Goden fault zone reveals the main tectonic events that have culminated in late Quaternary normal-oblique displacement across the Cerro Goden fault. Cretaceous to Eocene rocks of the La Cadena range exhibit large folds with wavelengths of several kms. The orientation of folds and analysis of fault striations within the folds indicate that the folds formed by northeast-southwest shortening in present-day geographic coordinates. The age of deformation is well constrained as late Eocene–early Oligocene by an angular unconformity separating folded, deep-marine middle Eocene rocks from transgressive, shallow-marine rocks of middle-upper Oligocene age. Rocks of middle Oligocene–early Pliocene age above unconformity are gently folded about the roughly east-west–trending Puerto Rico–Virgin Islands arch, which is well expressed in the geomorphology of western Puerto Rico. Arching appears ongoing because onshore and offshore late Quaternary oblique-slip faults closely parallel the complexly deformed crest of the arch and appear to be related to extensional strains focused in the crest of the arch. We estimate ~4 km of vertical throw on the Cerro Goden fault based on the position of the carbonate cap north of the fault in the La Cadena de San Francisco and its position south of the fault inferred from seismic reflection data in Mayaguez Bay. Based on these

observations, our interpretation of the kinematics and history of the Cerro Goden fault zone includes two major phases of motion: (1) Eocene northeast-southwest shortening possibly accompanied by left-lateral shearing as determined by previous workers on the Great Southern Puerto Rico fault zone; and (2) post-early Pliocene regional arching of Puerto Rico accompanied by normal offset and right-lateral shear along faults flanking the crest of the arch. The second phase of deformation accompanied east-west opening of the Mona rift and is inferred to continue to the present day. doi: 10.1130/0-8137-2385-X.115. URL: <http://specialpapers.gsapubs.org/content/385/115.abstract>

Mann, Paul, et al. 1998. "Tectonic geomorphology and paleoseismology of the Septentrional fault system, Dominican Republic." *GSA Special Papers* 1998, v. 326, p. 63-123. URL: <http://specialpapers.gsapubs.org/content/326/63.abstract>

Mann, P. and Lawrence, S. R. 1991. "Petroleum Potential of Southern Hispaniola." *Journal of Petroleum Geology*. Volume 14, Issue 3, Pages 291-308. Descriptors: geological history; hydrocarbon generation; maturity modelling; petroleum potential; seismic stratigraphic mapping; Haiti; West Indies, Greater Antilles, Hispaniola, Dominican Republic; Petroleum Geology - Stratigraphy; Petroleum Prospecting; Caribbean Region; Dominican Republic; Location Maps; Southern Hispaniola; Petroleum Geology. Notes: Cited By (since 1996): 4. Abstract: Recent surface and seismic stratigraphic mapping has elucidated the geologic history of Southern Hispaniola. Oil-prone source rocks are predicted in deep-water carbonate rocks of the Sombrerito Formation (Early Miocene) and hemi-pelagic mudstones of the Trinchera Formation (Middle to Late Miocene). Reservoirs occur in carbonates of the Sombrerito Formation and sandstones of the Trinchera and Arroyo Blanco Formations. Maturity modelling shows that hydrocarbon generation largely pre-dates Plio-Pleistocene folding and uplift. Shallow, late-formed structural traps in the Azua Basin have been charged by remigrated hydrocarbons. Unrecognised and undrilled deeper parent structures are predicted at depth in the Azua Basin, but require modern seismic data to confirm their existence. Existing seismic data identify undrilled prospects in the Enriquillo and San Juan Basins. Database: SCOPUS. ISSN: 0141-6421.

Mann, Paul; Draper, Grenville and Lewis, John F. 1991. *Geologic and Tectonic Development of the North America-Caribbean Plate Boundary in Hispaniola*. Boulder, Colo: Geological Society of America. Page(s): 401. Descriptors: Island arcs- Hispaniola; Plate tectonics- Hispaniola; Geology- Hispaniola; Tectónica de placas- Caribe; Geología-Caribe; Géologie- Haïti (île); Tectonique des plaques- Haïti (île); Arcs insulaires- Haïti (île). Abstract: An overview of the geologic and tectonic development of Hispaniola / Paul Mann, Grenville Draper, John F. Lewis- Metamorphic belts in central Hispaniola / Grenville Draper, John F. Lewis- Blueschist metamorphism and deformation on the Samana Peninsula: a record of subduction and collision in the Greater Antilles / James Joyce- Geology, structure, and tectonic development of the Rio San Juan Complex, northern Dominican Republic / Grenville Draper, Frederick Nagle- Stratigraphy and geological history of the Puerto Plata area, northern Dominican Republic / James L. Pindell, Grenville Draper- Duarte complex in the La Vega-Jarabacoa-Janico area, central Hispaniola: geologic and geochemical features of the sea floor during the early stages of arc evolution / John F. Lewis, Jorge G. Jiménez G.- Lithology and stratigraphy of upper

Cretaceous volcanic and volcanoclastic rocks of the Tiroo Group, Dominican Republic, and correlations with the Massif du Nord in Haiti / John F. Lewis .. [et al.]. (cont.) Age of intrusive rocks in northern Hispaniola / Stephen E. Kesler .. [et al.]- Geology of the Maimon Formation, Dominican Republic / Stephen E. Kesler .. [et al.]- Geology and geochemistry of the early Cretaceous Los Ranchos Formation, central Dominican Republic / Stephen E. Kesler .. [et al.]- Geology of the maar-diatreme complex hosting precious metal mineralization at Pueblo Viejo, Dominican Republic / Norman Russell, Stephen E. Kesler- Sedimentologic, stratigraphic, and tectonic synthesis of Eocene-Miocene sedimentary basins, Hispaniola and Puerto Rico / James Dolan .. [et al.]- Structural geology and Cenozoic tectonic history of the central Cordillera Septentrional, Dominican Republic / Ruurdjan de Zoeten, Paul Mann- Structure and geologic development of the Cibao Valley, northern Hispaniola / N. Terence Edgar- Tectonic evolution of the San Francisco Ridge of the eastern Cibao basin, northeastern Hispaniola / Margaret A. Winslow .. [et al.]. (cont.) Structural geology and Cenozoic tectonic history of the southeastern termination of the Cordillera Central, Dominican Republic / Christoph Heubeck, Paul Mann- Geology of the Azua and Enriquillo basins, Dominican Republic: 1, Neogene lithofacies, biostratigraphy, biofacies, and paleogeography / P.P. McLaughlin and W.A. van den Bold, Paul Mann- Geology of the Azua and Enriquillo basins, Dominican Republic: 2, structure and tectonics / Paul Mann, P.P. McLaughlin, Calvin Cooper. Notes: xx; ill., maps; 27 cm. Note(s): Issued in box with 5 maps on 8 folded leaves. Includes bibliographical references and index. ISBN: 0813722624; 9780813722627. LCCN: 91-38100. OCLC Accession Number: 24670505; 468404030. URL: <http://catalogue.bnf.fr/ark:/12148/cb37396738s>

Mann, P., Matumoto, T., Burke, K. and Texas Univ., Austin. 1984. "Neotectonics of Hispaniola - Plate Motion, Sedimentation, and Seismicity at a Restraining Bend." *Earth Planet. Sci. Lett.* Elsevier Science BV: P.O. Box 211, Amsterdam, 1000 AE, Netherlands, [mailto:w.tukker@elsevier.nl], [URL:<http://www.elsevier.com>]. Oct. Volume 70, Issue 2, Pages 311-324. Descriptors: Dominican Republic; Geological Surveys; Haiti; Plates (Tectonics); Tectonics; Bending; Geological Faults; Sediments; Seismology; Vertical Distribution. Contract: NAG5-155; NR: 49. Abstract: The question as to the extent to which earthquake mechanisms define plate motion is addressed in view of the pattern of Neogene faulting, volcanism, and sedimentation in Hispaniola. The structure of two fault systems that approximately define the northern and southern coasts of the island suggest an east-west trend in relative plate motion, which is consistent with previous findings. The intervening area consists of an echelon mountain ranges thrust up at the restraining bend from the early Miocene. A Pleistocene volcanic province within this area is interpreted as defining a diffuse extensional fault termination of the southern strike-slip fault zone. Database: CSA Technology Research Database. ISSN: 0012-821X.

Mann, William Paul. 1983. *Cenozoic Tectonics of the Caribbean: Structural and Stratigraphic Studies in Jamaica and Hispaniola (Haiti, Dominican Republic)*. United States- New York: State University of New York at Albany. Descriptors: Geology; Remote sensing. Abstract: Structural and stratigraphic field studies in Jamaica and Hispaniola (Dominican Republic and Haiti) and synthesis of published data from surrounding areas refine previously proposed models for convergent and strike-slip plate interactions in the northern Caribbean. Specifically: (1) new data and regional

stratigraphic analysis of major unconformities in the Greater Antilles supports the idea of two distinct arcs that terminated by collision at slightly different times in the latest Cretaceous and Paleogene; unconformities and sedimentation associated with both collisions are used to constrain a prestrike-slip, early Oligocene reconstruction of the northern Caribbean; (2) field studies in the Port Maria area of northeastern Jamaica essentially complete mapping of the Wagwater Belt, a reactivated Paleogene graben and overlying sedimentary basin, that records approximately east-west extension normal to the trend of the latest Cretaceous Jamaican island arc; the relatively narrow Wagwater Graben contains at least 5.6 km of coarse clastic terrestrial sediments and is overlain by the much larger, saucer-shaped basin filled with a fining-upward section of 1.2 km of marine sediments; consideration of the orientation, distribution, and ages of other Cenozoic graben in Jamaica, the Nicaragua Rise and Central America suggests that all of the graben, including the Wagwater, may have formed by internal deformation of the northern Caribbean plate as it moved eastward during the Cenozoic around a promontory in the North America plate in southern Mexico; and (3) the interpretation of satellite imagery and aerial photographs and field studies in the Enriquillo Valley and Sierra el Numero, Dominican Republic; the Cul-de-Sac Valley and southern peninsula of Haiti; and the Clydesdale area of eastern Jamaica indicate the presence of a 700 km long, approximately east-west trending throughgoing left-lateral strike-slip fault zone--named here, the Enriquillo-Plantain Garden Fault Zone; field studies in the Clydesdale area and the overall fault pattern of Jamaica suggest that the island constitutes a large restraining bend or compressional segment in the Enriquillo-Plantain Garden Fault Zone; the overall structure of the Enriquillo-Plantain Garden Fault Zone is remarkably consistent with the east-west direction of Caribbean-North America relative plate motion which has been previously determined from earthquake slip vectors and fault-strikes mostly from the Cayman Trough. Although many problems remain in the late Cretaceous and Cenozoic geology of the Caribbean, a plate tectonic framework into which many of them can be accommodated is beginning to emerge. OCLC Accession Number: 8401427. URL: <http://proquest.umi.com/pqdweb?did=750221361&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

"Mapping Agencies Offer Aid After Haiti Quake." 2010. GeoWorld. March. Volume 23, Issue 3, Pages 10. Descriptors: Port-au-Prince (Haiti) earthquake, 2010/Rescue work; GIS industry; Aerial mapping; Applied Science & Technology. Notes: PD: Illustration. Abstract: Two federal agencies, the National Geospatial Intelligence Agency and the National Oceanic and Atmospheric Administration (NOAA), offered assistance in the wake of the January 2010 Haiti earthquake. NOAA deployed a specially equipped jet for aerial surveys on January 1718, 2010. The jet was equipped with high-resolution digital cameras and other sensors to collect data for disaster response, scientific research, and environmental resource management. ISSN: 1528-6274.

Mar, E. 2010. "Lessons Learned from Haiti [2]." *Archit. Rec.* Volume 198, Issue 4, Pages 16. Database: SCOPUS. ISSN: 0003-858X.

Marcelin, Fritz Sauveur. 1985. Predicting Soil Erosion from Cap Rouge Plateau, Haiti. Descriptors: Soil erosion- Haiti; Thesis/dissertation; Manuscript. Notes: x, 89 leaves: illustrations 29 cm. Dissertation: Thesis (M.S.)--Texas A & M University, 1985. Note(s): Typescript (photocopy). Vita. Includes bibliographical references (leaves 76-86). "Major subject: Range Science." OCLC Accession Number: 15161200.

Martinez, Juan Carlos, Sain, Gustavo and Yates, Michael. 1991. "Toward Farm-Based Policy Analysis: Concepts Applied in Haiti." *Agricultural Economics*. July. Volume 5, Pages 223-235. Descriptors: Agricultural administration/Haiti; Biological & Agricultural. Notes: Bibliography; Illustration. ISSN: 0169-5150.

Mathews, J. T. 1989. "Redefining Security." *Foreign Affairs*. Volume 68, Issue 2, Pages 162-177. Descriptors: environmental degradation; article; deforestation; Demographic Factors; demography; developed country; environment; environmental protection; Estimation Technics; forecasting; Natural Resources; North America; Northern America; Political Factors; politics; pollution; population; population dynamics; Population Forecast; population growth; research; Research Methodology; soil degradation; United States; Western Hemisphere; World; Americas; Developed Countries; Environmental Pollution; Conservation of Natural Resources; Statistics. Notes: Cited By (since 1996): 103. Abstract: The concept of US national security was redefined in the 1970s to include international economics, and lately environmental degradation has also become a factor, as pollution transcends boundaries. By 2100 another 5-6 billion people may be added to the world's population requiring dramatic production and technology transformation with the resultant expanded energy use, emissions, and waste impacting the ecosystem. Climate change through global warming is in the offing. The exponential growth of the population in the developing world poses a crucial challenge for food production, housing, and employment. At a 1% growth rate population doubles in 72 years, while at 3% it doubles in 24 years. Africa's growth rate is almost 3%, it is close to 2% in Latin America, and it is somewhat less in Asia. Renewable resources such as overfished fishing grounds can become nonrenewable, and vanished species can never be resurrected. Deforestation leads to soil erosion, damage to water resources through floods and silting of irrigation networks, and accelerated loss of species. 20% of species could disappear by 2000 thereby losing genetic resources for chemicals, drugs, and food sources. Overcultivation has caused major erosion and decline of agricultural productivity in Haiti, Guatemala, Turkey, and India. Lopsided land ownership in Latin America requires land reform for sustainable agricultural production in the face of the majority of people cultivating plots for bare subsistence. Human practices that have caused environmental damage include concessions granted to logging companies in the Philippines, mismanagement of natural resources in sub-Saharan Africa, the ozone hole, and the greenhouse effect with potential climate changes. Solutions include family planning, efficient energy use, sustainable agroforestry techniques, and environmental accounting of goods and services. Database: SCOPUS. ISSN: 0015-7120.

Maurrasse, Florentin J-M. and Sen, Gautam. 1991. "Impacts, Tsunamis, and the Haitian Cretaceous-Tertiary Boundary Layer." *Science*. 21 June 1991. Volume 252, Pages 1690-1693. Descriptors: Cretaceous-Tertiary Boundary; Petrography; Quartz; Tektites; Tsunami Waves; Basalt; Bolides; Haiti; Photomicrographs; Spherules. Contract: NSF EAR-76-22620; NSF EAR-88-15858; NSF EAR-89-03879; Research supported by Florida International University; NR: 35. Abstract: The marker bed at the Cretaceous-Tertiary boundary of the Beloc Formation (Haiti) contains abundant coarse-grained microtektites and minor amounts of shocked quartz grains in the basal part. The upper part is composed of medium-grained marl with amalgamated microtektite lenses and finer-grained marl lenses disseminated throughout. Field and petrographic observations, and the distribution of planktonic foraminifera suggest that the bed formed from a

complex sequence of events. A bolide impact nearby produced microtektites that settled to form a nearly pure layer at the base. Vaporized materials with anomalously high extraterrestrial components settled last, along with carbonate sediments. The entire bed became sparsely consolidated. Subsequently, another major disruptive event, perhaps a giant tsunami, partly reworked the initial deposit. Cohesive fragments of the original marker bed mixed with exotic materials were re-deposited as lenticular bodies. Database: CSA Technology Research Database. ISSN: 0036-8075.

Maurasse, Florentin J. M. 1988. *Presentations, Transactions du 1er Colloque sur la Géologie d'Haiti: Port-Au-Prince, 27-29 Mars 1980*. Port-au-Prince: Imp. Le Natal. Page(s): 286. Descriptors: Geology- Haiti- Congresses. Notes: ill., maps (7 folded); 28 cm. Note(s): French or English. 2 pages of errata bound in at end of book. Includes bibliographical references (p. 271-281) and index. Reproduction: Photocopy. [Berkeley, CA: University of California Library Photographic Service, 1988?]. 285 leaves. Responsibility: editeur, Florentin J.-M.R. Maurasse. OCLC Accession Number: 18122705 ; 490130092.

Maurasse, Florentin J-M R. 1982. *Présentations, Transactions du 1er Colloque Sur La Géologie d'Haïti, Port-Au-Prince, 27-29 Mars 1980*. Impr. Le Natal). Descriptors: Geology- Haiti- Congresses; Conference publication (cnp). Notes: 286, [4] p., [8] folded leaves of plates: ill., maps; 28 cm. Note(s): One map on folded leaf laid in. "Achévé d'imprimer .. janvier 1982"--P. [287]. Includes bibliographical references (p. 271-281 and [289-290]) and index. Responsibility: éditeur, Florentin J-M.R. Maurasse. OCLC Accession Number: 8711566.

Maurasse, Florentin J. M. R. 1981. *New Data on the Stratigraphy of the Southern Peninsula of Haiti; Premier Colloque Sur La Geologie d'Haiti. First Symposium on the Geology of Haiti*. Haiti: Florentin J. M. R. Maurasse, Port au Prince, Haiti. Premier Colloque Sur La Geologie d'Haiti, Port-Au-Prince. Haiti Conference: March 27-29, 1980. Descriptors: Antilles; Atlantic Ocean; biostratigraphy; carbonate rocks; Caribbean region; Caribbean Sea; Cenozoic; clastic rocks; conglomerate; Cretaceous; environment; Foraminifera; Greater Antilles; Haiti; Hispaniola; Invertebrata; limestone; Mesozoic; microfossils; micropaleontology; North Atlantic; paleoecology; Protista; sedimentary petrology; sedimentary rocks; sedimentation; shallow-water environment; stratigraphy; Tertiary; turbidite; West Indies. Notes: FE: Illus. incl. geol. sketch map, strat. GeoRef Accession Number: 1984-019540.

Maurasse, Florentin J-M R. 1981. *Présentations, Transactions du 1er Colloque Sur La Géologie d'Haïti, Port-Au-Prince, 27-29 Mars 1980*.], Impr. Le Natal). Descriptors: Geology- Haiti- Congresses; Conference publication (cnp). Notes: 286 p., [8] folded leaves of plates: ill., maps; 28 cm. Note(s): One map on folded leaf in pocket. English and French, with summaries in English. Includes bibliographical references (p. 271-281) and index. Responsibility: éditeur, Florentin J-M.R. Maurasse. LCCN: 82-147912. OCLC Accession Number: 9153759.

Maurasse, Florentin J-M R. 1980. *Resumés des Présentations, 1er Colloque Sur La Géologie d'Haïti*. Descriptors: Geology- Haiti- Congresses; Conference publication. Notes: 34 p. 28 cm. Responsibility: éditeur, Florentin J-M.R. Maurasse. OCLC Accession Number: 20655672.

Maurasse, Florentin J-M R. and Miami Geological Society. 1982. *Survey of the Geology of Haiti: Guide to the Field Excursions in Haiti of the Miami Geological*

Society, March 3-8, 1982. Miami, Fla: Miami Geological Society. Page(s): 103.
Descriptors: Geology- Haiti. Notes: ii; illustrations 28 cm. Note(s): Includes bibliographical references (p. 98-103). Responsibility: by Florentin J-M.R. Maurrasse. OCLC Accession Number: 10755738.

Maurrasse, Florentin J-M R. Sen, Gautam and Colorado Geological Survey. 1996. The Cretaceous-Tertiary Boundary in the Beloc Formation, Southern Peninsula of Haiti, West Indies. Denver, Colo: Colorado Geological Survey, Dept. of Natural Resources. Descriptors: Geology- Haiti- Guidebooks; Haiti- Guidebooks; Government publication; State or province government publication. Notes: 1 v. (unpaged): illustrations 28 cm. Note(s): Cover title. Includes bibliographical references. Responsibility: by Florentin J-M.R. Maurrasse and Gautam Sen. OCLC Accession Number: 37750793.

Max, Michael D., Johnson, Arthur H., Dillon, William P., Max, Michael D., Johnson, Arthur H. and Dillon, William P. 2006. "Oceanic Gas Hydrate Character, Distribution, and Potential for Concentration; Economic Geology of Natural Gas Hydrate." Coastal Systems and Continental Margins. Springer, Dordrecht, Netherlands. Volume 9, Pages 105-130. Descriptors: aliphatic hydrocarbons; alkanes; Antilles; Atlantic Ocean; Blake-Bahama Outer Ridge; Bryant Canyon; Caribbean region; clathrates; continental shelf; continental slope; gas hydrates; geophysical methods; geophysical profiles; geophysical surveys; Greater Antilles; Haiti; Hispaniola; hydrocarbons; localization; methane; natural gas; North Atlantic; ocean floors; organic compounds; petroleum; petroleum accumulation; reflection methods; remote sensing; seismic methods; seismic profiles; spatial distribution; stability; surveys; tectonics; uplifts; West Indies. Notes: FE: illus. incl. table. Database: GeoRef. ISBN: 1402039719.

Mbanya, Jean Claude. 2010. "Global Solidarity in a Time of Crisis: How IDF Responded to the Disaster in Haiti." Diabetes Res. Clin. Pract. 3. Volume 87, Issue 3, Pages 423-425. ISSN: 0168-8227.

McClenny, Bernie. 2006. "Haiti Operations." QST. September 2006. Volume 90, Issue 9, Pages 74-75. Descriptors: DXpeditions; Amateur radio stations/Haiti; Applied Science & Technology. Notes: Illustration. Abstract: Amateur Radio operations from Northwest Haiti Christian Mission at St. Louis du Nord are discussed. The mission is located in a remote part of Haiti and has had an Amateur Radio presence for over 10 years. Operators such as Jan Heise have traveled to the mission to participate in contests because Amateur Radio activity in the country has declined and QSOs from Haiti are in demand. Some of the trips to the mission are described. ISSN: 0033-4812.

McCluney, Christen N. 2010. Commander Discusses Brigade's Role in Haiti." Armed Forces Press Service. Emerging Media, Defense Media Activity. March 25, 2010. Abstract: The brigade's soldiers have been working in phased operations with Joint Task Force Haiti, initially providing immediate assistance and disaster relief, along with security and humanitarian aid. They transitioned to helping the World Food Program's surge, providing security and assistance to nongovernmental organizations and the United Nations as they provided food and water to displaced Haitians. "This had a huge effect on the population," McAteer said. Immediately after the Jan. 12 earthquake, he explained, the government and security in Haiti experienced major setbacks. "We were able to fill that void and serve as a supporting element," the colonel said. McAteer added that the brigade's paratroopers broke down many barriers and changed misconceptions about the U.S. military as they quickly ascertained the needs of the Haitian people. For example, he

said, a university hospital in the Haitian capital of Port-au-Prince was inundated with patients, and help from the brigade's soldiers allowed the hospital staff to turn things around. The airport and naval ports now are operating at pre-earthquake capacity, McAteer said, and the security environment is vastly improved. "When you look at the trends in security, it has been very calm throughout our stay here," he said. "There have been no acts of violence against American soldiers." See:

<http://www.defense.gov/news/newsarticle.aspx?id=58466>

McGahey, Christopher. 1998. Community-Managed Water and Sanitation Utility for the Urban Poor: Cite Soleil, Port-Au-Prince, Haiti. Reston, VA, United States: ASCE. Proceedings of the Annual Water Resources Planning and Management Conference. Page(s): 313-318. Proceedings of the 1998 25th Annual Conference on Water Resources Planning and Management. Chicago, IL, USA Conference: 7 June 1998 through 10 June 1998. Descriptors: Economic and social effects; Environmental protection; Public policy; Sanitation; Urban planning; Waste disposal; Environmental sanitation services; Water supply systems. Abstract: The U.S. Agency for International Development's (USAID) Environmental Health Project, worked with a non-governmental organization, the Centres pour le Developpment et la Sante (CDS), to plan and implement a water and sanitation district in Cite Soleil, an informal settlement of 200,000 inhabitants in Port-au-Prince, Haiti. The USAID activity enhanced a United Nations-funded project to construct an independent water supply system for Cite Soleil. The USAID project supported CDS in establishing and operating an autonomous organization, or district, capable of managing the water supply system and providing environmental sanitation services with revenues from the sale of water. Design of the activity began in October 1995 and inauguration of the district, under Haitian supervision, began in April 1997. After six months of operation, the district was successfully covering its operating costs with revenue generated for the retail sale of water. At that time, the district had not yet generated sufficient monthly income to completely implement its environmental sanitation mandate, but it was scaling up its services from a targeted focus to broader community coverage. Community ownership of the operation and maintenance of the system was strong and clearly visible, and no significant illegal tapping of the system was evident which could not be addressed by the community. Notes: Sponsors: ASCE; conference code: 48659. Database: SCOPUS.

McLean, R. G., Spillane, J. T. and Miles, J. W. 1975. "A Prospective Study of the Effects of Ultralow Volume (ULV) Aerial Application of Malathion on Epidemic Plasmodium Falciparum Malaria. III. Ecologic Aspects." American Journal of Tropical Medicine and Hygiene. Volume 24, Issue 2, Pages 193-198. Descriptors: acetylcholinesterase; insecticide; malathion; anopheles; anopheles albimanus; arthropod; epidemiology; malaria; plasmodium falciparum; prevention; vector; Aircraft; Animal; Birds; Brain; Chiroptera; Disease Outbreaks; Ecology; Environmental Exposure; Evaluation Studies; Fishes; Haiti; Human; Insects; Lizards; Mosquito Control; Population Density; Prospective Studies; Support, U.S. Gov't, Non-P.H.S. Notes: Cited By (since 1996): 1. Abstract: The effects of aerial ultralow volume (ULV) malathion on selected species of nontarget animals in Haiti are reported. Mortality of certain groups of insects such as bees, flies, beetles, and butterflies was observed immediately following spray application. Minor fish mortality occurred only in shallow water exposed to direct spray. The brain acetylcholine esterase levels of living fish, tree lizards, birds and bats collected

from treated areas were not significantly reduced. No ill or dead animals, besides the few fish, were seen even when maximum exposure occurred. Only minor changes in the feeding behavior of some insectivorous birds were observed. The relative bird density decreased substantially for only one species during the study, and other factors besides the treatment were considered to be the reasons for the decline. Aerial applications of ULV malathion at dosages sufficient to dramatically reduce anopheline populations did not significantly affect nontarget vertebrates in this tropical environment. Database: SCOPUS. ISSN: 0002-9637.

Meggiolaro, V., Niccolini, G., Miniussi, G., et al. 2000. "Multidisciplinary Approach to Metallogenic Models and Types of Primary Gold Concentration in the Cretaceous Arc Terranes of the Dominican Republic." Transactions of the Institutions of Mining and Metallurgy, Section B: Applied Earth Science. Volume 109, Issue MAY-AUG, Descriptors: Cretaceous; gold; island arc; metallogenesis; terrane; Dominican Republic. Notes: Cited By (since 1996): 1. Abstract: Multidisciplinary research carried out on primary gold ores in the evolving Cretaceous island arc terranes of the Dominican Republic has shown the existence of three groups of deposits and occurrences. The first comprises the Lower Cretaceous ores, including the giant Pueblo Viejo deposit and several uneconomic showings with traces of Au-Ag in the El Valle area west of Miches; comparison of the acid-sulphate hydrothermal system of Pueblo Viejo with the disseminated, one-stage system of the El Valle region accounts for the fundamental differences in gold tonnages and grades between the two districts. The Upper Cretaceous barite-polymetallic (Cu-Zn)-Au-Ag epithermal ores in the northwest Dominican Republic and Haiti form the second group; Cu-Mo anomalies in oxidation zones are consistent with the observed presence of Cu-Mo porphyries at depth. The third group is formed by Upper Cretaceous-Tertiary metasediment-hosted, metamorphic quartz-sulphide, granitic vein swarms of the Miches area. These rocks are the probable source for the Miches lateritic/alluvial gold, which has been reworked during erosion and lateritization. Leaching tests have demonstrated the viability of routes other than cyanidation for gossanous gold-enriched samples from El Valle and Restauracion (northwest Dominican Republic). The results of a thiocyanate leach test appear to be the most promising on comparison with those obtained from tests with thiourea and ammoniacal thiosulphate. Database: SCOPUS. ISSN/ISBN: 03717453.

Merin, O., Md, Ash, N., Md, Levy, G., Md, Schwaber, M., Md and Kreiss, Y., Md, Mha, Mpa. 2010. "The Israeli Field Hospital in Haiti -- Ethical Dilemmas in Early Disaster Response." N. Engl. J. Med. Mar 18. Volume 362, Issue 11, Pages e38. Descriptors: Hospitals; Earthquakes; Patients; Hospitalization. Abstract: Patients who arrived with brain injuries, paraplegia secondary to spinal injuries, or a low score on the Glasgow Coma Scale were referred to other facilities. Since we had neither a neurosurgical service nor computed tomography, we believed it would be incorrect to use our limited resources to treat patients with such a minimal chance of ultimate rehabilitation at the expense of others whom we could help. ISSN: 0028-4793.

Metcalf, William G. and Stalcup, Marvel C. 1976. "A New Bathymetric Chart of the Windward Passage Sill." Deep Sea Research and Oceanographic Abstracts. 12. Volume 23, Issue 12, Pages 1209-1212. Abstract: The submarine ridge between the eastern tip of Cuba and the northwestern tip of Haiti forms the sill of the Windward Passage and is the topographic barrier between the deep water of the Atlantic Ocean and

that of the Cayman Basin in the northwestern Caribbean Sea. The controlling depth of this ridge was shown to be 1560 m by a bathymetric survey using a precision radar ranging system. The results agree with previous estimates based on temperature distribution and bathymetric surveys. ISSN: 0011-7471.

Meyer, A. H., Benecke, D. and Lauser, G. 2010. "Despair in Haiti: A Destroyed Country Confronts almost Unsolvable Tasks." *Dtsch. Lebensm. -Rundsch.* Volume 106, Issue 2, Pages 66-67. Database: SCOPUS. ISSN: 0012-0413.

Millard, William B. 2010. "Starting from Scratch: Haiti's Earthquake and Disaster Planning." *Ann. Emerg. Med.* 5. Volume 55, Issue 5, Pages A17-A22. ISSN: 0196-0644.

Miller, S. and Novak, R. J. 1985. "Analysis of Lipids by Gas-Liquid Chromatography and Complementary Methods in Four Strains of *Aedes Aegypti* Mosquitoes." *Comparative Biochemistry and Physiology- Part B: Biochemistry and* Volume 81, Issue 1, Pages 235-240. Descriptors: acylglycerol; fatty acid; lipid; phospholipid; *Aedes*; animal; article; comparative study; gas chromatography; methodology; species difference; thin layer chromatography; Chromatography, Gas; Chromatography, Thin Layer; Fatty Acids; Fatty Acids, Nonesterified; Glycerides; Lipids; Phospholipids; Species Specificity. Notes: Cited By (since 1996): 2. Abstract: 1. Fatty acid composition of total lipids, neutral lipids and phospholipids of strains of *Aedes aegypti* were determined. 2. The fatty acid composition of the strains differed quantitatively with regard to the relative percentage of commonly occurring fatty acids. 3. Gas-liquid chromatography of fatty acid methyl esters showed 18:1 (oleic or elaidic) to be the predominant fatty acid. The fatty acid was identified as oleic by argentation thin-layer chromatography. 4. A modified colorimetric method was used to determine tissue-free fatty acids. 5. The lipids were predominantly triacylglycerol with lesser amounts of free fatty acids and decreasing amount of sterol ester, sterol, monoacylglycerol, diacylglycerol and hydrocarbons. 6. The data show considerable lipid differences between the Caribbean strains (Les Cayes, Haiti, and San Juan, Puerto Rico) and the Jakarta (Indonesia) strain. The Shimba Hills (Kenya) strain was more similar to Jakarta than to the Caribbean strains. 7. The results obtained with the different strains are discussed in relation to the established oral susceptibility to Dengue 1 and Dengue 2, yellow fever, and genetic analysis by isoenzyme studies. Database: SCOPUS. ISSN: 0305-0491.

Miller, S. and Shah, M. A. 1982. "Cholinesterase Activities of Workers Exposed to Organophosphorus Insecticides in Pakistan and Haiti and an Evaluation of the Tintometric Method." *Journal of Environmental Science and Health - Part B Pesticides, Food Contaminants, and Agricultural Wastes.* Volume 17, Issue 2, Pages 125-142. Descriptors: cholinesterase; organophosphorus compound; blood and hemopoietic system; human cell; methodology; normal human; plasma; Agricultural Workers' Diseases; Cholinesterases; Colorimetry; Erythrocytes; Haiti; Human; Hydrogen-Ion Concentration; Insecticides, Organophosphate; Malathion; Pakistan; Reagent Kits, Diagnostic; Biological Materials - Trace Analysis; Farms - Personnel; Biochemistry; Insecticides. Notes: Cited By (since 1996): 2. Database: SCOPUS. ISSN: 0360-1234.

Ming, D. W.; Sharpton, Virgil L.; Schuraytz, B. C. and National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX. 1991. *Mineralogy of Cretaceous/Tertiary Boundary Clays in the Chicxulub Structure in Northern Yucatan*

(Abstract Only). Page(s): Program and Abstracts for Clay Minerals Society 28th Annual Meeting. Program and Abstracts for Clay Minerals Society 28th Annual Meeting p 114 (See N92-10248 01-46); United States; Program and Abstracts for Clay Minerals Society 28th Annual Meeting p 114 (See N92-10248 01-46); United States. Conference: 114 (SEE N92-10248 01-46); United States;. Descriptors: Chemical Composition; Clays; Core Sampling; Cretaceous-Tertiary Boundary; Ejecta; Geochronology; Meteorite Collisions; Mineralogy; Boundary Layers; Breccia; Carbonates; Caribbean Region; Gulf Of Mexico; Haiti; Igneous Rocks; Noble Metals. Abstract: The Cretaceous/Tertiary (K/T) boundary clay layer is thought to be derived from ejecta material from meteorite impact, based on the anomalous concentrations of noble metals in the layer. Because of recent findings of a half-meter thick ejecta deposit at the K/T boundary in Haiti, efforts have focused on locating a large impact feature in the Caribbean and the Gulf of Mexico. One of the leading candidates for the site of a large impact is the Chicxulub structure located on the northern Yucatan Peninsula in Mexico. The Chicxulub structure is a subsurface zone of upper Cretaceous igneous rocks, carbonates, and breccias. The structure has been interpreted to be a 200 km diameter; however, there is some question to the size of the structure or to the fact that it even is an impact feature. Little is known about the mineralogy of this structure; the objective of this study was to determine the clay mineralogy of core samples from within the Chicxulub structure. Notes: Available from NTIS. Database: CSA Technology Research Database. NTIS Accession Number: N92-10253.

Molnar, Peter and Lynn R. Sykes. 1971. "Plate Tectonics in the Hispaniola Area: Discussion." Geological Society of America Bulletin April 1971 v. 82 no. 4 p. 1123-1126. URL: <http://gsabulletin.gsapubs.org/content/82/4/1123.abstract>

Molnar, Peter and Lynn R. Sykes. 1969. "Tectonics of the Caribbean and Middle America Regions from Focal Mechanisms and Seismicity." Geological Society of America Bulletin September 1969 v. 80 no. 9 p. 1639-1684. Abstract: Seismic data strongly support recent theories of tectonics in which large plates of lithosphere move coherently with respect to one another as nearly rigid bodies, spreading apart at ocean ridges, sliding past one another at transform faults, and underthrusting at island arcs. Boundaries between adjacent plates of lithosphere are defined by belts of high seismic activity. Redetermination of more than 600 hypocenters in the Middle America region and previous studies in the Galapagos and Caribbean regions define the boundaries of two relatively small, nearly aseismic plates in the region of interest. The first, the Cocos plate, is bordered by the East Pacific rise, the Galapagos rift zone, the north-trending Panama fracture zone near 82° W., and the Middle America arc; the second, the Caribbean plate, underlies the Caribbean Sea and is bounded by the Middle America arc, the Cayman trough, the West Indies arc, and the seismic zone through northern South America. Focal mechanisms of 70 earthquakes in these regions were determined to ascertain the relative motion of these two plates with respect to the surrounding regions or plates. The results show underthrusting of the Cocos plate beneath Mexico and Guatemala in a northeasterly direction and beneath the rest of Central America in a more north-northeasterly direction. The Cocos plate is spreading away from the rest of the Pacific floor at the East Pacific rise and at the Galapagos rift zone. Motion is right-lateral strike-slip along the Panama fracture zone, a transform fault connecting the Galapagos rift zone and the Middle America arc. At the same time, the Caribbean plate is moving

easterly with respect to the Americas plate, which is here taken to include both North and South America and the western Atlantic. Left-lateral strike-slip motion along steeply dipping fault planes is observed on the Cayman trough. The Americas plate is underthrusting the Caribbean in a westerly direction at the Lesser Antilles and near Puerto Rico. Unlike the Lesser Antilles, however, motion at present is *not* perpendicular to the Puerto Rico trench but instead is almost parallel to the trench along nearly horizontal fault planes. Computations of rates of motion indicate that underthrusting is at a higher rate in southeastern Mexico and Guatemala than in western Mexico and that the Caribbean is moving at a lower rate relative to North America than is the Cocos plate.

URL: <http://gsabulletin.gsapubs.org/content/80/9/1639.abstract>

Monaghan, Paul Francis. 2000. Peasants, the State and Deforestation in Haiti's Last Rainforest. United States -- Florida: University of Florida. Page(s): 153. Descriptors: Cultural anthropology; Environmental science; Political science; Agricultural economics; Deforestation; Studies; Wealth. Abstract: This dissertation analyzes important changes occurring in a remote Haitian village, which I call Malfini. This case study illustrates current problems facing the Haitian peasantry, focusing on the political relationships that are at the heart of these problems. The three changes are an increased economic stratification among peasant farmers, an increased use of wage work instead of traditional labor organization and a rapidly disappearing environmental base due to erosion and loss of soil fertility. Malfini is located on the margins of the last remaining rainforest in Haiti, and continued environmental degradation will result in a severe loss of Haiti's biodiversity. I conducted ethnographic and survey research over several years and compiled data from this research in this case study. In 1997, I conducted a household survey that focused on demographic features, income indicators and agricultural production. I analyzed those data to answer several research questions. These questions include the following: Is the gap between poor and wealthy peasants measurable, how would such a gap affect traditional farming patterns and what are the origins of such a gap in Malfini? I created a measure of household wealth that could predict the extent to which a household bought or sold labor and invested in livestock or cash crops. In order to explain the origins of these measurable differences among households in Malfini, I tested household variables such as the age and gender of household head, internal dependency ratio, migration history and connection to the state land system. Households with connections to the state tax bureaus in the lowland towns have direct access to the state-owned forests of Malfini and this became the best variable for predicting current wealth. The ability to directly lease state land is the result of political connections between Port-au-Prince and an elite living in the hinterlands of rural Haiti. The Duvalier dictatorship gave state land leases to members of its rural militia. Thus, holding such a lease became a matter of politics. Although it has been more than a decade since Jean Claude Duvalier left the country, the legacy of political ties to the land in Malfini continues to affect conservation and development programs in the region. OCLC Accession Number: 9997842.

Morton, Mary Caperton. 2010. "Haitian Quake No Shock to Geologists." Earth. American Geological Institute. Apr. Volume 55, Issue 4, Pages 30-31. Descriptors: Antilles; Caribbean region; damage; earthquakes; Enriquillo-Plantain Garden Fault; geologic hazards; Greater Antilles; Haiti; Haiti earthquake 2010; Hispaniola; magnitude;

risk assessment; seismic risk; West Indies. Database: GeoRef. ISSN: 1943-345X. URL: <http://www.earthmagazine.org/>.

Moseley, Stephen, Green, Kerry and Tilley, Neil. 2010. "Stable Society." *The Engineer* (London, England). January 25. Volume 295, Pages 17. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Building failures; Earthquake resistant design; Applied Science & Technology. Abstract: Three writers comment on an online article that suggested much of the destruction caused by the recent Haiti earthquake could have been avoided with better-engineered structures. ISSN: 0013-7758.

Mosher, D. E.; Lachman, B. E.; Greenberg, M. D.; Nichols, T. and Rosen, B. 2008. "Green Warriors: Army Environmental Considerations for Contingency Operations from Planning through Post-Conflict." Santa Monica, CA; United States: Rand Arroyo Center. Volume: ADA487920, page(s): 255. Descriptors: Operations other than war; Policies; Environmental protection; Environmental management; Army; Overseas; Postwar operations; Case studies; Surveys; Safety; Hazardous wastes; Cultural resources; Water quality; Army planning; Regulations; Pollution; Prevention; International law; Public opinion; Federal law; Afghanistan; Bosnia Herzegovina; Indigenous population; Sanitation; Haiti; Infrastructure; Environmental impact; Costs; Health; Army personnel; Risk; Kosovo; Stability; Iraq; Contingency operations; Sro (Stability and reconstruction operations); Nation building; Soldier health; Soldier safety; Mission success; Base camps; Field activities; Interviews; Geneva conventions; Foreign laws. Abstract: Environmental issues have become increasingly important in contingency operations the U.S. Army conducts overseas. Countries in which the Army conducts operations tend to have environmental problems caused by industrialization, lack of environmental protection, long-running conflict, and natural conditions. This situation creates health and safety risks for soldiers, can affect missions, and can increase the importance of life-sustaining environmental infrastructures for such things as clean water, sewage disposal, and agriculture. Prompted by the growing importance of environmental considerations in military operations, the Army Environmental Policy Institute (AEPI) asked RAND to examine how the Army approaches this issue in overseas contingency operations, particularly during the post-conflict and reconstruction phases. It also asked RAND to identify existing problems and gaps in policy, doctrine, and guidance and to propose solutions the Army could adopt to address them. The report concludes that environmental considerations -- including clean water, sanitation, hazardous-waste management -- can be important for achieving overall U.S. objectives during reconstruction and post-conflict operations, including stability. If not properly addressed in planning or operations, environmental considerations can increase the costs of an operation and make it more difficult for the Army to sustain the mission. Yet, environmental considerations are not well incorporated into Army planning or operations. To address these shortcomings, the Army should take additional steps to ensure that environmental considerations are incorporated into planning, operations, training, and research. Appendix A reviews domestic and international law related to environmental considerations in Army contingency operations. Appendix B summarizes the findings from public-opinion surveys of the local populace in Iraq. Notes: ISBN 978-0-8330-4318-4. URL: <http://handle.dtic.mil/100.2/ADA487920>.

Moss, George; Wager, Robert and Naval Ocean Research and Development Activity Stennis Space Center MS. 1983. Coastal Hydrographic Sonar/Advanced

Acoustic Techniques Technology Assessment Report. Ft. Belvoir Defense Technical Information Center: Descriptors: Cartography and Aerial Photography; Physical and Dynamic Oceanography; Acoustic Detection and Detectors; Hydrographic surveying; Scanning sonar; Hydrographic sonar; Gulfs; Coastal regions; Hazards; Bathymetry; Navigation; Launching; Productivity; Mapping; Area coverage; Multiple beams(radiation); Side looking sonar; Haiti; Depth finding; Towed sonar; Sector Scan Sonar; Trisponders; PE63701B. Abstract: Technological options for increasing the productivity of hydrographic survey launches are reviewed, based on observations of the Naval Oceanographic Office survey operations in the Golfe de la Gonave, Haiti, during May 1982. It was found that multi-beam sonars have the potential to increase productivity by 50% in terms of area surveyed per day per launch for water depths between 75 and 200 meters, or possibly by 100% over the very limited depth range of 145 to 200 meters. By contrast, under the operating conditions observed during the May 1982 operation in Golfe de la Gonave, major improvements in reliability and maintainability combined with use of the new LCP(L) MK-12 launches can potentially increase productivity by up to 310%. Sector-scan sonars were found to have an attractive potential for detection of navigation hazards between sounding lines, mapping the perimeters of hazardous areas, and reconnaissance and survey planning. These capabilities will increase productivity provided the sonars are designed for operation at normal survey speeds. Notes: 43 p. Report: NORDA-TN-199; General Info: approved for public release. OCLC Accession Number: 227590483. PURL: <http://handle.dtic.mil/100.2/ADA131461>.

Moti, Moham. 1997. Cartographie par Informatique des Carbonates de la Vallée De l' Artibonite (Haïti). Translated title: Computer Mapping of Carbonates in the Valley of the Artibonite, Haiti. Descriptors: Sols- Teneur en carbonates- Artibonite, Vallée de l' (République Dominicaine et Haïti)- Informatique; Sols- Teneur en carbonates- Haïti- Informatique; Cartographie pédologique- Artibonite, Vallée de l' (République dominicaine et Haïti); Cartographie par ordinateur; Thesis/dissertation; Manuscript. Notes: ix, 69 f.: cartes. Dissertation: Thèse (M.Sc.)--Université Laval, 1997. Note(s): Bibliogr.: f. 66-69. Other Titles: Thèse. Agriculture. ISBN: 0612256847 (microfiche); 9780612256842 (microfiche). OCLC Accession Number: 77326311.

Mu, Xinming. 1988. Modeling Rural Water Demand Behavior: A Study of the Contingent Valuation Method. United States- North Carolina: The University of North Carolina at Chapel Hill. Descriptors: Economics. Abstract: A major impediment to improved performance in rural water supply sector of developing countries is inadequate information on the response of consumers to new service options. There are typically several types of water sources available in a village of a developing country. In such cases, the conventional demand function for water will be conditional on the choice of water source. Based on the random utility theory, a discrete/continuous choice model was developed for modeling rural water demand behavior. The discrete water source choice model has been empirically tested by a case study conducted in Kenya. The results suggest that the discrete choice model reasonably characterizes households' water source choice behavior. The time spent in collecting water from a source is the most significant variable in determining which source is chosen. The households' income does not impact the water source choice as strongly as was expected. The contingent valuation method is introduced as a promising device for studying water demand behavior in rural areas. The

method has been field tested in Haiti. The results show that the bidding game format works better than the open question format. Households' willingness-to-pay bids are systematically related with the variables suggested by economic theory. The hypotheses developed to test the existence of hypothetical bias, strategic bias and starting point bias in the willingness-to-pay bids were all rejected. A comparison study of water source choice behavior in a contingent market and in an observed market was undertaken in Brazil. In both the contingent valuation villages and the observed behavior village, the head of household's education level is positively related with the probability of choosing the new system. Farmers are less likely to use the new system. The households' income level does not have a significant effect on the source choice. In the contingent valuation villages, both strategic bias and starting point bias appear to exist in the willingness-to-pay bids. The hypothesis that there is no behavioral difference in source choice between the contingent market and the observed market is not convincingly conclusive. (Abstract shortened with permission of author.). OCLC Accession Number: 8823458. URL: <http://proquest.umi.com/pqdweb?did=745280181&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Mulgaria, Francesco. 2010. "Extending the Usefulness of Seismic Hazard Studies." *Seismol. Research Letters*. Seismological Society of America, El Cerrito, CA. May. Volume 81, Issue 3, Pages 423-424. Descriptors: Antilles; building codes; Caribbean region; earthquakes; geologic hazards; Greater Antilles; Haiti; Hispaniola; magnitude; Port-au-Prince earthquake 2010; Port-au-Prince Haiti; risk assessment; seismic networks; seismic response; seismic risk; seismicity; technology; warning systems; West Indies. References: 8. Database: GeoRef. ISSN: 0895-0695. URL: <http://www.seismosoc.org/publications/srl.html>.

Mullins, Justin. 2010. "How Crowd-Sourcing has Helped in Haiti." *The New Scientist*. 1/27. Volume 205, Issue 2745, Pages 8-9. Abstract: A new generation of Internet tools is linking up people in need with those that can bring relief, no matter where they are. ISSN: 0262-4079.

Munasinghe, M. 1993. "Environmental Economics and Sustainable Development." Washington, DC; United States: World Bank Group. 1 Sep. Volume: WB0046, page(s): 120. Descriptors: Developing countries; Economic development; Environmental protection; Environmental economics; Environmental management; Madagascar; Sri Lanka; Costa Rica; Haiti; Kenya; Natural resources; Latin America; Sub-Saharan Africa; South Asia; Sustainable development. Abstract: How can countries safeguard natural resources for future generations as they strive to reduce poverty with economic growth. *Environmental Economics and Sustainable Development* discusses practical options to reconcile these dual goals. It explains how to place an economic value on the long-term benefits of natural resources and on the development activities that affect the environment. The author shows how to gauge the environmental impact of projects early in the evaluation cycle. Numerous case studies describe various techniques used to appraise a country's environmental assets. These include two major studies of Madagascar and Sri Lanka. The Madagascar study describes ways to evaluate forest resources and biodiversity. In the Sri Lanka study, the focus is on techniques to develop the energy sector while protecting the environment. Other case studies feature economic strategies to conserve water in Haiti, rain forests in Costa Rica, and elephant herds in Kenya. Database: NTIS. ISBN: 0821323520;

Murray, A. M. 2001. "The Fossil Record and Biogeography of the Cichlidae (Actinopterygii: Labroidei)." *Biological Journal of the Linnean Society*. Volume 74, Issue 4, Pages 517-532. Descriptors: Africa; Asia; Dispersal; Europe; Neotropics; Palaeobiogeography; Salinity tolerance; biogeography; fish; fossil record; paleobiogeography; Actinopterygii; Cichlidae; Labroidei; Perciformes; Pisces; Vertebrata. Notes: Cited By (since 1996): 22. Abstract: The family Cichlidae is a large group of tropical fishes in the order Perciformes, with an estimated number of living species exceeding 1400. The modern distribution of the family Cichlidae is predominantly in fresh waters of Central and South America, Africa, Madagascar, India and the Middle East, with fossil members known from Africa, Saudi Arabia, the Levant, Europe, South America and Haiti. Many authors have referred to the distribution as being Gondwanan and have postulated that cichlids originated over 130 million years ago, in the Early Cretaceous. However, the suggested evidence for an Early Cretaceous origin of cichlids is equally or more compatible with a much younger age of origin. Based on the biology and distribution of modern and fossil cichlids, it is more probable that they arose less than 65 million years ago, in the Early Tertiary, and crossed marine waters to attain their current distribution. Database: SCOPUS. ISSN: 0024-4066.

Murray, Gerald F. 1980. *Haitian Peasant Contour Ridges: The Evolution of Indigenous Erosion Control Technology*. Cambridge, MA: Harvard Institute for International Development, Harvard University. Descriptors: Soil conservation- Haiti-Furcy; Soil erosion- Haiti; Furcy (Haiti)- Rural conditions. Notes: 54 leaves; 29 cm. Responsibility: Gerald F. Murray. OCLC Accession Number: 6676874.

Murray, Gerald F. and USAID/Haiti. 1979. *Terraces, Trees, and the Haitian Peasant: An Assessment of Twenty-Five Years of Erosion Control in Rural Haiti*. Page(s): 243. Descriptors: Soil conservation- Haiti. Notes: v; 28 cm. Note(s): Typescript. "Report submitted to USAID, Haiti, August 1979" Includes bibliographical references (p. 228-230). Responsibility: Gerald F. Murray. OCLC Accession Number: 32646570.

Murray, Gerald F. 1978. *Hillside Units, Wage Labor, and Rural Haitian Land Tenure: A Proposal for the Organization of Erosion Control Projects*. Port-au-Prince: U.S. Agency for International Development. Descriptors: Hill farming- Haiti; Land tenure- Haiti; Reclamation- Haiti; Water and water use- Haiti; USAID/Haiti. Notes: 41 l. 28 cm. Responsibility: by Gerald F. Murray. OCLC Accession Number: 24931314.

Murray, G.F. and M.E. Bannister. 2004. "Peasants, Agroforesters, and Anthropologists: A 20-Year Venture in Income-Generating Trees and Hedgerows in Haiti." *Agrofor. Syst.* 07/02. Volume 61-62, Pages 383-397. Descriptors: Agroforestry; Land use, Rural; Forests & forestry; Haiti. Abstract: This chapter examines the evolving trajectory and emerging lessons from twenty years of agroforestry project activities in Haiti that made it possible for more than 300 000 Haitian peasant households – over a third of the entire rural population of Haiti – to plant wood trees as a domesticated, income-generating crop on their holdings. Unusual popular enthusiasm for the project derived from several anthropological and technical design factors: the adaptation of the project to pre-existing Haitian land tenure, tree tenure, and market systems; the elevation of micro-economic over macro-ecological themes; the decision to bypass the Haitian government and operate the project through local NGOs (non-government organizations); the use of a joint-venture mode in which smallholders supplied land and labor and the

project supplied capital in the form of seedlings; the use of professionally managed small-container seedling technology rather than backyard nurseries; and a project management policy that encouraged farmer-induced deviations from project assumptions in matters of tree deployment and harvesting schedules. Issues of secure tree tenure were central to farmer planting decisions. The article discusses how secure tree tenure was possible under the heterogeneous informal arrangements that characterize Haitian peasant land tenure. The approach generated the birth of several creative Haitian peasant agroforestry configurations described in the chapter. In discussing lessons learned, the authors argue that long-term environmental payoffs should be viewed, not as the principal project goal, but as secondary side effects of smallholder tree planting decisions made for short-term micro-economic reasons. ISSN: 0167-4366.

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Nathan, Stuart. 2010. "After Shock." *The Engineer* (London, England). February 8. Volume 295, Pages 20-22. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Earthquakes and public works; Applied Science & Technology. Notes: Illustration; Map. Abstract: The writer discusses the important role of engineering in helping poorer countries such as Haiti prepare for earthquakes. While earthquakes are statistically unlikely in nearly every part of the world, if one does erupt, it is likely to be catastrophic. Through engineering evidence and calculations, countries can learn how a particular building technique can make stronger houses. There is an onus on the engineer when they are taking on projects in poor countries offer advice on how to rebuild, especially when they are asked about future seismic risk. ISSN: 0013-7758.

National Earthquake Information Center; Global Seismographic Network; United States and Agency for International Development. 2010. "M7.0 Haiti Earthquake of 12 January 2010." Denver, Colo.: U.S. Geological Survey. Version 3. Descriptors: Haiti Earthquake, Haiti, 2010; Earthquakes- Haiti- Port-au-Prince- Maps; Earthquakes- Haiti- History; Earthquakes- Antilles, Greater- History; Earthquakes- Caribbean Sea- History; Earthquake zones- Hispaniola- Maps; Plate tectonics- Caribbean Sea- Maps; Faults (Geology)- Hispaniola- Maps; Government publication; International government publication; Internet resource. Notes: Description: 5 maps on 1 sheet: col. 26 x 36 cm. or smaller, sheet 107 x 94 cm. "Earthquake summary map." Includes text, 1 table of significant earthquakes. Relief shown by shading; depth shown by gradient and bathymetric tints. "Earthquakes shown are .. magnitudes greater than 4.5." "USGS, GSN, USAID from the American people; PAGER Version 5." Includes bibliographical references. Also available on the Internet. Map Info: Scale 1:20,000,000. (W 90°15' --W 50°00'/N 30°30' --N 00°00'). Scale 1:4,500,000. Responsibility: prepared by U.S. Geological Survey, National Earthquake Information Center; in cooperation with the Global Seismographic Network. Abstract: Tectonic setting- Epicentral region- Estimated population exposed to earthquake shaking- Historic earthquakes and tsunami 1492-2004- Hispaniola. OCLC Accession Number: 501304328. URL: <ftp://hazards.cr.usgs.gov/maps/sigeqs/20100112/20100112.pdf>.

National Film Board of Canada; Canadian Broadcasting Corporation; Canadian International Development Agency and Public Affairs Branch. 1986. Grande Saline. Hull, Quebec: Public Affairs Branch, CIDA. Volume: 1 videocassette (VHS) (26 min.): sd., col. 1/2 in., Descriptors: Water-supply- Haiti; Fresh water- Haiti; Documentary films; Government publication; National government publication; Videorecording; Videocassette; VHS tape. Abstract: Life in a Haitian village and the efforts of residents to improve their water supply through a de-salination project. Notes: Issued also as a documentary film. Issued also in French under title: La Grande Saline. Responsibility: National Film Board of Canada in collaboration with the Canadian Broadcasting Corporation and the Canadian International Development Agency. OCLC Accession Number: 42482449; 42482416; 22955650.

Nault, Vital. 1992. *Cartographie par Informatique de l'État de la Fertilité des Sols de Rizières de la Vallée de l'Artibonite, Haïti (1990)*. Translated title: Computer Mapping of the State of Soil Fertility for Rice in the Artibonite Valley, Haiti. Descriptors: Sols- Fertilité- Artibonite, Vallée de l' (République dominicaine et Haïti)- Cartes; Sols- Fertilité- Haïti- Cartes; Cartographie par ordinateur; Cartographie agricole- Artibonite,

Vallée de l' (République dominicaine et Haïti); Cartographie agricole- Haïti; Riz- Sols- Artibonite, Vallée de l' (République dominicaine et Haïti)- Cartes; Riz- Sols- Haïti- Cartes; Thesis/dissertation; Manuscript. Notes: xiii, 116 f.: ill., cartes (certaines en coul.); Dissertation: Thèses (M.Sc.)- Université Laval, 1992. Note(s): Bibliogr.: f. 107-116. Other Titles: Thèse. Agriculture. Responsibility: Vital Nault. OCLC Accession Number: 77053586.

Naval Ocean Research and Development Activity Stennis Space Center MS and Moss George, Wager Robert. "Coastal Hydrographic Sonar/Advanced Acoustic Techniques Technology Assessment Report Fields and Groups: 170100 - 080300 - 080200 -." page(s): 43. Descriptors: Hydrographic Surveying; Scanning Sonar; Hydrographic Sonar; Gulfs; Coastal Regions; Hazards; Bathymetry; Navigation; Launching; Productivity; Mapping; Area Coverage; Multiple Beams Radiation; Side Looking Sonar; Haiti; Depth Finding; Towed Sonar. Abstract: Technological options for increasing the productivity of hydrographic survey launches are reviewed, based on observations of the Naval Oceanographic Office survey operations in the Golfe de la Gonave, Haiti, during May 1982. It was found that multi-beam sonars have the potential to increase productivity by 50% in terms of area surveyed per day per launch for water depths between 75 and 200 meters, or possibly by 100% over the very limited depth range of 145 to 200 meters. By contrast, under the operating conditions observed during the May 1982 operation in Golfe de la Gonave, major improvements in reliability and maintainability combined with use of the new LCP(L) MK-12 launches can potentially increase productivity by up to 310%. Sector-scan sonars were found to have an attractive potential for detection of navigation hazards between sounding lines, mapping the perimeters of hazardous areas, and reconnaissance and survey planning. These capabilities will increase productivity provided the sonars are designed for operation at normal survey speeds. DTIC Accession Number: ADA131461. PURL: <http://handle.dtic.mil/100.2/ADA131461>.

Naval Oceanographic Office NSTL Station MS and Barwick, Atwood S. 1969. "Project Flood Data Report, Caribbean Sea, August 1967 to August 1968." Aug. Page(s): 35 Report Number: NOO-IR-69-52 XB-NOO* Descriptors: oceanographic data; data processing; optical properties; sea water; diving; sedimentation; West Indies; Virgin Islands; minesweepers; Caribbean Sea; Puerto Rico; bathythermograph data; chemical analysis; colors; particle size. Abstract: Mine divisions 41, 45, and 85 collected oceanographic data in the Caribbean Sea from August 1967 to August 1968 in support of Project FLOOD. Most of the data were collected in the vicinities of Hispaniola, Puerto Rico, and the Virgin Islands. Acceptable data included 78 bathythermograms (BT's), 22 bottom sediment samples, and 16 water transparency (Secchi disc) and color (Forel scale) observations The data are a useful contribution to knowledge of the marine environment of the Caribbean Sea and will be available to agencies and institutions through the National Oceanographic Data Center. DTIC Accession Number AD0860437. PURL: <http://handle.dtic.mil/100.2/AD860437>.

Naval Oceanographic Office NSTL Station MS and Burton, Gordon D. 1965. "Geomagnetic Survey of an Area Northeast of Hispaniola." Jan. Page(s): 17 Report Number: H-1-65. Descriptors: Geomagnetism; West Indies; oceanographic ships; oceanographic data; mapping; maps; magnetometers; measurement; Dominican Republic; Puerto Rico; anomalies; depth finding; structural geology. Abstract: In March

and April 1964, USACS Albert J. Myer conducted a detailed geomagnetic survey of an areal northeast of Hispaniola. This survey was accomplished on an opportunity basis as part of a U.S. Naval Oceanographic Office project to survey offshore areas not previously subjected to systematic surveys. The area of operation is located about 60 miles northeast of the island of Hispaniola. The Myer area lies between two areas where previous magnetic surveys had been conducted. The information collected on the Myer survey thus can be used for providing correlation between these adjacent surveys. (Author)

Notes: Citation Status: active. DTIC Accession Number: AD0468351.

Naval War Coll Newport RI Joint Military Operations Dept and Thomas, Cari B. 2004. "The Maritime Component Commander: The U.S. Coast Guard? Can it...Will it...Should it." 18 May. Pages(s): 49 Report Number: XB-NWC/JMO Descriptors: Joint Military Activities; naval operations; Coast Guard; United States; national security; lessons learned; strategy; military capabilities; history; power; military commanders. Abstract: since mid-March 2004, the U.S. Coast Guard has assumed the duties as a Maritime Component Commander for the combined Joint Task Force-Haiti under the direction of Southern Command. The duties, described in a 16 March 04 SOUTHCOM press release were to continue to support stability operations by providing support for port security in Port-au-Prince harbor and conducting port assessments to help restore commercial and humanitarian operation in other Haitian ports. The purpose of this research project is to examine the strategic settings under which a Combatant Commander is expected to conduct maritime operation and evaluate the duties of the MCC. Some review of Coast Guard history, principles and capability will be presented. The study will then analyze data regarding survey respondents' perceptions on the Coast Guard's ability to perform these duties in both combat and non-combat environments, and examine the debate regarding the competing demands for Coast Guard people and platforms, particularly in a post 9-11 homeland security environment. Finally, it gives recommendations for a Combatant Commander's considerations, presents some lessons learned for operations typical for Coast Guard coordination and concludes with a view on how the Coast Guard fits into the national interests as defined by the President of the United States. DTIC Accession Number: ADA425931. PURL: <http://handle.dtic.mil/100.2/ADA425931>.

Naval War Coll Newport, RI and Davis, Dawne M. 1997. "Operational Logistics in MOOTW: What Your CINC Needs to Know. Fields and Groups: 150600 - Military Operations, Strategy and Tactics." 07 Feb. Page(s): 17. Descriptors: Military Operations; Military Planning; Logistics Planning; USSR; Military Reserves; Warfare; Iraq; Nations; Lessons Learned; Government Foreign; Tools; Water; Operation; Wake; Logistics; California; Somalia; North Direction; Feeding; Communism; Democracy; Haiti; Elections. Abstract: Much has been made of the changing role of the military since the threat from communism has all but been eliminated with the fall of the Soviet Union. In fact, without an 'evil empire' to provide a focus for our military plans the military has been forced to redefine itself in the wake of these startling changes. We must do more with less, downsize our forces, shift many logistical assets to the reserve components to save money, reduce our forward presence while at the same time maintaining capabilities to fight two major regional contingencies and to conduct military operations other than war (MOOTW). MOOTW have become increasingly predominant in the roles and missions of our armed forces. Since the fall of the iron curtain United States armed forces

have been involved in Operation Provide Comfort to feed the Kurds in Northern Iraq, Operation Restore Hope to feed the starving masses in Somalia, Operation Uphold Democracy to restore a democratic government in Haiti, Joint Task Force Los Angeles during the riots in California and Operation Support Hope to stop the dying in Rwanda. These military operations demonstrate a gradual shift in the use of military forces from simply winning our nation's wars to providing the tools to feed the hungry, provide water to the thirsty and uphold foreign government elections all in support of our national interests. Distribution Limitation(s): 01 - approved for public release Source Serial: F Source Code: 252900. Notes: Full Text (pdf) Availability: Size: 1 MB Handle / proxy Url: <http://handle.dtic.mil/100.2/ADA325110>; Citation Status: A - Active. DTIC Accession Number: ADA325110.

Naval Weather Service Command Washington D C. 1974. Summary of Synoptic Meteorological Observations: Caribbean and Nearby Island Coastal Marine Areas. Volume 3. Area 12 - Hispaniola South, Area 13 - Windward Passage, Area 14 - Grand Bahama, Area 15 - Nassau, Area 16 - San Salvador, Area 17 - Acklins Island. Ft. Belvoir Defense Technical Information Center: Descriptors: Meteorology; Coastal regions; Marine meteorology; Atlantic ocean islands; Caribbean sea; Ocean waves; Atmospheric temperature; Fog; Climate; Meteorological phenomena; Atmospheric precipitation; Air water interactions; North Atlantic ocean; Cloud cover; Channels(waterways); Haiti; Bahama islands; Synoptic meteorology; Windward Passage; Grand Bahama Island; Nassau(Bahama Islands); Acklins Island; San Salvador Island. Abstract: The data contained in these tables were obtained from tape data Family 11 (TDF-11), Marine Surface observations. TDF-11 was primarily funded by the Naval Weather Service Command and selected by NWSA Asheville as the most comprehensive collection of marine surface observations from which to develop a series of coastal marine summaries. Notes: 485 p. Note(s): See also Volume 2, AD/A-001 031, and Volume 4, AD/A-001 457. General Info: Approved for public release. OCLC Accession Number: 227366524.

Neuenschwander, A. L.; Crawford, M. M.; Magruder, L. A., et al. 2010. Terrain Classification of LADAR Data Over Haitian Urban Environments using a Lower Envelope Follower and Adaptive Gradient Operator. Proceedings of SPIE - the International Society for Optical Engineering. Volume: 7684. Abstract: In response to the 2010 Haiti earthquake, the ALIRT lidar system was tasked with collecting surveys to support disaster relief efforts. Standard methodologies to classify the lidar data as ground, vegetation, or man-made features failed to produce an accurate representation of the underlying terrain surface. The majority of these methods rely primarily on gradient-based operations that often perform well for areas with low topographic relief, but often fail in areas of high topographic relief or dense urban environments. An alternative approach based on a adaptive lower envelope follower (ALEF) with an adaptive gradient operation for accommodating local slope and roughness was investigated for recovering the ground surface from the lidar data. This technique was successful for classifying terrain in the urban and rural areas of Haiti over which the ALIRT data had been acquired. ISBN: 0277786X; 9780819481481. Database: SCOPUS. OCLC Accession Number: 768408.

Nichols, Stephen Wayne. 1988. Systematics and Biogeography of West Indian Scaritinae (Coleoptera: Carabidae) (Florida, Mexico). United States- New York: Cornell University. Descriptors: Entomology. Abstract: The Scaritinae (Coleoptera: Carabidae) of

the West Indian biogeographic region, including south Florida and the Yucatan Peninsula (in part), are reviewed. A synonymy, adult diagnosis, larval diagnosis, and comments on distribution, general ecology, and immature stages are provided for the subfamily. Similar information is also provided for other supraspecific taxa. Species-level taxa are treated in more detail with information falling under the following headings: synonymy, type locality, diagnosis, taxonomic notes, distribution, material examined, literature records, ecology, bionomics, immature stages, and parasites. Keys are provided to the tribes of Scaritinae of the world, including Oxylobini (new status) and Pasimachini (new status), and to all included genera, subgenera, and species. *Antilliscaris* Banninger and *Semiardistomis* Kult are raised from their previous rank as subgenera to full generic status. Two new species are described: *Ardistomis franki* n. sp. (from Hardwar Gap, Jamaica) and *Ardistomis hispaniolensis* n. sp. (from Ennery, Haiti). Fourteen species are newly synonymized and nine new combinations are formed. Sixty-five species of the subfamily Scaritinae are known from the West Indian biogeographic region. Of these, twenty-seven (41.5%) are endemic. Single island endemics are found on six islands: Cuba, Hispaniola, Jamaica, Puerto Rico, Guadeloupe, and Martinique. The Puerto Rican fauna has the highest level of endemism (38% of scaritines are endemic). The endemic West Indian scaritine fauna is dominated by stenotopic halophobic hygrobionts (salt intolerant species that require high levels of moisture), suggesting that fluctuating climates have played a prominent role in shaping the West Indian fauna. The distribution of scaritines and endemic genera of Coleoptera in the West Indies support the view that the Greater Antilles were colonized by over-water dispersal from the mainland, especially by rafting. In addition, the fauna seems to be in a state of flux, with significant numbers of probable introductions by man, particularly among species that are eurytopic with respect to their moisture requirements. OCLC Accession Number: 8804612. URL: <http://proquest.umi.com/pqdweb?did=752312561&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Nicolini, P. 1977. Les porphyres cupriferes et les complexes ultra-basiques du nord-est d'haiti. Essai de geologie previsionnelle. Translated title: The porphyry copper complexes and ultra-basic in the north-east of haiti. Testing ore deposit forecast. Page(s): 15. Descriptors: Terre; Ocean; Espace: Geologie Regionale; Cartes; Gisements Metalliques Et Non Metalliques; These; Echelle Stratigraphique; Secondaire; Tectonique D'ensemble; Metallogenie Previsionnelle; Porphyry; Copper; Cu; Filon; Cisaillement; Ultrabasite; Diorite; Granodiorite; Corneenne; Alteration Hydrothermale; Controle Gite; Haiti; Thesis; dissertation. Abstract: Metallogenie previsionnelle des porphyres du nord est de Haiti. Et des roches associees, specialement les ultrabasites. Controle tectonique de la repartition des porphyres. Etude de leur geometrie et de leur petrographie. Metallotecte du cu (mineralisation dominante) et metallotecte des ultrabasites. Notes: 20. Dissertation: Doctorat d'Etat: Terre, Ocean, Espace. 2 pages. OCLC Accession Number: 490624854.

Nittinger, J. and Institut fuer Angewandte Geodaesie, Frankfurt am Main (Germany). 1984. "The Significance of Orthophoto Maps for Developing Countries." Descriptors: Cadastral Mapping; Developing Nations; Orthophotography; Photomapping; Central America; Geodetic Surveys; Haiti; Land Use; Photogrammetry; Photointerpretation; Technology Transfer; Thailand. Abstract: Orthophoto maps as planning tools are discussed. They can also be used as a basis for cadastral maps and for the recording of land register data. This is demonstrated by examples from Thailand,

Central America, and Haiti. Notes: 1984. pp. 17-28; SEE N85-29338 18-43; Inform. Relative to Cartography and Geodesy. Ser. 2: Transl., No. 42, Vol. 1 p 17-28 (SEE N85-29338 18-43). Database: CSA Technology Research Database. NTIS Accession Number: N85-29341. DOI: 10.3138/TQ44-7MGW-L2V0-2N51.

Noel, Claudel. 2010. "Solid Waste Workers and Livelihood Strategies in Greater Port-Au-Prince, Haiti." *Waste Management*. Volume 30, Issue 6, Pages 1138-1148. Abstract: The solid waste management industry in Haiti is comprised of a formal and an informal sector. Many basic activities in the solid waste management sector are being carried out within the context of profound poverty, which exposes the failure of the socioeconomic and political system to provide sufficient job opportunities for the urban population. This paper examines the involvement of workers in the solid waste management industry in Greater Port-au-Prince and the implications for livelihood strategies. The findings revealed that the Greater Port-au-Prince solid waste management system is very inclusive with respect to age, while highly segregated with regard to gender. In terms of earning capacity, the results showed that workers hired by the State agencies were the most economically vulnerable group as more than 50% of them fell below the official nominal minimum wage. This paper calls for better salary scales and work compensation for the solid waste workers. ISSN: 0956-053X.

Nugroho, G. 1993. "Partnership for Community Health Development." *World Health Forum*. Switzerland. Volume 14, Issue 2, Pages 168-171. Descriptors: Communicable disease control/trends; community health aides/trends; community health services/trends; consumer participation/trend; developing countries; Haiti; humans; poverty/trends; rural health/trends; achievement; Americas; behavior; Caribbean; community health services; community participation; community workers; delivery of health care; diseases; education; family planning education; health; health facilities; health personnel; health services; health surveys; hospitals; immunization; Latin America; Malnutrition; Maternal-child health services; North America; nutrition disorders; organization and administration; primary health care; training activities; training programs. Abstract: A programme of community health development is reported from two villages in Haiti. It involves close cooperation between a district hospital, a local dispensary, and, most importantly, the inhabitants themselves, the programme is simple, financially realistic, adapted to local conditions, and linked to activities designed to meet basic requirements, such as those of food production and water supply. The Albert Schweitzer Hospital in the Artibonite Valley of central Haiti was founded by William Larimer Mellon in 1956 to serve about 175,000 people. Early in 1977, the hospital decided to create a community health department and provide curative, preventive, and promotive health programs through seven dispensaries, A mobile immunization team was established. In 1988, two villages with a total population of 1459, in the catchment area of the Plassac dispensary, were selected for a research and development project with a comprehensive baseline survey. Among children aged up to 5 years, 36% were of normal nutritional status, while 41 %, 18%, and 4% suffered from first-, second-, and third degree malnutrition, respectively. Of these children, only 31% were completely immunized. 21% of the children had tuberculosis, malaria, and upper respiratory tract infections. The illiteracy rate was around 85 %. A village development committee was elected by the community. Voluntary health workers, elected or selected among mothers, were trained in health promotional activities, and each was made responsible for 15-20

families. These workers, with the dispensary's health agents, delivered a minimum health care package, comprising maternal and child care, family planning, immunization, treatment of simple diseases, health and nutrition education, and environmental sanitation. In less than two years, there was a strong indication of declining mortality and malnutrition among children aged one to three years. No more cases of third-degree malnutrition were seen in the dispensary, and some 90% of children were fully immunized. Changes were evident in the health knowledge, attitudes, and practices of the population. It is expected that during 1993 the whole catchment area of the Plassac dispensary, with around 20,000 people, will be covered. The dispensary had to be upgraded to a community health center with two or three beds for emergency cases. ISSN: 0251-2432; 0251-2432.

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Oates, Peter M. 2001. "Solar Disinfection for Point of use Water Treatment in Haiti." Massachusetts Institute of Technology, Dept. of Civil and Environmental Engineering. See: <http://web.mit.edu/watsan/Docs/Student%20Theses/Haiti/Oats2001.pdf>

Oates, Peter M., Shanahan, Peter and Polz, Martin F. 2003. "Solar Disinfection (SODIS): Simulation of Solar Radiation for Global Assessment and Application for Point-of-use Water Treatment in Haiti." *Water Research*. 1. Volume 37, Issue 1, Pages 47-54. Descriptors: Solar disinfection; Solar simulation; Water treatment. Abstract: Haiti and other developing countries do not have sufficient meteorological data to evaluate if they meet the solar disinfection (SODIS) threshold of 3–5 h of solar radiation above 500 W/m², which is required for adequate microbial inactivation in drinking water. We have developed a mathematical model based on satellite-derived daily total energies to simulate monthly mean, minimum, and maximum 5-h averaged peak solar radiation intensities. This model can be used to assess if SODIS technology would be applicable anywhere in the world. Field measurements were made in Haiti during January 2001 to evaluate the model and test SODIS efficacy as a point-of-use treatment option. Using the total energy from a measured solar radiation intensity profile, the model recreated the intensity profile with 99% agreement. NASA satellite data were then used to simulate the mean, minimum, and maximum 5-h averaged peak intensities for Haiti in January, which were within 98.5%, 62.5%, and 86.0% agreement with the measured values, respectively. Most of the discrepancy was attributed to the heterogeneous nature of Haiti's terrain and the spatial resolution of the NASA data. Additional model simulations suggest that SODIS should be effective year-round in Haiti. Actual SODIS efficacy in January was tested by the inactivation of total coliform, *E. coli*, and H₂S-producing bacteria. Exposure period proved critical. One-day exposure achieved complete bacterial inactivation 52% of the time, while a 2-day exposure period achieved complete microbial inactivation 100% of the time. A practical way of providing people with cold water every morning that has undergone a 2-day exposure would be to rotate three groups of bottles every morning, so two groups are out in the sun and one is being used for consumption. ISSN: 0043-1354. See: <http://web.mit.edu/watsan/Docs/Other%20Documents/Oates-%20SODIS%20Paper2001.pdf>

Officer, Charles B. and Lyons, John B. 1993. "A Short Note on the Origin of the Yellow Glasses at the Haiti Cretaceous/Tertiary Section." *Earth Planet. Sci. Lett.* July 1993. Volume 118, Issue 1-4, Pages 349-351. Descriptors: Cretaceous-Tertiary Boundary; Glass; Haiti; Limestone; Volcanoes; Zeolites; Carbonates; Iron Oxides; Silicon Dioxide. Notes: NR: 7. Abstract: The Cretaceous/Tertiary section in Haiti consists of the alteration products of palagonite, smectite, and zeolites (more than 95 percent), black glass (1 percent), and yellow glass (less than 0.01 percent). The alteration products are typical decomposition products of volcanic glasses. The black glasses are of an andesitic-dacitic composition, a clear indication as to their origin. The rare yellow glasses contain melilite crystals and are considered to be assimilative reaction products formed during the rise of the igneous magma through the overlying limestone/marl formations. Database: CSA Technology Research Database. ISSN: 0012-821X.

Ohler, F.M.J. 1992. Plan de travail pour 1993 (Projet HAI/89/017, Creation de Fermes Energetiques et Reboisement Sylvo-Pastoral dans une Region Marginale de la Plantation Dauphin, Haiti). (Plan of work for 1993 (Project HAI/89/017, establishing

energy farms and silvo-pastoral reforestation on marginal land in the Dauphin plantation, Haiti)). Language: French. Imprint: (np). Dec 1992. Notes: Summary (Fr). (np). Dec 1992. 22 pages. Fiche no: 342179. Project: Creation de Fermes Energetiques et Reboisement Sylvo-Pastoral dans une Region Marginale de la Plantation Dauphin, Haiti, Document de travail 2, HAI/89/017. Report number(s): FAO-FO--HAI/89/017. FAO-AN: 342179.

“Order Defining the Jurisdiction of the Forestry Guard, 30 December 1987.” 1988. Annual Review of Population Law. Volume 15, Pages 236. Descriptors: agriculture; Agriculture--legal aspects; article; Central America; developing country; Economic Factors; economics; environment; environmental protection; Environmental Protection--legal aspects; Forests--legal aspects; Haiti; health care planning; law; Macroeconomic Factors; Natural Resources; North America; organization and management; Program Activities; Programs; South and Central America; tree; water supply; Water Supply--legal aspects; Western Hemisphere; Americas; Caribbean; Developing Countries; Latin America; Legislation; Organization And Administration; Caribbean Region; Conservation of Natural Resources; Health Planning; Trees. Abstract: This Order defines the jurisdiction of the Haitian forestry guard in order better to protect the State's hydrographic basins and national forest resources. It provides that the forestry guard is to have the following functions: 1) to oversee in general the application of forestry legislation; 2) to stop all forms of agricultural or forestry exploitation that harm state lands; 3) to confiscate all illicitly exploited forestry resources; 4) to inspect regularly the parts of the forest or parks assigned to its care; and 5) to control the circulation of wood and wood products, documents, and freight. In collaboration with other interested state agencies, the forestry guard is also to prevent forest fires and promote the natural and man-made generation of the forest. Database: SCOPUS. ISSN/ISBN: 03643417.

Organization of American States. Department of Regional Development and Environment and Haiti. Frontier Development Program. 1991. Agroforestry and Watershed Management Project, Artibonite River: Pre-Feasibility Study. Washington, D.C. General Secretariat of the Organization of American States: page(s): 106. Descriptors: Agricultural Development; Agricultural Production; River Basins; River Basin Development; Reforestation; Soil Conservation; Water Conservation; Haiti; Feasibility Studies. Notes: xxxviii; illustrations + 3 folded maps in pocket. Note(s): At head of title: Republic of Haiti. - On spine: Republic of Haiti, Frontier Development Program. - Summary in French. - Bibliography: p. 105. ISSN/ISBN: 0827030509; 9780827030503. OCLC Accession Number: 80245438.

Organization of American States. Dept. of Regional Development and Environment; Organisme de développement du bassin du fleuve Artibonite (Haiti); Organization of American States; Organization of American States; Dept. of Regional Development and Environment and Republic of Haiti, agroforestry and watershed management project, Artibonite River: pre-feasibility study. 1991. “République d'Haïti, Programme De Développement de la Zone Frontalière dans le Bassin du Haut Artibonite.” Translated title: “Republic of Haiti, Program of the Border Zone Development in the Basin of the Upper Artibonite.” Washington, D.C.: L'Organisation. Descriptors: Soils- Artibonite River Watershed (Dominican Republic and Haiti)- Maps; Soil erosion- Artibonite River Watershed (Dominican Republic and Haiti)- Maps; Government publication; International government publication. Notes: Description: 3

maps: col. 74 x 66 cm., folded in cover 28 x 22 cm. Map Info: Scale 1:150,000. Note(s): Accompanied by text: Republic of Haiti, agroforestry and watershed management project, Artibonite River: pre-feasibility study / General Secretariat of the Organization of American States, Executive Secretariat for Economic and Social Affairs, Department of Regional Development and Environment. Washington, D.C.: The Organization, 1991. xxxviii, 106 p.: col. ill., maps; 28 cm. Includes location map. Bibliography in accompanying text. Responsibility: cette carte fait partie de l'étude d'aménagement et de conservation des sols et des eaux dans le bassin du haut Artibonite, réalisée dans le cadre du programme de développement de la zone frontalière conjointement par le Département du développement régional et de l'environnement du Secrétariat général de l'Organisation des états américains et l'Organisme de développement du bassin du fleuve Artibonite, 1991. Abstract: Contraintes d'érosion- Occupation du sol- Vocation des sols. ISSN/ISBN: 0827030509; 9780827030503; LCCN: 92-680578. OCLC Accession Number: 25368323.

Orkin, M. and Maibach, H. I. 1993. "Scabies Therapy - 1993." Seminars in Dermatology. Volume 12, Issue 1, Pages 22-25. Descriptors: crotamiton; diphenhydramine; hydrocortisone; hydroxyzine; lindane; permethrin; sulfur; acquired immune deficiency syndrome; drug resistance; drug tolerance; human; priority journal; pruritus; review; scabies; Acquired Immunodeficiency Syndrome; Age Factors; Animal; Antipruritics; Clinical Protocols; Insecticides, Botanical; Pyrethrins; Toluidines. Notes: Cited By (since 1996): 28. Abstract: The addition of permethrin as a scabicide with low toxicity adds significantly to our therapeutic options for typical and special forms of scabies. Detailed specific management suggestions, as well as a scabies instruction sheet, are included. The management of crusted (Norwegian) scabies and scabies in human immunodeficiency virus-acquired immune deficiency syndrome (HIV/AIDS) is more difficult and may require, particularly in those intensely immunosuppressed, repeated treatment with scabicides and sometimes sequential use of several agents. Tolerance (resistance) to lindane was suggested in Central America but also in South America, Haiti, Egypt, and in clusters in the United States. Database: SCOPUS. ISSN: 0278-145X.

Orndorff, R. C. 1985. "Annotated Bibliography of Coal in the Caribbean Region." Descriptors: Bibliographies; Caribbean Region; Coal; Colombia; Dominican Republic; Haiti; Jamaica; Maps; Puerto Rico. RP: TI86-900020; USGS-OFR-85-110; 1 ref.; Available from NTIS HC A03/MF A01. Abstract: The purpose of preparing an annotated bibliography was to compile information on coal localities for the Caribbean region used for preparation of a coal map of the region. Also, it serves as a brief reference list of publications for future coal studies in the Caribbean region. It is in no way an exhaustive study or complete listing of coal literature for the Caribbean. All the material was gathered from published literature with the exception of information from Cuba which was supplied from a study by Gordon Wood of the U.S. Geological Survey, Branch of Coal Resources. The literature ranges from 1857 to 1981. The countries listed include Colombia, Mexico, Venezuela, Cuba, the Dominican Republic, Haiti, Jamaica, Puerto Rico, and the countries of Central America. (DOE). Database: CSA Technology Research Database.

O'Rourke, P. J. 1994. "Haiti. In Haiti, Nothing Works Right. Phones are Impossible. Electricity is Rare. Running Water is Provided on an Eccentric Schedule. What Else but Politics could Create a Situation Like Haiti's, Where Miserable Poverty is

Fought by Making People as Miserable as Possible?" *Rolling Stone*. April 21. Issue 680, Pages 48. Notes: Additional Info: Straight Arrow Publishers, Alt Journal: Uniform Title: *Rolling stone* (San Francisco, Calif.) Key Title: *Rolling stone*. ISSN: 0035-791X.

Orsak, Geoffrey. 2010. "We Failed Haiti Once." *Design News*. March. Volume 65, Issue 3, Pages 28. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Engineering/Social aspects; Disaster relief; Applied Science & Technology. Abstract: The writer comments on the steps that can be taken by the engineering community in light of the recent earthquake that devastated Haiti. The first step is to increase the emphasis on disaster prevention as a core element of the engineering discipline. The second step is to produce and disseminate novel construction technologies so that even low-cost housing can be made safer. The third step is to develop the capability to speedily assemble temporary cities that can serve as homes to the millions displaced by natural disasters. The fourth step is to ensure that the logistics and workforce support are in place and ready to save lives in the crucial days following a disaster. ISSN: 0011-9407.

Oskarsson, N., Helgason, O. and Sigurdsson, H. 1996. "Oxidation State of Iron in Tektite Glasses from the Cretaceous/Tertiary Boundary; the Cretaceous-Tertiary Event and Other Catastrophes in Earth History." *Special Paper - Geological Society of America*. Volume 307, Pages 445-452. Descriptors: Antilles; Beloc Haiti; buffers; carbon dioxide; Caribbean region; Cenozoic; chemical composition; Cretaceous; Eh; emission spectra; ferric iron; ferrous iron; fugacity; Greater Antilles; Haiti; Hispaniola; iron; K-T boundary; lower Paleocene; melts; Mesozoic; metals; mineral composition; Mossbauer spectra; oxidation; oxygen; Paleocene; Paleogene; siliceous composition; spectra; stratigraphic boundary; tektites; temperature; Tertiary; Upper Cretaceous; volatiles; water; West Indies. References: 18; illus. incl. 2 tables. Database: GeoRef. ISBN: 0813723078.

Ott, J. S.; Roller, N. E. and Wagner, T. W. 1981. "Analysis and Interpretation of Seasat Synthetic Aperture Radar Data for Portions of Costa Rica, Haiti, and Honduras." Ann Arbor; United States: Environmental Research Inst. of Michigan. Nov. 1981. Volume: ERIM1438001F; AIDPNAAK048; PB84169911, page(s): 74. Descriptors: Water resources; Forestry; Geology; Soils; Remote sensing; Spaceborne photography; Weather; Synthetic aperture radar; Natural resources; Costa Rica; Haiti; Honduras; Developing country application; Seasat satellites. Abstract: Space-borne remote sensing is a relatively novel technique for mapping, monitoring, and inventorying forestry, geological, soil, and water resources. This report describes a 1-1/2 year project to study the nature of Seasat Synthetic Aperture Radar (SAR) remote sensing data for portions of Costa Rica, Haiti, and Honduras and to assess SAR-type data utility for supplying resource information to developing countries. Contract AID-DSAN-C-0147. Database: NTIS. NTIS Accession Number: PB84169911.

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Pahaut, P. E. Enquête sur les terres et les eaux dans la Plaine des Gonaïves et le Département du Nord-Ouest; United Nations Development Programme and Food and Agriculture Organization of the United Nations. 1969. "Carte des Classes De Potentialité des Terres Irrigables: [Haïti]." Port-au-Prince: Enquête sur les terres et les eaux dans la Plaine des Gonaïves et le Département du Nord-Ouest. Descriptors: Soils- Haiti-Gonaïves Plain- Maps; Soils- Haiti- Nord-Ouest- Maps; Government publication; International government publication. Notes: Description: 6 maps: col. on 2 sheets 110 x 80 cm. and 73 x 93 cm., folded in cover 28 x 22 cm. Scale 1:25,000. Note(s): Cover title: Haïti, rapport final, volume 1, général, carte. Relief shown by contours and spot heights. Published jointly with United Nations Development Programme and Food and Agriculture Organization of the United Nations. On cover: FAO/SF: 45/HAI-3. Abstract: Région des Gonaïves. Région du Nord-Ouest. LCCN: 80-690195. OCLC Accession Number: 6788850.

Pallas, P. 1985. Modele mathematique de simulation de la nappe alluviale de la Plaine de Gonaïves. Amelioration du calage, simulation previsionnelle. Rapport de consultant. (Mathematical simulation model of the alluvial water table of Gonaïves Plain. Improvement of calibration, simulation of predictions. Consultant's report). Language: French. Imprint: Port-au-Prince (Haiti). Dec 1985. 46 p. Fiche no: 86X00936. Doc. Orig. Div: AGL; AGO. Project: HAI/84/011. Report number(s): FAO-AGL--HAI/84/011. FAO-AN: 257853.

Pan American Institute of Geography and History. 1953. "Estudio Preliminar En Cuba, Haiti, Republic Dominicana y Puerto Rico, Tomo 3 of Los Estudios Sobre Los Recursos Naturales En Las Americas. Xvi." Descriptors: 1938-1952; Antilles; bibliography; Caribbean region; Cretaceous-Pleistocene; Cuba; Dominican Republic; economic geology; education; geologic instruction; geologic investigations; Geologic investigations and instruction; Greater Antilles; ground water; Haiti; Hispaniola; historical geology; history; instruction; mineral resources; physiographic geology; Puerto Rico; Subjects; West Indies. Database: GeoRef.

Pareja Mendoza, Efrain. 1981. Bibliographie d'Assistance Externe En Haiti Depuis l'Annee 1949. Bibliography of External Assistance in Haiti since 1949. Haiti: United Nations, Port au Prince, Haiti. Descriptors: Antilles; areal geology; Bibliographie 1949-1981; bibliography; Caribbean region; economic geology; energy sources; geology; Greater Antilles; Haiti; Hispaniola; hydrogeology; hydrology; water resources; West Indies. GeoRef Accession Number: 1984-050215.

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Quinn, Robert Michael and Peace Corps/Haiti. 1991. *Agroforestry Training Manual*: Peace Corps, Haiti. Descriptors: Agroforestry- Study and teaching- Haiti; Soil conservation- Study and teaching- Haiti; Agricultural education- Curricula- Haiti; Forestry schools and education- Curricula- Haiti. Abstract: Agroforestry technical training: goals- Agroforestry technical training: performance objectives- Training schedules- List of technical training sessions- Session designs. Notes: 125 leaves: ill., forms; 29 cm. Note(s): "Designed for use in Peace Corps pre-service training in Haiti.. Most sessions .. could, with few or no changes, be used in Peace Corps pre-service or in-service trainings anywhere in the world"--Leaf 2. "November 1991." OCLC Accession Number: 228506953.

R

Raccurt, C. P., Brasseur, P., Verdier, R. I., et al. 2006. "Human Cryptosporidiosis and *Cryptosporidium* Spp. in Haiti." *Tropical Medicine and International Health*. Volume 11, Issue 6, Pages 929-934. Descriptors: Aids patients; Cryptosporidiosis; *Cryptosporidium felis*; *Cryptosporidium hominis*; *Cryptosporidium parvum*; Faecal peril; Haiti; disease prevalence; feces; human immunodeficiency virus; hygiene; infectious disease; urban area; acquired immune deficiency syndrome; adolescent; adult; aged; animal experiment; animal model; article; Central America; child; controlled study; *Cryptosporidium*; diarrhea; feces analysis; genotype; hospital admission; human; Human immunodeficiency virus infection; incidence; infant; mouse; newborn; nonhuman; oocyst; AIDS-Related Opportunistic Infections; Animals; Humans; Oocysts; Prospective Studies; Species Specificity; Atlantic islands; Atlantic Ocean; Caribbean Islands; Greater Antilles; Port-au-Prince; Animalia. Notes: Cited By (since 1996): 7. Abstract: Contamination by water-borne infectious diseases is closely linked to urban slums conditions such as overcrowding and high level of faecal pollution by animal and human excreta. In this environment, cryptosporidiosis is a major cause of acute diarrhoea in children and chronic persistent diarrhoea in AIDS patients, resulting in increased morbidity and mortality in both populations. The aims of this study conducted in Port-au-Prince, Haiti were to: (i) determine the frequency of *Cryptosporidium* infection in two populations of patients with diarrhoea, children and AIDS patients, and the existence of *Cryptosporidium* carriage in healthy adults living in close contact with them; (ii) identify by molecular genotyping the *Cryptosporidium* species involved; and (iii) evaluate the viability of *Cryptosporidium* oocysts isolated from human stools. From January 2000 to January 2001, 158 of 1529 diarrhoea stool samples collected from 93 patients with diarrhoea, 57 adults followed at Centres GHESKIO and 36 children admitted at the University Hospital in Port-au-Prince contained *Cryptosporidium* oocysts (10.3%). The majority of adult patients (98%) were HIV-infected whereas the majority of children (81%) tested negative for HIV. *Cryptosporidium* was documented in only 1/102 healthy persons living in contact with *Cryptosporidium* infected patients and infection was with the same genotype as that of the contact patient. Among the 69 *Cryptosporidium* isolates studied for genotyping, three species were identified: *C. hominis* (59%), *C. parvum* (38%) and *C. felis* (3%). The two *C. felis* cases are the first reported from AIDS patients in the Caribbean. Most of the children regardless of their HIV status were infected with *C. hominis* (72%), whereas AIDS patients were more likely to be infected by either human or animal genotypes. These data confirm that immunocompromised individuals are susceptible to a wide range of *Cryptosporidium* spp. Viability of *Cryptosporidium* oocysts were determined in an experimental mouse model for 17/18 specimen studied including in 12/13 *C. hominis*, 4/4 *C. parvum* and 1/1 *C. felis*. Infectivity in newborn mice was found to be dose-dependent and more effective with *C. parvum* than the other two genotypes. Cryptosporidiosis remains a frequent hazard for both AIDS patients and young children in Haiti because of poor hygiene, particularly contaminated water and overcrowded conditions associated with urban slums. Database: SCOPUS. ISSN: 1360-2276.

Raccurt, C. P., Fouché, B., Agnamey, P., et al. 2008. "Short Report: Presence of *Enterocytozoon Bieneusi* Associated with Intestinal *Coccidia* in Patients with Chronic Diarrhea Visiting an HIV Center in Haiti." *American Journal of Tropical Medicine and*

Hygiene. Volume 79, Issue 4, Pages 579-580. Descriptors: adolescent; adult; article; child; chronic diarrhea; Coccidia; Cryptosporidium; Cyclospora cayetanensis; Enterocytozoon; feces analysis; female; Haiti; human; Human immunodeficiency virus infection; Isospora belli; major clinical study; male; polymerase chain reaction; restriction fragment length polymorphism; soil pollution; chronic disease; coccidiosis; diarrhea; infant; intestine infection; isolation and purification; microbiology; middle aged; preschool child; Enterocytozoon bienewsi; Child, Preschool; HIV Seropositivity; Humans; Intestinal Diseases, Parasitic. Abstract: This study investigated the presence of Enterocytozoon bienewsi as a possible cause of chronic diarrhea in Haitian patients attending the GHESKIO AIDS clinic in Port-au-Prince, Haiti. Coccidian oocysts were found by polymerase chain reaction (PCR) in the stools of 58/74 patients with chronic diarrhea and included the following agents: 45 (60%) Cryptosporidium spp., 27 (34%) Cyclospora cayetanensis, and 11 (15%) Isospora belli. Four patients (5.5%) were co-infected with E. bienewsi and one (1.4%) had E. bienewsi alone. The PCR-restriction fragment length polymorphism (RFLP) method made it possible to document the presence in human feces of E. bienewsi in Haiti. As in sub-Saharan Africa, the association of E. bienewsi with coccidian parasites found in Haitian patients with diarrhea is probably caused by the high level of fecal contamination of soils and surface waters usually associated with countries with low hygienic standards. Database: SCOPUS. ISSN: 0002-9637.

Raccurt, C. P., Mojon, M. and Hodges, W. H. 1984. "Parasitological, Serological, and Clinical Studies of Wuchereria Bancrofti in Limbe, Haiti." American Journal of Tropical Medicine and Hygiene. Volume 33, Issue 6, Pages 1124-1129. Descriptors: arthropod; blood and hemopoietic system; clinical article; clinical study; culex pipiens; diagnosis; epidemiology; filaria; filariasis; geographic distribution; Haiti; human; lymphangitis; lymphatic system; parasite prevalence; parasite transmission; priority journal; serology; wuchereria bancrofti; Adolescent; Adult; Child; Child, Preschool; Culex; Female; Insect Vectors; Male; Microfilaria; Middle Age; Trinidad and Tobago. Notes: Cited By (since 1996): 11. Abstract: A survey for Wuchereria bancrofti in Limbe, Haiti (est. pop. = 10,500) revealed that 17% (231/1,450) had a patent infection. Nearly half of those surveyed harbored fewer than 10 microfilariae (mf) per 20 mm³ of finger-prick blood; the median mf density for females and males was 12.4 and 9.5, respectively. Parasitemias occurred as early as age 4. Antibody titers $\geq 1:20$ against adult D. viteae antigen were observed in 38% of microfilaremic individuals and in 29% of amicrofilaremic individuals. Peak antibody responsiveness (40%) was observed between 5 and 9 years of age. In all age groups there was no correlation between mf density and antibody titer. Among the mf carriers, 5.6% had no clinical symptoms. Lymphangitis was a common feature with 14.3% having lymphedema, 8.2% with edema of the lower extremities, and 1.3% reporting episodes of chyluria. Genital involvement among women was rare, but in males 5.4% had genital swelling and 4.5% had hydroceles. Culex pipiens quinquefasciatus (Say) was observed to support the complete development of W. bancrofti in Limbe. Database: SCOPUS. ISSN: 0002-9637.

Radstake, F. and Chery, Y. 1992. "Geophysical Prospecting for Groundwater Exploration in Haiti." Hydrological Sciences Journal/Journal des Sciences Hydrologiques. Volume 37, Issue 1, Pages 1-12. Descriptors: alluvial aquifer; electrical profiling; electrical sounding; electromagnetic profiling; geophysical exploration;

geophysical prospecting; groundwater; groundwater exploration; magnetic profiling; resistivity; resistivity survey; Haiti, Arcahaie Plain; Haiti, Cayes Plain; Haiti, Colombier Plain. Abstract: The National Service of Water Resources (SNRE) of Haiti has made an inventory of geophysical data in Haiti and executed additional studies in seven alluvial plains. The applied geophysical methods in groundwater exploration are electrical sounding and electrical, electromagnetic and magnetic profiling. The methodology used and the final results for three regions are presented in this paper, viz. the Colombier Plain, the Arcahaie Plain and the Cayes Plain. Interpretation of the data obtained revealed the true resistivity of the alluvial aquifers and the depth of the basements. In combination with the piezometric level of the groundwater, the exploitable aquifer systems were determined. True resistivities of the basement enabled a determination of the extent of a zone of productive limestones in the Colombier Plain. Database: SCOPUS.

Radstake, F. and Chery, Y. 1992. "Prospection Geophysique Pour La Recherche De l'Eau Souterraine En Haiti." Translated title : Exploration Geophysics To Search for Underground Water in Haiti. Hydrological Sciences Journal = Journal des Sciences Hydrologiques. February. Volume 37, Issue 1, Pages 1-12. Notes: Additional Info: Published for the International Association of Hydrological Sciences by Blackwell Scientific Publications, Alt Journal: Key Title: Hydrological sciences journal Preceding Title: Hydrological sciences bulletin. ISSN: 0262-6667.

Radstake, Frank. 1992. "Electromagnetic Resistivity Profiling for Locating Buried River Channels; a Case Study in Haiti." Applied Hydrogeology. Verlag Heinz Heise, Hanover, Federal Republic of Germany: Federal Republic of Germany. Volume 1, Issue 2, Pages 50-57. Descriptors: alluvium; alluvium aquifers; Antilles; aquifers; buried channels; Caribbean region; case studies; clastic sediments; electrical methods; electrical sounding; electromagnetic methods; fluvial features; geophysical methods; geophysical surveys; Greater Antilles; ground water; Haiti; Hispaniola; models; resistivity; sediments; surveys; water resources; West Indies. Database: GeoRef. ISSN: 0941-2816.

Rajendran, C. P. 2010. "Lessons from Haiti: The Indian Earthquake Scenario." Curr. Sci. Volume 98, Issue 6, Pages 757-758. Database: SCOPUS. ISSN: 0011-3891.

Rand Corp, Santa Monica, CA and Niblack, Preston. 1995. "The United Nations Mission in Haiti: Trip Report." Jan. pages(s): 52 Report Number: Rand/P-7953X0-XD. Santa Monica, Calif.: RAND, 1995. Descriptors: Foreign Policy; Military Assistance; Government (Foreign); Transitions; Haiti; Peacekeeping; Military Forces (United States); Stability; National Security; United States Government: Decision Making; Leadership; International Politics; Economics; Military Forces(Foreign); Military Equipment; Political Alliances; Inspection; President (United States); Military Modernization; United Nations; Military Tactics; Defense Planning; International Relations; Police; Political Revolution; Democracy; Foreign Aid; Elections; Military Establishment of UNMIH; U.S. and UN objectives in Haiti; Challenges to a Successful Transition in Haiti; and The U.S., the U.N., and Peacekeeping. DTIC Accession Number: DAB207497. OCLC: 632901518.

Rand Graduate School, Santa Monica, CA and Timilsina, Anga R. 2007. "Getting the Policies Right: The Prioritization and Sequencing of Policies in Post-Conflict Countries." Jan. pages(s): 188 Report Number: Descriptors: Policies; Postwar Operations; Conflict; Security; Economic Development; Infrastructure; International; Operations Other Than War; Democracy, Stabilization; Internal; Theses; Cambodia, Haiti; Mozambique. Abstract: One of the most pressing issues in the post-conflict

reconstruction field is how to prioritize and sequence political, social, and economic policies to enable post-conflict countries to sustain peace and reduce the risk of violence re-occurring. Analyzing three cases of post-conflict reconstruction (Cambodia, Mozambique, and Haiti) and expert opinions of 30 academicians and practitioners, this study identifies major reconstruction policies, outlines the preferred way to prioritize and sequence them, and develops a framework to help policy makers better navigate the complexities and challenges of forming appropriate policies. DTIC Accession Number: ADA487626. PURL: <http://handle.dtic.mil/100.2/ADA487626>.

Rebillard, P. H. and Mercier De L'epinay, B. 1986. Geological Analysis of Seasat SAR and SIR-B Data in Haiti. *Journal of Geodesy*. Volume 59, page(s): 157-160. Remote Sensing for Resources Development and Environmental Management; Proceedings of the Seventh International Symposium, Enschede, Netherlands; 25-29 Aug. 1986; Remote Sensing for Resources Development and Environmental Management. Proceedings of the Seventh International Symposium, Enschede, Netherlands; Conference: 25-29 Aug. 1986. Descriptors: Image Analysis; Photogeology; Seasat Satellites; Shuttle Imaging Radar; Synthetic Aperture Radar; Haiti; Lithology; Multispectral Band Scanners; Photointerpretation; Radar Imagery. Abstract: Synthetic Aperture Radar data obtained by Seasat in 1978 and by SIR-B in 1984 were registered to the corresponding Landsat MSS data over the Western part of Haiti. Two areas were studied: the island of La Gonave and the Miragoane area. Seasat SAR data were registered to the Landsat data over the island of La Gonave and both Seasat and SIR-B data were compared over the Miragoane area. In both cases, difficulties occurred in the interpretation due to the relief which distorted the radar data, particularly the Seasat data for which the radar incidence angle was 20 degrees; furthermore, on the Miragoane area difficulties occurred using the SIR-B data due to low radar signal. Structural lines and lithological boundaries were pointed out thanks to the compositional and textual informations provided by the radar and MSS data. Geological interpretation maps of La Gonave and the Miragoane area were drawn: boundaries between rocks Eocene of age and rough basalts were precise as well as (1) domes, (2) ancient faults oriented NE-SW, (3) faults oriented NW-SE linked to the La Gonave anticline and (4) faults oriented E-W integrated in the tectonic model of the Caribbean plate. NU: A88-41961 17-43; volume 1; NR: 6. Database: CSA Technology Research Database. ISSN: 0949-7714; DOI: 10.1007/BF02520350.

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Regis, G. 1992. Dossier de relance des activites au CFAIM (Centre de Formation en Aménagement Integre des Mornes). (Report on the revival of activities at CFAIM (Mornes Integrated Development Training Centre)). Language: French. Imprint: Port-au-Prince (Haiti). Aug 1992. Port-au-Prince (Haiti). Aug 1992. vp. Fiche no: 339761. Project: Centre de Formation en Aménagement Integre des Mornes, Haiti, HAI/011/SWI. Report number(s): FAO-FO--GCP/HAI/011/DEN. FAO-AN: 339761.

Regis, G. No date given. Historique et strategie de projets de conservation des eaux et des sols en Haiti. Compte rendu du seminaire organise a l'occasion du dixieme anniversaire du C.F.A.I.M. (Centre de Formation en Aménagement Integre des Mornes), Limbe. (Report of the workshop to mark the tenth anniversary of the C.F.A.I.M. (Training Centre for the Integrated Development of Hill Areas), Limbe). Ministere de l'Agriculture, des Ressources Naturelles et du Developpement Rural, Port-au-Prince (Haiti). Language: French. Port-au-Prince (Haiti). (No date given).Ministere de l'Agriculture, des Ressources Naturelles et du Developpement Rural, Port-au-Prince (Haiti). (No date given).p. 35-42. Fiche no: 331149-159. Project: Centre de Formation en Aménagement Integre des Mornes, Haiti, HAI/011/SWI. Report number(s): FAO-FO--GCP/HAI/011/SWI. FAO-AN: 331151.

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projects funded by large banks and aid agencies will increase the sustainability of Third World development. INSETS: The Kenyan 'jiko' charcoal stove. Guinope Rural Development; Brazil's Extractive Reserves; Agroforestry Outreach in Haiti. ISSN: 0013-9157.

Report on Irrigation Possibilities in the Republic of Haiti. 1927. Port-au-Prince: Cie. Lithograph. d'Haiti. Descriptors: Irrigation; Haiti; Water-power. Notes: 61 S: 17 Kt., 2 graph. Darst.-Taf., 1 Tab. Responsibility: Republic of Haiti. Bureau of Public Works. OCLC Accession Number: 253750951.

République d'Haïti, programme de développement de la zone frontalière dans le bassin du haut Artibonite. 1991. Translated title: Republic of Haiti development program for the border area in the basin of the upper Artibonite. Organization of American States. Dept. of Regional Development and Environment. Organisme de développement du bassin du fleuve Artibonite (Haiti); Organization of American States. Washington, D.C.: L'Organisation. LA: French. 3 maps: col. ; 74 x 66 cm., folded in cover 28 x 22 cm. Contents: Contraintes d'érosion -- Occupation du sol -- Vocation des sols. Notes: Cette carte fait partie de l'étude d'aménagement et de conservation des sols et des eaux dans le bassin du haut Artibonite, réalisée dans le cadre du programme de développement de la zone frontalière conjointement par le Département du développement régional et de l'environnement du Secrétariat général de l'Organisation des états américains et l'Organisme de développement du bassin du fleuve Artibonite, 1991. Accompanied by text: Republic of Haiti, agroforestry and watershed management project, Artibonite River: pre-feasibility study / General Secretariat of the Organization of American States, Executive Secretariat for Economic and Social Affairs, Department of Regional Development and Environment. xxxviii, 106 p.: col. ill., maps ; 28 cm. Includes location map. ISBN: 0827030509; 9780827030503. OCLC: 25368323.

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Count: 2023. Abstract: Focuses on the struggle for freedom from human rights abuse in Haiti. Impact of the military regime on Haitians civil society; Details on the abuses committed by the Haitian Armed Forces and paramilitary supporters; Assessment on the role of United States concerning the judicial reform; Reliance on international support. ISSN: 0898-3038.

Roark, P. and Smucker, J. N. 1987. "Midterm Evaluation of the USAID/CARE Community Water Systems Development Project in the Republic of Haiti." Water and Sanitation for Health Project Field Report no.205 February 1987.99p, 11 Tab, 7 Append. AID Contract 5942-C-00-4085-00. Project 936-5942. Descriptors: Haiti; Developing countries; Rural areas; Water supply development; Public participation; Potable water; Public health; Training; Water supply; Water resources development; Evaluation. Abstract: The Community Water Systems Development Project is a continuing rural water supply and sanitation project, commenced in July 1984 and implemented by CARE. The project plans to serve approximately 160,000 people in some 40 communities in the southern peninsula of Haiti by June 1988, using primarily capped springs and gravity-fed systems. The goals of the project are to improve the quality of life in the targeted communities and to strengthen community institutions to enable them to manage the water supply and sanitation systems constructed under the project. To accomplish these goals, the project designs and constructs potable water systems, promotes community participation and the strengthening of local institutions, and develops and implements user education and sanitation activities in all target communities. Training is provided for community leaders, community plumbers, and governmental counterparts. In April 1986, a three-person USAID team conducted a rapid assessment of the project, which has been the only formal evaluation to date. It was found that project administration and management are appropriate and proceeding well after a slow start. The likely number of sites to be completed is 29 rather than 40. Engineering design and logistics, and construction have been satisfactory. Operations and maintenance have not been sufficiently tested. Nineteen recommendations are made involving such methods to improve the rate of production, community participation, cost assessments, and assignment of financial responsibilities for the water systems. (Lantz-PTT). Database: Water Resources Abstracts. OCLC: 54352637.

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Roberts, L. 2010. "Relief Among the Rubble." *Science*. Volume 327, Issue 5966, Pages 634-637. Abstract: When the earthquake struck on 12 January, the hotel in which a group of public health experts had been meeting in Léogâne, Haiti, to review a collaborative program to fight neglected tropical diseases collapsed. The attendees did what they could to help the injured around them in the days following; all but one person attending the meeting got out alive. Although the program, which stretched back more than 20 years, was on the verge of a major push within Haiti to eliminate lymphatic filariasis (LF)—a debilitating, mosquito-borne parasitic disease, for now and for the

months ahead, the program's efforts will be focused on emergency relief for Léogâne. But at the same time, the partners are beginning to get a fix on what was lost—their program was considered one of the few success stories in Haiti—and how they can pick up the pieces and move beyond their LF work to help rebuild the public health system in this shattered country. Database: SCOPUS. ISSN: 0036-8075.

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Sarhan, Michael S. 2006. *A Comparative Assessment of the Flooding Caused by Tropical Storm Jeanne in Haiti and the Dominican Republic*. United States- Arkansas: University of Arkansas. Descriptors: Geography. Abstract: Tropical Storm Jeanne devastated the city of Gonaives and did extensive damage to the countryside in Haiti, killing more than 3,000 people and leaving hundreds of thousands homeless, while leaving the Dominican Republic comparatively unscathed with death tolls in the dozens. This study examined the possible influences that land-use practice had on the disparity in damages and deaths, as well as discussing the influences of geology, hydrology, topography, and socio-economic pressures. This study analysis implemented the use of satellite imagery, geographic information systems (GIS), thematic cartography, and field observations and interviews, to ascertain the relative influences of the various identified parameters in this study. The results in this study indicate that regardless of Haitian deforestation, poor land-use practices cannot explain the differences in damages between the two countries, but rather a hierarchy of all factors with topography and hydrology being the primary influences and land-use the least important. Keywords. Hispaniola, Dominican Republic, Haiti, Tropical Storm Jeanne. OCLC Accession Number: 1444206. URL:

<http://proquest.umi.com/pqdweb?did=1335352621&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Sattin, R. W., Roisin, A. and Kafriksen, M. E. 1984. "Epidemic of Gynecomastia among Illegal Haitian Entrants." *Public Health Reports*. Volume 99, Issue 5, Pages 504-510. Descriptors: breast; endocrine system; epidemic; epidemiology; ethnic or racial aspects; etiology; gynecomastia; human; malnutrition; refeeding; Adult; Diet; Disease

Outbreaks; Estrogens; Food Analysis; Haiti; Male; Middle Age; Nutrition Disorders; Refugees; Time Factors; United States; Water. Notes: Cited By (since 1996): 7. Abstract: Gynecomastia may occur as a normal physiologic development at certain ages or as a result of a variety of pathological conditions. An outbreak of gynecomastia was investigated at two processing centers of the Immigration and Naturalization Service (INS) between December 2, 1981, and May 14, 1982. At the Fort Allen Service Processing Center, Puerto Rico, gynecomastia was initially detected in 77 of 540 Haitian male entrants (14%) and in only 6 of 186 male employees of the center (3%) who were 18-50 years old; the difference in prevalence was statistically significant. At the Krome North Service Processing Center in Miami, Fla., gynecomastia was initially detected in 52 of 512 Haitian males 18-50 years old (10%). Two case-control studies did not demonstrate an association between gynecomastia and a number of factors that might have been related to an exogenous estrogen or to a substance with an estrogenic effect. Estrogen or estrogen-like substances were not found in food, water, or environmental samples. When the populations were rescreened several months later, 76 of the persons with gynecomastia detected in the first screening had had total or partial remission. Persons with remission had arrived earlier - a mean of 21.6 days for those at Fort Allen and 36.7 for those at Krome - than did those with newly detected gynecomastia and those with continuing cases. The difference in arrival dates was significant ($P < 0.005$ for Fort Allen and $P < .001$ for Krome). These results, in view of nutritional deprivation in Haiti, suggest that these cases may have been an outbreak of refeeding gynecomastia. Database: SCOPUS. ISSN: 0033-3549.

Sawyer, Tom. 2010. "After the Quake, Haitians Don't Trust Buildings." ENR. April 26. Volume 264, Issue 13, Pages 7. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Earthquake damage; Fear; Applied Science & Technology. Notes: Illustration. Abstract: The writer shares the experiences he and Architectural Record's Jenna McKnight had on their weeklong trip to Port-au-Prince, Haiti. It has been a little more than three months since a magnitude-7.0 earthquake destroyed the city and the surrounding area. It was observed that to a certain extent, the damage in the city is more about confidence than buildings. As people no longer believe in structures, an enormous percentage of the population now is living in tents outside of houses with no sign of damage. ISSN: 0891-9526.

Sawyer, Tom. 2010. "Social Networking Yields Rapid Damage Tally in Haiti." ENR. February 15. Volume 264, Issue 5, Pages 12-13. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Earthquakes/Computer simulation; GIS databases; Applied Science & Technology. Notes: Illustration; Map. Abstract: A remote damage-assessment system called geospatial earth observation catastrophe assessment network, or GEO-CAN, has helped in tallying the damage of the January 12, 2010, earthquake in Port-au-Prince, Haiti. The first phase of the image assessment consisted of a rapid evaluation based on satellite images to identify blocked roads and damaged bridges and establish the extent of destruction, and the second phase distributed additional high-resolution aerial images of the same area to a social network of volunteer experts for a systematic, building-by-building evaluation. Over the weekend of January 23-24, heavily damaged and collapsed buildings were identified 776 sq miles in and around Port-au-Prince. The image distribution and data collection and processing were managed by ImageCat, Long Beach, California. ISSN: 0891-9526.

Sawyer, Tom, Buckley, Bruce and Hunter, Pam. 2010. "Haiti Quake Recovery Planners Wait in Wings." ENR. January 25. Volume 264, Issue 3, Pages 10-14. Descriptors: Building/Repair and reconstruction; Port-au-Prince (Haiti) earthquake, 2010/Rescue work; Applied Science & Technology. Notes: Illustration; Map. Abstract: Leaders of the U.S. earthquake response team in Haiti claim that it will take several weeks before efforts shift from a first-response life support mission to a recovery phase. Even a week after the January 12, 2010, earthquake, communications, transportation, and logistical bottlenecks were still impeding the response and there was uncertainty about how the international reconstruction effort would be led. Response efforts and long-term recovery plans are discussed. ISSN: 0891-9526.

Sawyer, Tom and Judy, Scott. 2010. "Reconstruction Resources Organizing for Haitian Mission." ENR. March 1. Volume 264, Issue 7, Pages 16. Descriptors: Port-au-Prince (Haiti) earthquake, 2010/Rescue work; Disaster relief; United Nations; Applied Science & Technology. Notes: Illustration. Abstract: The United Nations and its aid partners have revised the amount of relief they seek for Haiti in 2011 to \$1.4 billion. The revised figure includes a \$577 million flash appeal. This humanitarian appeal was issued just days after the earthquake, originally intended to cover a six-month period, and oversubscribed by \$41 million, but it is now being expanded to meet needs for a year. According to John Holmes, the U.N. under Secretary-General for humanitarian affairs and U.N. relief coordinator, the new figure considers the needs for stepped-up early-recovery efforts as the hurricane and rainy seasons approach. A U.N. donor's conference is being planned on March 31, 2010, in New York to achieve the target amount. ISSN: 0891-9526.

Sawyer, Tom, Post, Nadine and Bergeron, Angelle. 2010. "Haiti's Quake Assessment is Small Step Toward Recovery." ENR. February 1. Volume 264, Issue 4, Pages 12-13. Descriptors: Port-au-Prince (Haiti) earthquake, 2010; Earthquake damage; Building/Repair and reconstruction; Applied Science & Technology. Notes: Illustration. Abstract: A team of structural engineers, led by Andre Filiatrault from State University of New York, is tasked to assess the condition of buildings slightly damaged in the recent magnitude-7 earthquake in Haiti. The engineers have surveyed hospitals, schools, warehouses, homes, and government and UN buildings and have cleared St. Laundry Hospital in Petionville and Hospital Dash in Delmas for reoccupation. Using the Applied Technology Council's rapid evaluation safety assessment method, buildings are tagged red if they are unsafe to occupy, yellow if they can have restricted use, and green if they are safe. ISSN: 0891-9526.

Scharer, Katherine. 2010. "Changing Views of the San Andreas Fault." Science. February 26. Volume 327, Issue 5969, Pages 1089-1090. Abstract: The magnitude 7.0 earthquake that struck Haiti on 12 January 2010 is a reminder of the devastation caused by large earthquakes. Because recurrence of large (M 7–8) earthquakes is rare, on the order of centuries, studying the past behavior of a fault guides future expectations. Paleoseismologists examine the stratigraphic and geomorphic history of deposits and landforms along a fault for evidence of past ruptures. Such observations provide information on when earthquakes happened, what parts of the fault failed, and the size of the earthquakes. The collected geologic data form the backbone of probabilistic seismic hazard analyses (1) used by the insurance and engineering industries and are increasingly used to explore models of lithosphere rheology and fault interaction (2, 3). Because of

sparse data, however, inferences about patterns of strain accumulation and release are a common occurrence. On pages 1119 and 1117 of this issue, Zielke *et al.* (4) and Grant Ludwig *et al.* (5) present data and interpretations providing an exciting new view that questions fault behavior models that have been applied to the south central San Andreas Fault for decades, highlighting the value of revisiting old problems with new techniques. ISSN: 0036-8075.

Schmidt, Carl; Tippenhauer, Louis Gentil, et al. 1899. "Geologische Karte Eines Teils." Translated title: Geological Map, Part One. Gotha: J. Perthes. Descriptors: Haïti-Sud-Ouest; Géologie Cartograph Code: Category of scale: a Constant ratio linear horizontal scale: 200000. Notes: Description: 1 file en coul. 323 x 244. Genre/Form: Carte thématique. Note(s): Petermann's Geogr. Mitteilungen, Jahrgang 1899, Tafel 3. Accompagne: Geologische Studien in Haiti, von.. L. Gentil Tippenhauer, pp. 25-29, 153-155, 201-204; voir: Ge. FF. 5 (1899). Responsibility: von Süd-West-Haiti, aufgenommen u. gezeichnet von L. Gentil Tippenhauer, .. 1898. 1: 200 000 Red. v. Dr B. Hassenstein, aut. V.C. Schmidt. OCLC Accession Number: 494783159. URL: <http://catalogue.bnf.fr/ark:/12148/cb40616329q>

Senftle, F. E.; Thorpe, A. N.; May, L., et al. 1993. Magnetic Properties and Moessbauer Analyses of Glass from the K-T Boundary, Beloc, Haiti (Abstract Only). Lunar and Planetary Inst., Twenty-Fourth Lunar and Planetary Science Conference. Part 3: N-Z p 1275-1276 (See N94-20636 05-91); Lunar and Planetary Inst., Twenty-Fourth Lunar and Planetary Science Conference. Part 3: N-Z p 1275-1276 (See N94-20636 05-91). Descriptors: Glass; Iron Meteorites; Magnetic Measurement; Magnetic Properties; Mossbauer Effect; Spectroscopic Analysis; Tektites; Cretaceous-Tertiary Boundary; Haiti; Iron; Magnetic Permeability; Magnetization. Abstract: The experimental magnetic susceptibility, the temperature-independent component of the magnetic susceptibility, the magnetization, and the Curie constant have been measured for a number of specimens of glass from the K-T boundary found at Beloc, Haiti, and the results are compared with those of similar measurements of tektites. Because the Fe(3+)/Fe(2+) ratio is needed to calculate the magnetic parameters, Moessbauer spectroscopic measurements were also made. The data were consistent with the classification of the Beloc glasses as tektites. Database: CSA Technology Research Database. URL: http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19940016163_1994016163.pdf.

Service Consultatif en Genie Rural et Cellule d'Evaluation Economique de l'ODVA et l'ODPG, Haiti. Conclusions et recommandations du projet. 1988. FAO, Rome (Italy). Dept. de l'Agriculture. Language: French. Rome (Italy). 1988. FAO, Rome (Italy). Dept. de l'Agriculture. 1988. 59 p. Fiche no: 89M01836-F. Job no: S8685. AGO. Project: Service Consultatif en Genie Rural et Cellule d'Evaluation Economique, Haiti, HAI/84/011; HAI/81/005. Report number(s): FAO-AG--DP/HAI/81/005; FAO-AG--DP/HAI/84/011. FAO-AN: 288437.

Services hydrauliques de la République d'Haiti. 1977. Rapport Sur l'Approvisionnement et/ou Amélioration des Services d'Eau Potable Dans 10 Villes Moyennes En Haiti. Translated title : Report on the Supply and/or Improvement of Water Supply Services In 10 Cities In Haiti Averages. Port-au-Prince: Services hydrauliques de la République d'Haiti. Descriptors: Water-supply- Haiti; Drinking water- Haiti; Government publication; National government publication. Abstract: t. 1. Description du programme.--t. 2. Rapport sur l'examen des fonctions financières et administratives des

Services hydrauliques de la République d'Haiti.--t. 3. Études préliminaires pour l'amélioration des services d'eau potable des villes de Gonaïves, de Jacmel, d'Aquin, de Port-de-Paix, de Miragoane et de Cap-Haitien.--t. 4. Études préliminaires pour l'amélioration des services d'eau potable des villes de Léogâne, de St. Marc, des Cayes et de Jérémie. Notes: 4 v. 28 cm. Note(s): On t.p.: Organisation panaméricaine de la santé, Organisation mondiale de la santé, Programme des Nations-Unies pour le développement. LCCN: 79-107314. OCLC Accession Number: 5679052.

Severin, F. C. No date given. Gestion de l'eau dans l'aménagement des mornes. Compte rendu du séminaire organisé à l'occasion du dixième anniversaire du C.F.A.I.M. (Centre de Formation en Aménagement Intégré des Mornes), Limbe. (Report of the workshop to mark the tenth anniversary of the C.F.A.I.M. (Training Centre for the Integrated Development of Hill Areas), Limbe). Ministère de l'Agriculture, des Ressources Naturelles et du Développement Rural, Port-au-Prince (Haiti). Language: French. Imprint: Port-au-Prince (Haiti). (No date given). Ministère de l'Agriculture, des Ressources Naturelles et du Développement Rural, Port-au-Prince (Haiti). (No date given). p. 137-145. Fiche no: 331149-159. Project: Centre de Formation en Aménagement Intégré des Mornes, Haiti, HAI/011/SWI. Report number(s): FAO-FO--GCP/HAI/011/SWI. FAO-AN: 331159.

Shackleton, N. J. and Chappell, J. 1985. "The Ocean Deep-Water Oxygen Isotope Record and the New Guinea Sea-Level Record; American Geophysical Union; 1985 Spring Meeting." EOS Trans. Am. Geophys. Union. American Geophysical Union, Washington, DC, United States: United States; Transactions, American Geophysical Union. 30 Apr. Volume 66, Issue 18, Pages 293. Descriptors: Antilles; Barbados; biochemistry; Caribbean region; Cenozoic; changes of level; Foraminifera; geochemistry; Greater Antilles; Haiti; Hispaniola; Invertebrata; isotopes; Lesser Antilles; Malay Archipelago; microfossils; New Guinea; O-18/O-16; oxygen; Pacific Deep Water; Pleistocene; Protista; Quaternary; stable isotopes; stratigraphy; West Indies. Database: GeoRef. ISSN: 0096-3941.

Shannon, Dennis Alan and Soil Management Collaborative Research Support Program. 2003. Long-Term Effects of Soil Conservation Barriers on Crop Yield on a Tropical Steepland in Haiti. Auburn University, Ala: United States Agency for International Development, Soil Management Collaborative Research Support Program. Page(s): 40. Descriptors: Soil conservation- Haiti; Soil conservation- Tropics; Crop yields- Haiti. Notes: illustrations 28 cm. Note(s): "November 2003." Funding: "This work made possible through support provided by the Global Bureau, United States Agency for International Development (USAID), under terms of Grant no. LAG-G-00-97-00002-00, and by the USAID/Haiti Mission through contracts with the South-East Consortium for International Development (SECID) in the Productive Land Use Systems (PLUS) Project (Contract no. 521-0217-C-00-5031-00) and the Agroforestry II (AFII) Project (Contract no. 521-0217-00-0004-00)."--T.p. verso. OCLC Accession Number: 56435134.

Shannon, D. A., Isaac, L. and Brockman, F. E. 1996. "Assessment of Hedgerow Species for Seed Size, Stand Establishment and Seedling Height." Agrofor. Syst. 1996/. Volume 35, Issue 1, Pages 95-110. Descriptors: Seeds-Weight and measurements; Germination-Seedling emergence; Agroforestry-Haiti; Alley cropping; Biological & Agricultural. Notes: Bibliography; Illustration. ISSN: 0167-4366.

Shor, Betty. 2005. "Improved Bamboo for Haiti." *Bamboo: The Magazine of the American Bamboo Society*. 02. Volume 26, Issue 1, Pages 6-8. Descriptors: Bamboo; Plant propagation; Associations, institutions, etc; Plant varieties; Haiti. Abstract: Reports on the outcome of the bamboo propagation and distribution project implemented by the Organization for the Rehabilitation of the Environment in Haiti. Estimated total bamboo varieties distributed and planted; Plant propagation methods utilized; Beneficiaries of the program. ISSN: 15548295.

Showstack, Randy. 2010. "In the Aftermath of Haiti's Earthquake; a Discussion of Lessons Learned." *EOS Trans. Am. Geophys. Union*. American Geophysical Union, Washington, DC; Transactions, American Geophysical Union. 09 Feb. Volume 91, Issue 6, Pages 55-57. Descriptors: Antilles; Caribbean region; earthquakes; geologic hazards; Greater Antilles; Haiti; Haiti earthquake 2010; Hispaniola; risk assessment; seismic risk; seismicity; West Indies. Abstract: The 12 January 2010 earthquake in Haiti brought massive devastation to that country (see Figure 1). In this week's issue of *Eos*, three noted seismologists respond to questions from *Eos* senior writer Randy Showstack in a news roundtable format. Paul Mann, senior research scientist with the Institute for Geophysics at the University of Texas at Austin, has just returned from Haiti, where he and a colleague worked on a fault rupture survey; they plan to conduct an offshore fault survey soon. Glen Mattioli, professor of geosciences at the University of Arkansas, Fayetteville, has been part of a team conducting a Global Positioning System (GPS) survey of Haiti to measure ground deformation following the earthquake and to install a number of continuous GPS sites to examine after slip, viscoelastic relaxation, and the time return to interseismic deformation (see Figure 2). Work by Mann, Mattioli, and their colleagues has been supported through a U.S. National Science Foundation Rapid Response Research (RAPID) proposal grant provided to Purdue University, with Eric Calais serving as principal investigator. Carol Prentice, a seismologist with the U.S. Geological Survey's Earthquake Hazards Team, has been conducting paleoseismic research on the active faults in the Caribbean region since 1991, including projects on Hispaniola, Puerto Rico, Trinidad, and Jamaica. Database: GeoRef. ISSN: 0096-3941.

Showstack, Randy. 2010. "Haiti Earthquake Underscores Need for Better use of Seismic Information." *EOS Trans. Am. Geophys. Union*. American Geophysical Union, Washington, DC; Transactions, American Geophysical Union. 26 Jan. Volume 91, Issue 4, Pages 30-31. Descriptors: Antilles; Caribbean region; earthquakes; faults; geologic hazards; Greater Antilles; Haiti; Haiti earthquake 2010; Hispaniola; information management; mitigation; seismicity; tectonics; West Indies. Abstract: When Eric Calais, professor of geophysics in Purdue University's Department of Earth and Atmospheric Sciences, first learned about the 12 January strikeslip earthquake along a portion of the Enriquillo-Plantain Garden fault zone (EPGFZ) in Haiti, he knew right away that it would be a shallow event and a large event, very close to the capital city of Port-au-Prince. Having worked in Haiti, he also was aware that the poor nation lacks seismic and building construction codes. "My immediate reaction was, 'This is going to be a total nightmare and a huge disaster for Haiti,'" Calais, who also is a researcher at the French National Center for Scientific Research, told *Eos*. The main earthquake, currently estimated at magnitude 7.0, occurred at 2153:10 UTC at a depth of 13 kilometers, just 25 kilometers outside of Port-au-Prince, the U.S. Geological Survey (USGS) reports. Since then, there have been dozens of aftershocks, many of them above magnitude 5.0; these

aftershocks could continue for weeks or even months, according to USGS (see Figure 1). In recent decades, there had not been a major earthquake along the approximately 600-kilometer-long EPGFZ (named after the end points in Jamaica and the Dominican Republic), although seismologists indicate that large earthquakes in 1860, 1770, and earlier likely originated along that system. Database: GeoRef. ISSN: 0096-3941.

Shulman, Peter Adam. 2007. *Empire of Energy: Environment, Geopolitics, and American Technology before the Age of Oil*. United States- Massachusetts: Massachusetts Institute of Technology. Descriptors: American history; Science history; Environmental science; Energy. Abstract: This dissertation asks how the United States physically built its global empire. Between 1840 and 1930, empire building involved the establishment of a network of naval bases and coaling stations. By focusing on energy, I reconceptualize the American overseas empire as neither inevitable nor geographically predetermined. I trace how coal shaped U.S. expansion, how this expansion influenced ideas about national security, and how these security concerns affected the global environment. Coal reveals continuities in American foreign relations that link overseas expansion to responses to the introduction of steam power into ocean travel. As the Navy sought coal, it progressively assembled the familiar contours of America's global reach. The dissertation addresses both global and local history. It shows how policy makers before the Civil War demonstrated tremendous creativity in initiating geological investigations, diplomatic arrangements, and commercial agreements in foreign territories. Between the Civil War and 1898, these approaches gradually gave way to a more singular effort by the Navy to control strategic ports around the world. Soon, coal was so central to the Navy that coaling strategy and technology formed a foundation for the education of elite officers at the Naval War College, where its study shaped the planning for future wars. Attention to Americans in Borneo, Japan, the Isthmus of Chiriqui, Haiti, and Alaska shows how coal reoriented the American geographic perspectives. Three themes structure this work. First, the peculiar geography of the U.S. overseas empire of coaling stations was never predetermined, for the perceived needs of expansion changed with evolving diplomatic and technological circumstances. Paying close attention to scientists and engineers, I show how the fundamental obstacles presented by coal were addressed not only by diplomacy but also new inventions and geological expeditions. Second, that the American pursuit of steamship lines, coal, and territory abroad took place amid the global context of other maritime nations. Finally, the ultimate shape of American global expansion often depended on the particular histories of specific places and local events. I thus show how coal linked mine labor, professional geologists, naval officers, and global expansion to the construction of a recognizably modern United States. OCLC Accession Number: 0818748. URL: <http://proquest.umi.com/pqdweb?did=1379556051&Fmt=7&clientId=45714&RQT=309&VName=PQD>.

Sigurdsson, H., Bont, Ph and Turpin, L. 1991. "Geochemical Constraints on Source Region of Cretaceous/Tertiary Impact Glasses." *Nature*. October 31. Volume 353, Pages 839-842. Descriptors: Glass; Mineralogical analysis; Geology/Haiti; General Science. Notes: Bibliography; Illustration. Abstract: New trace elements and stable and radiogenic isotope data are presented which show that the silicic black glass spherules from the K/T boundary layer at Beloc in Haiti are derived from continental crust of andesitic composition, whereas the high-Ca glass formed by melting of evaporite-rich

sediment. This is confirmed by melting experiments with evaporite and andesite at 1200-1400 C which approximately reproduce the high-Ca glass. The temperature-dependent variation of sulfur content in synthetic high-Ca glasses indicates a formation temperature of 1300 C for the Haiti glasses. The geology of the impact site inferred from the geochemistry of the Haiti glasses matches the lithologies found in the 180-km Chicxulub structure which occurs in Cretaceous evaporite deposits in Mexico. The high sulfur content of the calcic glasses suggests that the impact may have generated significant emissions of sulfur dioxide to the atmosphere, causing short-term global cooling. ISSN: 0028-0836.

Silliman, S. 2007. Observations from a Project to Encourage Multiple-Year, International Collaboration on Research for Undergraduates. ASEE Annual Conference and Exposition, Conference Proceedings 14th Annual ASEE Conference and Exposition, 2007. Honolulu, HI Conference: 24 June 2007 through 27 June 2007. Descriptors: Curricula; Developing countries; International cooperation; Project management; Research and development management; Engineering undergraduates; Program formats; Engineering education. Abstract: Over the past 10 years, the author has experimented with a number of program formats designed to inform engineering undergraduates of the requirements of pursuing engineering projects in developing countries. These have included: (i) an elective course on water supply in developing countries, (ii) a service program in Haiti involving a combination of U.S. engineering and non-engineering undergraduates, (iii) an international REU program involving collaborative research in Benin (West Africa) among students from multiple universities in the U.S., and (iv) a recent experiment in multi-year research involving collaborations among U.S. undergraduates working with graduate students in Benin. A previous ASEE paper compared preliminary assessment of the first three types of programs (course, service, and REU). Results from this earlier assessment indicated that the multi-year program should represent a popular offering for U.S. undergraduates. Although the assessment of the first experience with the multi-year offering is limited by the number of student participants (4) such that the results must be interpreted with caution, the assessment leads to insight into the motivation, objectives, and constraints on an international, multi-year program. Among the positive outcomes are enhanced student appreciation (in both the US and Benin) of the potential benefit of international collaboration, recognition of common objectives (both educational and professional) among students from different cultures, and significant research results. Among the constraints not realized prior to this experience are the role that original student motivation has on long-term dedication to the project, the continuing language barriers that exist even after an 8-week common experience among the students, the challenge associated with disparate periods (in the two countries) during which the students have relatively free time to commit to the research effort, and the different educational philosophies of the two programs (U.S. and Benin). Notes: Sponsors: Dassault systemes; HP; Lockheed martin; IBM; DuPont; et al; conference code: 70739. Database: SCOPUS.

Silliman, S. E. 2003. Comparison of Education Models for Increasing Student Exposure to Engineering in Developing Countries. ASEE Annual Conference Proceedings page(s): 11793-11811. 2003 ASEE Annual Conference and Exposition: Staying in Tune with Engineering Education. Nashville, TN Conference: 22 June 2003 through 25 June 2003. Descriptors: College buildings; Engineers; Learning systems;

Research; Students; Water resources; Water supply; Education models; Elective courses; Financial resources; Curricula. Abstract: The challenge of increasing the exposure of undergraduate engineers to the opportunities for, and constraints on, working in developing countries has resulted, at the University of Notre Dame, in the examination of three models for providing appropriate learning experiences. Experience with a multidisciplinary experiential seminar on water supply in Haiti (involving students from multiple colleges at the University of Notre Dame) is compared both with a cross-disciplinary elective course on water supply development (again, involving students from multiple colleges at the University of Notre Dame) and with an REU (Research Experience for Undergraduates) site focused on water resources in developing countries (involving students from a number of universities and focused on research in Benin, Haiti, Honduras, and Chile). The Haiti seminar and the REU program both involve travel to, and interaction with, locals in the developing country. Impact of these three models on student learning is examined through application of surveys to students participating in each of these models, the pool of students applying to the research projects, a control group of senior engineering students, and representatives from industry. Both entrance and exit surveys were administered to the students in the elective course and students participating in the REU program. Among the similarities observed among students in all three groups was an increased perception (in particular, compared to the industry representatives) of need for education on international issues and the liberal arts. Differences among the groups were correlated to the primary learning objectives of the three models. Additionally, the Haiti and REU models attracted a disproportionately large percentage of women. Notes: Sponsors: American society for engineering education, ASEE; conference code: 63712. ISSN: 0190-1052. Database: SCOPUS.

Silliman, S. E. 2000. "Student Involvement in Water development/treatment in Rural Settings." IAHS-AISH Publication. Issue 260, Pages 171. Abstract: The Department of Civil Engineering and Geological Sciences at the University of Notre Dame has a rich history of involving students in a variety of projects designed to enhance their understanding and appreciation of problems associated with developing and maintaining high quality drinking water supplies. These projects have included: design of wetlands for treatment, design of wellhead protection for rural settings, international distance learning, and water supply/treatment studies in Haiti, Mexico and the Czech Republic. These educational efforts are paying significant dividends in terms of the overall educational experience of the students and the awareness of these young engineers of the challenges faced in both high and low technology settings. Database: SCOPUS. ISSN: 0144-7815.

Silliman, Stephen E. 2002. "The Role of Undergraduate Students in Water Resource Projects in Developing Countries; Geological Society of America, 2002 Annual Meeting." Abstracts with Programs - Geological Society of America. Oct. Volume 34, Issue 6, Pages 244. Descriptors: Africa; Antilles; Benin; Caribbean region; college-level education; developing countries; education; Greater Antilles; Haiti; Hispaniola; water resources; West Africa; West Indies. Abstract: Experience through a number of projects has shown the tremendous value obtained by including undergraduate students in water resources projects in developing countries. Among the benefits to the students are: (i) field application of classroom principals, (ii) close interaction in a multidisciplinary group of students, and (iii) exposure to a dramatically different cultural setting. Benefits

to the project include: (i) removing cultural barriers between the native population and the project team, (ii) increased energy and efficiency in the field, and (iii) new insights into project objectives. Examples are drawn from recent projects in Haiti and Benin. Database: GeoRef. ISSN: 0016-7592.

Singer, Bradley S., Hoffman, Kenneth A., Chauvin, Annick, Coe, Robert S. and Pringle, Malcolm S. 1999. "Dating Transitionally Magnetized Lavas of the Late Matuyama Chron - Toward a New Ar-40/Ar-39 Timescale of Reversals and Events." *Journal of Geophysical Research*. 10 Jan. 1999. Volume 104, Issue B1, Pages 679-693. Descriptors: Geomagnetism; Lava; Argon Isotopes; Basalt; Subduction (Geology); Paleomagnetism; Polarity; Haiti; Geodynamics. Abstract: The K-Ar based geomagnetic polarity timescale was constructed using data from lavas and tuffs that bracketed, but rarely dated, the transitions between polarity intervals. Subsequent Ar-40/Ar-39 dating indicated that the ages of some polarity transitions had been underestimated by about six percent. We have used incremental-heating techniques to obtain 18 new Ar-40/Ar-39 ages from basaltic lavas within flow sequences at Punaruu Valley, Tahiti, and Haleakala volcano, Hawaii. These lavas record transitional paleomagnetic directions corresponding to four mid-Pleistocene polarity reversals or events. Three lavas from Punaruu Valley previously thought to record the Cobb Mountain Normal Polarity Subchron (CMNS) gave a mean age of 1.105 +/- 0.005 Ma, indicating that they were erupted about 76 kyr after the CMNS; this period of transitional field behavior is designated the Punaruu event. In addition, seven new Ar-40/Ar-39 ages from the Punaruu Valley indicate that the Jaramillo Normal Polarity Subchron (JNS) lasted about 67 kyr, starting at 1.053 +/- 0.006 Ma and ending 0.986 +/- 0.005 Ma. This agrees with astronomical estimates but conflicts with JNS ages proposed by Spell and McDougall (1992) and Izett and Obradovich (1994) on the basis of Ar-40/Ar-39 dating of rhyolite domes in the Valles Caldera. Indistinguishable Ar-40/Ar-39 ages of seven lavas, including one from Punaruu Valley and six from Haleakala that record broadly similar intermediate paleodirections, suggest that the Kamikatsura event occurred at 0.886 +/- 0.003 Ma. The discovery of these new short-lived polarity events during the Matuyama reversed chron suggests that the 400-kyr period between 1.18 and 0.78 Ma experienced no less than seven and perhaps more than 11 attempts by the geodynamo to reverse. Database: CSA Technology Research Database. ISSN: 0148-0227.

Singh, R., Mehdi, W. and Sharma, M. 2010. "Complementary Nature of Surface and Atmospheric Parameters Associated with Haiti Earthquake of 12 January 2010." *Natural Hazards and Earth System Science*. Volume 10, Issue 6, Pages 1299-1305. Abstract: The present paper describes surface (surface air temperature) and atmospheric parameters (relative humidity, surface latent heat flux) over the epicenter of Haiti earthquake of 12 January 2010. Our analysis shows pronounced changes in surface and atmospheric parameters few days prior to the main earthquake event. Changes in relative humidity are found from the surface up to an altitude of 500 hPa clearly show atmospheric perturbations associated with the earthquake event. The purpose of this paper is to show complementary nature of the changes observed in surface, atmospheric and meteorological parameters. The total ozone concentration is found to be lowest on the day of earthquake and afterwards found to be increased within a week of earthquake. The present results show existence of coupling between lithosphere-atmosphere associated with the deadly Haiti earthquake. Database: SCOPUS. ISSN: 1561-8633.

Sinton, Christopher W. 1996. *A Tale of Two Large Igneous Provinces; Geochronological and Geochemical Studies of the North Atlantic Volcanic Province and the Caribbean Oceanic Plateau*. United States: Oregon State University, Corvallis, OR, United States. Descriptors: absolute age; anaerobic environment; Antilles; Ar/Ar; Arctic region; Atlantic Ocean; basalts; Caribbean region; Caribbean Sea; Central America; Colombia; continental margin; Costa Rica; Cretaceous; crust; Curacao; dates; decompression; dissolved materials; extinction; Gorgona Island; Greater Antilles; Greenland; Haiti; Hispaniola; igneous activity; igneous rocks; lava; Leg 152; Lesser Antilles; magnetic anomalies; mantle; marine environment; melting; Mesozoic; mid-ocean ridge basalts; Netherlands Antilles; Nicoya Peninsula; North American Plate; North Atlantic; North Atlantic volcanic province; Ocean Drilling Program; oceanic crust; oxygen; plate tectonics; sea water; South America; South American Plate; upper mantle; volcanic rocks; volcanism; West Greenland; West Indies. Notes: ODP, Ocean Drilling Program. GeoRef Accession Number: 1997-037955.

Sloand, Elizabeth. 2010. "The Children of Haiti." *Journal of Pediatric Health Care*. 8. Volume 24, Issue 4, Pages 211-212. ISSN: 0891-5245.

Smith Fawzi, M. C., Jean-Baptiste, M., Rosenthal, B. and Mitnick, C. 1997. "Health Impact of Human Rights Violations in Haitian Refugees [20]." *Lancet*. Volume 350, Issue 9074, Pages 371-372. Descriptors: adult; arthralgia; clinical article; cognition; cognitive defect; cuba; female; food; Haiti; health; health status; housing; human; human immunodeficiency virus infection; human rights; injury; letter; male; myalgia; neurologic disease; priority journal; rape; refugee; sanitation; united states; water supply; Humans; Refugees. Notes: Cited By (since 1996): 1. Database: SCOPUS. ISSN: 0140-6736.

Smith, Stephen C. 1998. "Is there a Role for Attack Helicopters in Peace Operations?" Volume: NASA no. 19980227166; DTIC: AD-A350068, Descriptors: Attack helicopters; Modification; Organizations; Haiti; Criteria; Land; Constrictions; Training aircraft; Aircraft components; Mines; Training; Military Operations; Peacetime; Attack Aircraft; Military Helicopters; Investigation; Theses; Military Psychology; Deployment. Abstract: This thesis is a study to determine if attack helicopters are needed in peace operations. It uses case studies of two peace operations in which the U.S. Army employed attack helicopters: Operation Uphold Democracy in Haiti and Operation Joint Endeavor in Bosnia. The case studies examine the doctrine, mission analysis, predeployment training, new equipment and equipment modifications, task organization, deployment, and employment of attack helicopter units in each operation. Because the operations are very recent, the study relies heavily on interviews and lessons learned from individuals who took part in each operation. The analysis evaluated each operation using six criteria that were common to both operations. These criteria included doctrine, mission analysis, task organization, training, aircraft modifications/preparation, and employment. This thesis concludes that there is a role for attack helicopters in peace operations. Attack helicopters were critical to the success of operations in both Haiti and Bosnia because of their ability to operate in the ground environment without restrictions due to terrain or land mines, and their psychological impact as a deterrent to the escalation of violence. PURL: <http://handle.dtic.mil/100.2/ADA350068>

Smolikowski, B. 1993. "The Water and Soil Fertility Management (GCES) a New Strategy for Fighting Erosion in Haiti." *Cahiers - ORSTOM, Serie Pedologie*. Volume 28, Issue 2, Pages 229-252. Descriptors: land-use; population pressure; soil erosion; soil

fertility; Haiti. Abstract: Diagnoses the physical and socio-economic environment encountered by the small farmers, including agro-ecology, erosion processes, land-use systems, social and economic factors. How Haitian farmers then adapt their land-use strategies to face their complex situations is then analysed. An alternate approach based on a rationale for rural development with careful management of water and soil fertility (GCES). Described here are the base lines of project intervention, how the management has been organised with the participation of the rural communities, and the techniques employed for improving production and maintaining the natural environment. Also displayed are how the technical decisions are directly linked to the original diagnosis, and how these decisions must answer to the needs of the rural communities. Database: SCOPUS. OCLC: 77449363.

Snyderman, Judith. 2010. "Military Engineers Help Haiti Build Better Future." American Forces Press Service. Emerging Media, Defense Media Activity. Abstract: An initial priority for engineers was to assess the main seaport which was heavily damaged. Analysis showed that the port's north pier was a complete loss, Wink said, but by the end of February, Seabees and Army divers had repaired the south pier well enough to allow small watercraft to relay critical humanitarian supplies from ships stationed offshore to troops at the pier, who transported them to stranded civilians. By the end of March, he added, the south pier was fully operational, and the port is now being run entirely by Haitian authorities with no Defense Department involvement. See: <http://www.defense.gov/news/newsarticle.aspx?id=58777>

Société haïtienne d'histoire, de géographie et de géologie, Société d'histoire et de géographie d'Haïti, Société haïtienne d'histoire et de géographie, Société d'histoire et de géographie d'Haïti and Bulletin. 1925. "Revue." Port-au-Prince, Impr. centrale etc.: Descriptors: Geology- Haiti- Periodicals. Notes: No. 1- Mai 1925-; Geographic: Haiti- History- Periodicals. Haiti- Description and travel- Periodicals. Haiti- Social life and customs- Periodicals. Note(s): Also issued online. Until Jan. 1947 published by the Society under the name Société d'histoire et de géographie d'Haïti; April 1947-Oct. 1949, Société haïtienne d'histoire et de géographie. General Info: 1925-49, no 1-75; in no. 77.

Sprenkle, Starry D. 2008. "Community-Based Agroforestry as Restoration: The Haiti Timber Reintroduction Project Methods and Framework." *Ecol. Restor.* 09. Volume 26, Issue 3, Pages 201-203. Descriptors: Agroforestry; Agriculture; Forest Conservation; Soil Restoration; Soil Management; Land Tenure; Land Use, Rural; Farmers; Haiti. Abstract: The article focuses on the development of the Haiti Tree Re-Introduction Project (HTRIP), by the Friends of Hôpital Albert Schweitzer at the Atribonite Valley. It is intended to promote agroforestry in mountain communities to restore soil fertility and forest cover. To address the challenges that the land tenure system presents to practices that restore soil fertility and forest cover, farmers who want to enroll land in HTRIP agroforestry plots are required to have at least a traditional claim to the land. Developers of the project have realized the need for education in the region to enforce changes to agricultural practices. ISSN: 15434060.

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"Staying Healthy in Haiti." 1994. Washington, DC. Div. of Preventive Medicine; United States: Walter Reed Army Inst. of Research. Sep. Volume: ADA3233848,

page(s): 19. Descriptors: Military medicine; Preventive medicine; Hygiene; Army personnel; Water; Health; Medicine; Malaria; Human immunodeficiency viruses; Immunization; Blood; Dengue virus; Reproduction (Physiology); Haiti; Infectious disease transmission. Abstract: Partial Contents: The Biggest Risks to U.S. Personnel and How to Avoid Those Risks; The Healthy US Soldier, Sailor, Airman or Marine in Haiti; Map; Specific Information on the Medical Threat and Prevention; Safety; Infectious Disease; Diarrhea and Intestinal Problems; Malaria; Dengue; Diseases Transmitted in Water and Soil; Diseases Transmitted by Animals; Diseases Transmitted by Human Blood and Body Fluids; Respiratory Disease; Stress; Climate; Hazardous Creatures; Personal Hygiene; Immunization and Prophylaxis; Reproductive Health Issues. Notes: Supersedes all previous editions. Database: NTIS and DTIC. DTIC Accession Number: ADA3233848.

Steverlynck, J. C. 1976. *Developpement agricole de la vallee des Trois Rivieres, Haiti. Etude de factibilite - Rapport technique 1. (Agricultural development of the Trois Rivieres valley, Haiti. Feasibility study - (Technical report 1)).* FAO, Rome (Italy). Agriculture Dept. Language: French. Imprint: 1976. Notes: Tables; 14 ref.; Summary (Fr). FAO, Rome (Italy). Agriculture Dept. 1976. 158 p. Fiche no: 42853. Job no: H9148. Doc. Orig. Div: AG. Project: HAI/72/006. Report number(s): FAO-AG--DP/HAI/72/006-TR-1. FAO-AN: 142853. AND: *Developpement agricole de la Vallee des Trois Rivieres, Haiti. Conclusions et recommandations du projet - Rapport terminal. (Agricultural development of the Trois Rivieres Valley, Haiti. Project conclusions and recommendations - (Terminal report)).* FAO, Rome (Italy). Agriculture Dept. Language: French. Imprint: 1976. Notes: 31 ref. FAO, Rome (Italy). Agriculture Dept. 1976. 42 p. Fiche no: 32463. Job no: H9201. Doc. Orig. Div: AG. Project: HAI/72/006. Report number(s): FAO-AG--DP/HAI/72/006. FAO-AN: 132463.

Stinnesbeck, W., Keller, G., de la Cruz, J., De León, C., MacLeod, N. and Whittaker, J. E. 1997. "The Cretaceous-Tertiary Transition in Guatemala: Limestone Breccia Deposits from the South Petén Basin." *Geologische Rundschau*. Volume 86, Issue 3, Pages 686-709. Descriptors: Biostratigraphy; Chicxulub impact; Guatemala; K/T boundary; Limestone breccias; Cretaceous-Tertiary transition; limestone breccia. Notes: Cited By (since 1996): 15. Abstract: Limestone breccia deposits in southern Mexico, Guatemala and Belize have recently been interpreted as proximal to distal ballistic fallout deposits, generated by a bolide impact that struck Yucatan at K/T boundary time. We review the age, lithology and the depositional environment of five K/T boundary sections in the South Petén area of Guatemala (Caribe, Aserradero, Chisec, Actela, Chemal) in order to evaluate the nature and origin of K/T limestone breccia deposition. The sections are located 500 km south of the proposed impact site at Chicxulub and trend in an east-west direction from the Guatemala/Mexico border to southern Belize. In four of the five sections examined, a breccia unit up to 50 m thick overlies reef-bearing shallow-water limestones of late Cretaceous (Campanian-Maastrichtian) age. Rhythmically bedded limestones, marls and siltstones of early Danian age overlie the breccia and were deposited under middle-to outer-neritic conditions. The breccia consists of differently coloured layers of shallow-water limestones. Clast size generally decreases upsection to thin layers of predominantly rounded clasts, and these fine-grained rudstones grade into grainstones at the top. In at least one section (EI Caribe) diagenetically altered glass spherules are present in the uppermost layers of the grainstone. These glass spherules are

of stratigraphic position and chemical composition similar to black and yellow glass from Beloc, Haiti and Mimbral, Mexico, which some workers have chemically linked to melt glass within the breccia of the Chicxulub cores. We suggest that breccia deposition in Guatemala may have been multi-event, over an extended time period, and related to the collision of the Yucatan and Chortis plates as well as related to a major impact or volcanic event at the end of the Cretaceous. Database: SCOPUS. ISSN: 0016-7835.

Streit, T. and Lafontant, J. G. 2008. Eliminating Lymphatic Filariasis: A View from the Field. *Annals of the New York Academy of Sciences*. Volume: 1136, page(s): 53-63. Language: English. Descriptors: Disease elimination; Drug donation; Elephantiasis; Haiti; Hydrocele; Lymphatic filariasis; Lymphedema; Mass chemotherapy; Poverty; Rapid diagnostics; causal attribution; disability; disease transmission; filariasis; human; infection control; infection risk; international cooperation; prevalence; public health problem; review; social welfare; socioeconomics; treatment indication; Elephantiasis, Filarial; Humans; Pharmaceutical Preparations; Role; Science. Abstract: Among infections closely associated with poverty, lymphatic filariasis (LF) is a study in contrasts. It is both a consequence of and a contributor to poverty. Although rarely fatal, it is recognized as a leading global cause of lifelong disability as well as significant personal, social, and economic burdens coincident with disease. Infection is often considerably more prevalent in communities than the number of cases of overt pathology for which LF is best known (lymphedema, elephantiasis, and hydrocele). With an estimated 120 million to 130 million affected persons in 83 countries and 1.25 billion persons living in areas at risk, in some countries LF may be expanding its range, whereas in others, with economic development, it has disappeared with little if any targeted intervention. The transmission cycle is relatively inefficient, yet an association with pockets of deepest poverty remains tenacious. Thanks to scientific advances in diagnostic tools, and particularly in control strategies focused on large-scale drug donation and mass drug distribution programs, scientists and policy makers now consider LF eliminable. Together with new approaches for morbidity control, a hopeful tone surrounds a disease problem that as recently as two decades ago could easily have been categorized as among the most neglected of neglected diseases. Continued progress toward global LF elimination will require solutions to potential obstacles in the most challenging - that is, the poorest - endemic settings. This chapter reviews progress toward LF elimination and some of the remaining challenges from a perspective in Haiti, the only least developed country of the Americas. ISSN: 0077-8923. Database: SCOPUS.

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Stuben, D., Kramar, U., Berner, Z., et al. 2002. "Two Anomalies of Platinum Group Elements Above the Cretaceous-Tertiary Boundary at Beloc, Haiti: Geochemical Context and Consequences for the Impact Scenario." *Special Papers*. Issue 356, Pages 163-188. Notes: Additional Info: The Society, Issue Id: Catastrophic Events and Mass

Extinctions: Impacts and Beyond Alt Journal: Uniform Title: Special papers (Geological Society of America) Key Title: Special paper - Geological Society of America. ISSN: 0072-1077.

Stutler, R. Kern; Water Management Synthesis II Project; United States; Agency for International Development and USAID/Haiti. 1983. Evaluation of the Irrigation Component of the Integrated Agricultural Development Project, no. 521-0078. Port-au-Prince: Water Management Synthesis - II Project, Agency for International Development, Washington, D.C. and U.S. Agency for International Development Mission to Haiti. Descriptors: Irrigation- Haiti; Water resources development- Haiti; Government publication (gpb); National government publication (ngp); Microfiche (mfc). Notes: [110] p. in various pagings; 28 cm. Note(s): At head of title: USAID/Haiti. "September 1983." Includes statistical tables. Includes bibliographical references (p. VIII-8-9). Reproduction: Microfiche. Leiden, Netherlands:/ Inter Documentation Co.,/ c1989. 2 microfiches. (Rural and regional development; DR-532). Responsibility: by R. Kern Stutler . [et al.] OCLC Accession Number: 79824584.

Styles, Peter. 2010. "The Haiti Earthquake; a Salutory Lesson in (Non) Earthquake Engineering." *Geology Today*. Apr. Volume 26, Issue 2, Pages 53-54. Descriptors: Antilles; Caribbean region; damage; earthquakes; epicenters; geologic hazards; Greater Antilles; Haiti; Haiti earthquake 2010; Hispaniola; magnitude; risk assessment; seismic risk; seismicity; tectonics; West Indies. Abstract: A devastating earthquake of magnitude 7 struck very close and almost beneath Port au Prince, the capital of Haiti, the western half of the island of Hispaniola, early in the morning of Tuesday, 12 January 2010. While in absolute terms this was by no means the largest earthquake recorded this year globally, the death toll is around 230,000, making it one of the world's worst earthquakes in terms of casualties in recorded history, with almost uncountable economic loss to one of the poorest countries in the world. Database: GeoRef. ISSN: 0266-6979. URL: <http://www.blackwellpublishing.com/journal.asp?ref=0266-6979>.

Swisher, Carl C.,III, Grajales-Nishimura, Jos M. and Montanari, Alessandro. 1992. "Coeval ⁴⁰Ar/³⁹Ar Ages of 65.0 Million Years Ago from Chicxulub Crater Melt Rock and Cretaceous-Tertiary Boundary Tektites." *Science*. August 14. Volume 257, Pages 954-958. Descriptors: Radioactive dating; Meteorite craters; Catastrophes (Geology); Cretaceous-Tertiary boundary; General Science; Readers' Guide (Current Events); Applied Science & Technology. Notes: Bibliography; Illustration; Map. Abstract: Argon-argon dates, in conjunction with geochemical and petrological evidence, support the suggestion that the Chicxulub crater in Yucatan, Mexico, is the site of an impact that caused mass extinctions at the end of the Cretaceous period. An age of 64.98 0.05 million years was obtained for samples of glassy melt rock from the crater, and dating of tektite glass from Haiti and northeastern Mexico has yielded similar ages of 65.01 0.08 million years and 65.07 0.10 million years, respectively. ISSN: 0036-8075.

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“Tafel der Verschiedenen Stellen des Zutagetretens Eines Lignitlagers in der Gegend Zwischen Den Flüssen Piedre und Canot und der Commune Maïssade.”
Translated title: Different parts of the table of the emergence one bearing lignite in the area between the rivers and Piedre Canot and the Commune Maïssade. 1901. Gotha: Justus Perthes. Descriptors: Geology- Haiti- Maps; Haiti- Geology- Maps. Notes: Description: 1 map: col.; Map Info: Scale 1:200. Cartograph Code: Category of scale: a Constant ratio linear horizontal scale: 200; Note(s): Petermann’s Geogr. Mitteilungen. Jahrgang 1901, Tafel 16. Responsibility: gezeichnet von L. Gentil Tippenhauer, ingenieur, 1901. National Library: 014768791. OCLC Accession Number: 500645741.

Tanguay, Marc. 1995. Impact de l’Embargo Commercial sur le Marché du Charbon de Bois et la Dégradation des Sols en Milieu Rural Haïtien: Une Approche Méthodologique. Translated title : Impact of the ban on commercial markets of charcoal and Land Degradation in Rural Haiti: A Methodological Approach. Descriptors: Charbon de bois- Aspect économique- Haïti; Sols- Dégradation- Haïti- Modèles mathématiques; Déboisement- Haïti; Sanctions économiques- Haïti; Sol, Utilisation agricole du- Haïti; Thesis/dissertation; Manuscript. Notes: vii, 169, [100] f.: illustrations Dissertation: Thèse (M.A.)--Université Laval, 1995. Note(s): Bibliogr.: f. 145-150. Other Titles: Thèse. Agriculture. ISBN: 0612072436 (microfiches); 9780612072435 (microfiches). OCLC Accession Number: 77238640.

Taylor, George C. 1943-1986. George C. Taylor Papers, 1943-1986. Descriptors: Hydrology- South America; Hydrology- Central America; Hydrology- Middle East; Hydrology- Africa, West. Abstract: The George C. Taylor collection contains numerous photographs and photograph albums of the places around the world where he worked, USGS open reports, maps, and notebooks from El Salvador and Nicaragua, 1943-1944, and Haiti, Chile, and Panama, 1946-1949. Also included are field notebooks, photographs, and reports from Yemen, Senegal, Burkina Faso, Peru, Jordan and other countries. An unpublished autobiographical account in 12 volumes is included. It is in manuscript form, entitled, “Ten Years with the Mercenaries of International Development, 1975-1985”. Consultancy files contain work done for Johnston Associates, 1982-1986. Ephemera include published books and resource materials on the countries where he worked. Notes: 26.35 cubic ft. (27 boxes) + 1 expandable envelope; Named Corp: Geological Survey (U.S.) United States. Agency for International Development. Genre/Form: Autobiography. Photographs. Photograph albums. Geographic: El Salvador- History- 1838-1944. Nicaragua- History- 1937-1979. Haiti- History- 1934-1986. Chile- History- 1920-1970. Panama- History- 1946-1971. Yemen (Republic) Burkina Faso- History. Peru- History- 1919-1968. Jordan- History- 20th century. Senegal- History- To 1960. Note(s): Bio/History: George C. Taylor was born in 1915. He was trained as an engineer and hydrologist and had a career with the U.S. Geological Survey (USGS) beginning in 1937. From 1950 to 1955 he worked with the Geological Survey of India on loan from USGS. 1962-1974 he was USGS chief, Office of International Hydrology and worked in numerous foreign projects in the Middle East, Asia, Africa and South America. He wrote of his experiences in a 12-volume unpublished memoir, “Ten Years with the Mercenaries of International Development, 1975-1985”. His work took him around the world to countries including: Jordan, Peru, Yemen, Upper Volta (later Burkina Faso), Senegal, Oman, and Portugal. General Info: Finding aid available in repository. OCLC

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Taylor, George Carroll, Jr and Lemoine, Remy C. 1949. "Ground-Water Geology of the Gonaives Plain, Haiti." United States: Descriptors: Antilles; Caribbean region; geologic maps; Gonaives Plain; Greater Antilles; ground water; Haiti; Hispaniola; hydrogeology; hydrologic maps; maps; springs; surveys; wells; West Indies. Database: GeoRef. U. S. Geol. Surv., Reston, VA, United States. GeoRef Accession Number: 1984-008315.

Taylor, George Carroll, Jr and Lemoine, Remy C. 1952. "Eaux Souterraines dans la Plaine de l'Archaie, Haiti." Translated title: Underground Water of the Plaine of Archaie, Haiti. Soc. Haitienne Histoire Geographie Geologie Rev. Jul. Volume 23, Issue 86, Pages 46-57. Descriptors: Antilles; Archaie Plain; Caribbean region; Cenozoic; geologic maps; Greater Antilles; ground water; Haiti; Hispaniola; maps; West Indies. Notes: FE: geol. Map. Database: GeoRef.

Taylor, George Carroll, Jr and Lemoine, Remy C. 1950. "Ground-Water Geology of the Gonaives Plain, Haiti." Econ. Geol. Bull. Soc. Econ. Geol. Economic Geology Publishing Company, Lancaster, PA, United States: United States. Mar. Volume 45, Issue 2, Pages 127-141. Descriptors: Antilles; Caribbean region; geologic maps; Gonaives plain; Gonaives plain; Greater Antilles; ground water; Haiti; Hispaniola; maps; West Indies. Notes: geol. sketch map. Abstract: The Gonaives Plain lies in northern Haiti at the head of the Gulf, of Gonaives. Ground water in the plain is used widely for domestic and stock purposes but so far to only a limited extent for irrigation. The future agricultural development of the plain will depend in large measure on the proper utilization of available ground-water supplies for irrigation. The rocks of the region are Upper (?) Cretaceous, Eocene and Oligocene, and Pleistocene and Recent. The structural depression occupied by the Gonaives Plain was formed in post-Miocene time by the dislocation of Oligocene and older rocks along normal faults and by the tilting of the adjacent crustal blocks. The lower parts of the depression contain a Pleistocene and Recent alluvial fill deposited by streams tributary to the plain. The Upper (?) Cretaceous rocks include andesite and basalt lava flows locally intercalated with some beds of tuff and agglomerate. These rocks are generally dense and impervious, but locally small springs rise from fractures and bedding planes or from weathered zones. The Eocene rocks are hard thin-bedded cherty limestones with some beds of massive chalky limestone. Considerable ground water circulates through joints and openings along

bedding planes, some of them solutionally enlarged, giving rise to important springs such as Sources Madame Charles. The Sources Madame Charles discharge at the rate of about 110 liters per second. The Oligocene rocks include limestone, shaly limestone, limy sandstone, marl, and shale. The limestone beds contain solution passages and other openings and these may afford capacity for the circulation of ground water, but no springs were observed. The Quaternary alluvial fill of the plain is composed of interbedded lenses of clay, silt, sand, and gravel. These deposits contain a zone of saturation whose upper limit is marked by a water table at a depth from less than 1 m to about 20 m; in most places it is less than 15 m. Where present in the zone of saturation the coarse, well-sorted sand and gravel beds of the alluvium probably will yield moderate to large supplies of water to wells and infiltration galleries. The individual yields of existing wells range from a few liters to about 60 liters per second. The most favorable part of the plain for ground-water prospecting and development lies 5 to 10 km northeast of Gonaives. In this area yields of 10 to 50 liters per second could be obtained from the alluvium in single wells drilled to depths of about 35 to 45 m. Additional information on the yield and physical character of aquifers in the alluvium would be provided by test wells drilled to depths of 40 to 60 m. Database: GeoRef. ISSN/ISBN: 0361-0128.

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lead to the conclusion that the bivergence of thrusting in island arcs can develop without reversal of subduction polarity, without subarc mantle flow, and without magmatic inflation. We suggest that the Eastern Greater Antilles arc and comparable arcs are simply crustal-scale bivergent (or “doubly vergent”) thrust wedges formed during unidirectional subduction. Sandbox kinematic modeling suggests, in addition, that a broad retrowedge containing an imbricate fan of thrusts develops only where the arc behaves relatively rigidly. In such cases, the arc acts as a backstop that transmits compressive stress into the backarc region. Further, modeling shows that when arcs behave as rigid blocks, the strike-slip component of oblique convergence is accommodated entirely within the prowedge and the arc—the retrowedge hosts only dip-slip faulting (“frontal thrusting”). The existence of large retrowedges and the distribution of faulting in an island arc may, therefore, be evidence that the arc is relatively rigid. The rigidity of an island arc may arise from its mafic composition and has implications for seismic-hazard analysis. <http://gsabulletin.gsapubs.org/content/121/11-12/1522.full.pdf+html>

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well to create landslide and flooding susceptibility maps. Database: SCOPUS. ISSN: 1561-8633.

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Tonn, Bruce E. "Intervention in Countries with Unsustainable Energy Policies: Is it Ever Justifiable?" Futures. Volume in Press, Corrected Proof, Abstract: This paper explores whether it is ever justifiable for the international community to forcibly intervene in countries that have unsustainable energy policies. The literature on obligations to future generations suggests, philosophically, that intervention might be justified under certain circumstances. Additionally, the world community has intervened in the affairs of other countries for humanitarian reasons, such as in Kosovo, Somalia, and Haiti. However, intervention to deal with serious energy problems is a qualitatively different and more difficult problem. A simple risk analysis framework is used to organize the discussion about possible conditions for justifiable intervention. If the probability of deaths resulting from unsustainable energy policies is very large, if the energy problem can be attributed to a relatively small number of countries, and if the risk of intervention is acceptable (i.e., the number of deaths due to intervention is relatively small), then intervention may be justifiable. Without further analysis and successful solution of several vexing theoretical questions, it cannot be stated whether unsustainable energy policies being pursued by countries at the beginning of the 21st century meet the criteria for forcible intervention by the international community. ISSN: 0016-3287.

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Stratigraphy, Resolution of Substage 5a Sea-Level Elevation, and Orbital Forcing.” *Quaternary Science Reviews*. 5. Volume 18, Issue 6, Pages 753-767. Abstract: A well-preserved, submerged, in situ fossil reef tract lies offshore of the southeast Florida carbonate margin in the Florida Keys. Cores in two transects enabled reconstruction of reef stratigraphy and paleoenvironments, paleo water depths, and paleo sea-levels. Because Florida is tectonically stable, the elevation data required correction only for the known, minor subsidence rate. Twenty eight pristine aragonitic corals were dated via high-precision TIMS U-series methods to produce a comprehensive late Pleistocene and early Holocene geochronology. The Pleistocene section of the fossil reef includes a thick section of Substage 5a reef growth recorded from ≈ -15 to -11 m MSL, spanning an age range of 86.2–80.9 ka. Paleoenvironmental reconstruction, local water quality constraints, and elevations of concurrent Bahamian speleothem growth combine to limit sea-level to ≈ -9.0 m MSL at ≈ 83 ka. This coincides, unlagged, with the 82 ka 65°N July insolation peak: the absence of any lag suggests that the earlier peak in obliquity at 92 ka also controls paleoclimate and sea-level. A below-present sea-level estimate for Substage 5a from the Florida fossil reef data coincides more closely with uplift-corrected reef data estimates of -15 to -13 m MSL from tectonic margins such as Barbados and Haiti, than with higher than present sea levels derived from detrital corals from Bermuda and the U.S. Atlantic Coastal Plain. The best TIMS dates on corals and speleothem constraining sea level combine to produce a new regional sea-level curve for the Atlantic-Caribbean region for late isotope stage 5 and early stage 4. ISSN: 0277-3791.

Transportation Command Scott AFB, IL and Hunter, Danita L. 1997. “United States Transportation Command: 10 Years of Excellence, 1087-1997.” Jan. Page(s): 47. Descriptors: military forces (United States); military operations; military exercises; military transportation; organizational realignment; history; Iraq; air transportation; Panama; sealift operations; Persian Gulf War; Haiti Bosnia; Herzegovina; airlift operations; Somalia; Russia; land transportation; rail transportation. Abstract: Throughout the history of the United States, when the need arose for the nation to move its military forces from point A to point B, the Army, Navy, Marines and Air Force deployed unilaterally. There was no single point of contact for transportation. If an Army unit had to move from Fort Bragg, NC, to Stuttgart, Germany, for example, their equipment might go by rail to Charleston, SC, where it would be taken by sea to Antwerp, Belgium. There, it would be unloaded from the ship and placed on a train and taken by rail to Stuttgart. From there it would be again unloaded and reloaded on a truck to be taken to the final destination. The people in the unit would travel by bus to the airport, fly to Frankfurt, get bussed to Stuttgart, and wait for their equipment to arrive. For many, many years, a move such as this, which happens routinely, required the unit transportation officer to coordinate with people in the other services and civilian transportation companies to route the passengers and equipment from the origin through many transportation systems to arrive at the final destination. Whether or not it would all arrive safely could not readily be determined while the cargo was in transit. Today, that whole scenario is taken care of with one phone call. The transportation officer simply picks up the phone and dials 1-800-USTANSCOM to arrange for all of the people and cargo to be transported from Fort Bragg to Stuttgart. All of the coordination still must be accomplished for the equipment and people to reach their final destination, but now the professionals at U.S. Transportation Command (USTANSCOM) and its Transportation

Component Command- the Air Force's Air Mobility Command, the Army's Military Traffic Management Command, and the Navy's Military Sealift Command- take care of the details. This monograph chronicles the creation of USTRANSCOM and its involvement in military operations, military exercises, and humanitarian and relief efforts from 1987 to 1997. DTIC Accession Number ADA466202. PURL: <http://handle.dtic.mil/100.2/ADA466202>.

Trevors, J. T. and Saier Jr., M. H. 2010. "The Crisis in Haiti, 2010: What's to be Done?" *Water Air Soil Pollution*. Pages 1-2. Abstract: The current crisis in Haiti is an overwhelming example of the devastation, suffering, and death that can occur when the earth's tectonic plates are on the move in an overcrowded country. It is no surprise that the destruction was so widespread. It is as expected, given our current international situation. In fact, it is hard to envision the horrific suffering that is occurring and will continue to occur for many years to come, just from this singular event. Many countries and organizations have responded with humanitarian aid that is difficult to deliver when infrastructure in the form of highways, airports, and communications are non-functional. Food, shelter, potable water, public health, and security infrastructure are not easy to provide to a large population. What can we and all countries of the world learn from such a catastrophic event? Published online February 9, 2010. Database: SCOPUS. ISSN: 0049-6979. DOI: 10.1007/s11270-010-0338-8.

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Troester, J. W. and Turvey, M. D. 2004. "Water-Resources Reconnaissance of Ile de la Gonaave, Haiti." *Hydrogeol. J. Apr.* Volume 12, Issue 2, Pages 224. Descriptors: Article Subject Terms: Aquifers; Bacteria; Caves; Chlorides; Chlorophylls; Coasts; Contamination; Evapotranspiration; Ground water; Groundwater; Hydrogen; Karst; Limestone; Organizations; Palaeo studies; Pools; Precipitation; River discharge; Sodium; Springs; Surface Water; Test Wells; Water Depth; Water Table; Water pollution; Water resources; Article Geographic Terms: ASW, Caribbean Sea, Greater Antilles, Haiti; Greater Antilles, Haiti; Freshwater. Notes: TR: CS0704932. Abstract: Ile de la Gonaave is a 750-km super(2) island off the coast of Haiti. The depth to the water table ranges from less than 30 m in the Eocene and Upper Miocene limestones to over 60 m in the 300-m-thick Quaternary limestone. Annual precipitation ranges from 800-1,400 mm. Most precipitation is lost through evapotranspiration and there is virtually no surface water. Roughly estimated from chloride mass balance, about 4% of the precipitation recharges the karst aquifer. Cave pools and springs are a common source for water. Hand-dug wells provide water in coastal areas. Few productive wells have been drilled deeper than 60 m. Reconnaissance field analyses indicate that groundwater in the interior is a calcium-bicarbonate type, whereas water at the coast is a sodium-chloride type that exceeds World Health Organization recommended values for sodium and chloride. Tests for the presence of hydrogen sulfide-producing bacteria were negative in most drilled wells, but positive in cave pools, hand-dug wells, and most springs, indicating bacterial contamination of most water sources. Because of the difficulties in obtaining freshwater, the 110,000 inhabitants use an average of only 7 L per person per day. Database: Water Resources Abstracts. ISSN: 1431-2174.

Trofa, Andrew F., DeFraités, Robert F. and Smoak, Bonnie L. 1997. "Dengue Fever in US Military Personnel in Haiti." *JAMA*. May 21. Volume 277, Pages 1546-1548. Descriptors: Dengue fever; Public health/Haiti; United States/Armed forces; General Science. Notes: Bibliography; Illustration. Abstract: Objective. To describe clinical manifestations and public health implications of an outbreak of dengue fever (DF) during Operation Uphold Democracy, Haiti, 1994. Design. Consecutive sample. Setting. Military combat support hospital, Port-au-Prince, Haiti. Patients. A total of 101 US military personnel with acute febrile illnesses. Interventions. A disease surveillance team collected clinical and epidemiologic data from US military clinics throughout Haiti. Febrile patients admitted to the combat support hospital were evaluated with standardized clinical and laboratory procedures. The surveillance team followed patients daily. Main Outcome Measures. Arbovirus isolation and specific antibody determination and symptoms and physical findings. Results. Febrile illnesses accounted for 103 (25%) of the 406 combat support hospital admissions during the first 6 weeks of deployment. All patients with febrile illness recovered. A total of 30 patients had DF; no patient had evidence of infection with malaria. Dengue virus serotypes 1, 2, and 4 were isolated from 22 patients, and 8 patients developed IgM antibody to dengue virus. Patients with DF could not be distinguished from other febrile patients on clinical grounds alone. No arboviruses other than dengue were identified. Conclusions. Active surveillance, with clinical and laboratory evaluation directed by an epidemiologic team, led to the timely recognition of an outbreak of febrile illness among US troops in Haiti. Viral isolation and serological studies were essential in confirming DF. During the surveillance period, DF accounted for at least 30% of the febrile illnesses among hospitalized US troops. Dengue fever is a significant threat to military personnel and civilian travelers in Haiti and has the potential for introduction to and transmission in the United States. ISSN: 0098-7484.

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UN. Secretary-General. 1985-10-25. Assistance to Haiti: Report of the Secretary-General. New York: UN. Page(s): 42. Descriptors: Economic Conditions; Economic Statistics; Balance Of Payments; National Accounts; External Debt; Development Policy; Agricultural Production; Education; Employment; Energy Resources; Water Supply; Sanitation; Health; Public Administration; Development Assistance; Deforestation; Soil Erosion; Economic Assistance; Aid Programmes; Statistical Data; Maps; Haiti. Notes: map, tables. Note(s): Issued under agenda item 87, agenda document A/40/251. Includes UN map no. 2950 rev. 1: Haiti (May 1981). UN development projects. UN maps included in documents. Reports and letters of the UN Secretary-General. Reports and studies. OCLC Accession Number: 82528330.

UNDP; UN. Department of Technical Cooperation for Development and Haiti. 1992. Assistance Juridique Pour La Promotion Et Le Développement du Secteur Minier en Haïti: Conclusions Et Recommandations du Projet. New York: UN. Page(s): 11. Descriptors: Mining; Mineral Resources Development; Mining Law; Gold Mines; Project Activities; Haiti; Project Management; UNDP--Programme Management. Notes: iv, [1]; map. At head of title: Département de la coopération technique pour le développement. - Préparé pour le Gouvernement haïtien par le Département de la coopération technique pour le développement, Organisation des Nations Unies, comme agent d'exécution du Programme des Nations Unies pour le développement. - DP/UN/HAI-87-023/1. UN development projects. Government. OCLC Accession Number: 79904649.

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Unger, J. -P and Killingsworth, J. R. 1986. "Selective Primary Health Care: A Critical Review of Methods and Results." *Social Science and Medicine*. Volume 22, Issue 10, Pages 1001-1013. Descriptors: economic aspect; efficacy; human; methodology; organization and management; pediatrics; policy; primary health care; social aspect; socioeconomics; Adult; Child; Community Health Aides; Democratic

Republic of the Congo; Developing Countries; Economics, Medical; Haiti; Health Planning; Health Resources; Hospitals; Infant; Life Expectancy; Mortality. Notes: Cited By (since 1996): 24. Abstract: In the aftermath of the Alma Ata conference, three types of Primary Health Care (PHC), have been identified. Comprehensive PHC (CPHC) and Basic PHC (BPHC) both have a wide scope of activities, BPHC however does not include water and sanitation activities. Only one year after the Alma Ata conference, CPHC was attacked as not 'feasible' and selective PHC (SPHC) was offered as an interim alternative. SPHC only addresses 5 to 8 diseases, almost all of them falling within the realm of pediatrics. This article critically analyses the methods and results of SPHC. It contrasts the lack of supportive data for SPHC and its methodological deficiencies with the extent of its adoption by bilateral cooperation agencies, foundations, academic and research institutions, and international agencies. The authors suggest that rather than health factors, the major determinants of this adoption have been political and economical constraints acting upon decision makers exposed to a similar training in public health. Database: SCOPUS. ISSN: 0277-9536.

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United States. Defense Mapping Agency. Hydrographic/Topographic Center. 1989. "Approaches to Manzanillo Bay, West Indies, Hispaniola - North Coast,

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V

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private sector in the development of its road infrastructure. If current governmental regulations managing transportation facilities in Haiti were to be converted to a combination of government and private operation, then the Haitians, especially from the Diaspora, could facilitate an open construction business environment. This plan would dismantle the monopoly currently in the market. In addition, with the support of industrialized countries, wealthier Haitians, missionaries, and volunteer groups, Haiti could implement an emergency plan by utilizing its talented graduates and its inexpensive labor force. This paper provides a description of the conditions of Haiti's current road infrastructure. It examines how the Haitians in the Diaspora, developed nations, and volunteer groups can better assist Haiti in modernizing and operating its road network. Such concepts such as privatization, public-private partnerships, and implementation mechanisms are considered and presented. This approach would help Haiti utilize its resources more efficiently in restoring and rehabilitating its road infrastructure. TRIS Accession Number: 00973948.

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"Water for the Thirsty." 2008. National Catholic Reporter. National Catholic Reporter Publishing Company: 09/19. Volume 44, Issue 28, Pages 3-3. Descriptors: social service; charitable giving; hurricanes; Haitians; Haiti; Catholic Relief Services (Company). Notes: M3: Article; Accession Number: 34704724; Source Info: 9/19/2008, Vol. 44 Issue 28, p3; Company/Entity: Catholic Relief Services (Company); NAICS/Industry Codes: 624190 Other Individual and Family Services; Number of Pages: 1/3p; Document Type: Article. Abstract: The article reports on the effort by the Catholic Relief Services and its local agency Caritas Haiti to extend help to those Haitians who were hit by Hurricanes Fay, Gustav and Hanna in September 2008. Accordingly, they have been left without basic necessities because of flooding and storms. In order to help, the Catholic Relief Services and its local agency have provided emergency supplies like water purification kits and food rations. ISSN: 0027-8939.

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Text Word Count: 87. Abstract: Presents information on a loan approved by the Inter-American Development Bank that will support to improve potable water and sanitation services in Haiti. Details on the project. ISSN: 1060-5088.

Waters, William Thomas. 1990. *Haitian Cultivators in Flux: Traditional and Modern Farming Practices in Pasbwadom, Haiti*. United States- New York: Syracuse University. Descriptors: Cultural anthropology. Abstract: This dissertation presents an anthropological case study undertaken in Pasbwadom, a community in southern Haiti which has received the services of a private voluntary organization (PVO) since 1985. Field data were collected including interviews, household and land surveys and documents. Data and conclusions are reported concerning traditional farming practices and the impact of the community and agricultural development projects of the PVO. Part One describes the cultivation (intercropping, ratoon, relay, and multi-storied cropping) and livestock management practices of the small-scale cultivator using indigenous technical knowledge, in order to better understand the complexity of the mixed farming system. Also discussed are the land tenure system and fragmentation of garden plots, and the health and nutritional state of the villagers. Part Two evaluates the PVO: its intended goals, implementation of projects, and the cultural and technical appropriateness of these projects. The analysis is focused on an agricultural development project emphasizing the introduction of high-yielding varieties of key grain crops, an expensive irrigation system, mono-cropping and chemical fertilizer and pesticides. Finally, the implementation by the author of a context-specific small-scale family compound dripline irrigation project is discussed. The applied project resulted in the development of a culturally appropriate and illustrated dripline irrigation manual based on the initial field data (1987) and two follow-up trips (1989 and 1990). The research suggests that the condition of the Haitian cultivator is the result of government policies that perpetuate land tenure insecurity and a property inheritance system that has led to fragmented landholdings. Agricultural holdings have decreased in size to such a degree that they are no longer capable of supporting subsistence-level agriculture, which has indirectly encouraged resource depletion and environmental degradation. The PVO has instituted a development program which has not addressed the needs of the cultivator and thus has provided him with little usable agricultural knowledge. The conclusion drawn is that the current agricultural knowledge of the cultivators is sufficient to support a sustainable agricultural system, but only if the Haitian government and PVOs redirect their policies to include the Haitian cultivator in project design, implementation, and evaluation. OCLC Accession Number: 9109627. URL:

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which delivers 12 gallons a minute of clean water was drilled in a countryside, 20 miles away from the Port-au Prince, Haiti. The drilling site was within a walled area enclosing three block houses, where the rig, a Keystone 50, was mounted on a gasoline-powered Chevy truck. Clutch discs were also installed and the battery was borrowed from the pickup truck. The water for drilling was supplied by the village women. Delays encountered include bearing availability and fuel shortage. Database: SCOPUS. ISSN: 0043-1443.

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papaya; parasite development; parthenium hysterophorus; Passiflora lauriflora; Phyllanthus niruri; Stachytarpheta jamaicensis; tamarind; thyme; velvet bean; Ancylostomatoidea. Abstract: Haitian Vodou priests (houngans) and priestesses (mambos) use plant remedies to treat many illnesses, including intestinal parasite infections. The present study screened 12 plants used in Vodou treatments for intestinal parasites to detect in vitro activity against infective-stage larvae of the hookworm *Ancylostoma caninum*. Water-soluble extracts of 4 of the 12 plants inhibited serum-stimulated feeding by larval *A. caninum* in a dose-dependent manner. All 4 plant extracts inhibited feeding induced by the muscarinic agonist arecoline, suggesting that these plant extracts may inhibit the insulin-like signaling pathway involved in the recovery and resumption of development of arrested *A. caninum* larvae. These results indicate that at least some of the plants used in traditional Haitian medicine as vermifuges show activity against nematode physiological processes. Database: SCOPUS. ISSN: 0022-3395.

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