

Supporting Humanitarian Assistance and Relief Efforts in Haiti

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PDC SUPPORT TO HAITI EARTHQUAKE RELIEF

Haitian President Rene Preval told [CNN](#) reporter Sanjay Gupta that in the aftermath of the devastating earthquake that hit Haiti on January 12, 2010, he had heard reports of death tolls ranging from 30,000 to 100,000, but he said the true toll is not yet known.

In fact, the 7.0 M earthquake with its epicenter just 16 miles from the Haitian capital of Port-au-Prince killed more than 200,000, injured an additional 300,000, and left no fewer than one million homeless.

Immediately after the earthquake Secretary of State Hillary Clinton, who was in Hawaii as part of an Asia-Pacific trip, said that the U.S. would provide both military and civilian assistance. PDC became engaged in providing that assistance immediately. The first PDC [web article](#) on the earthquake includes many important links for those who want to understand the immediate response.



U.S. Marines assigned to the 22nd Marine Expeditionary Unit (22nd MEU) unload cases of bottled water in Léogâne. (Image: HaitiEarthquakePhoto.com)

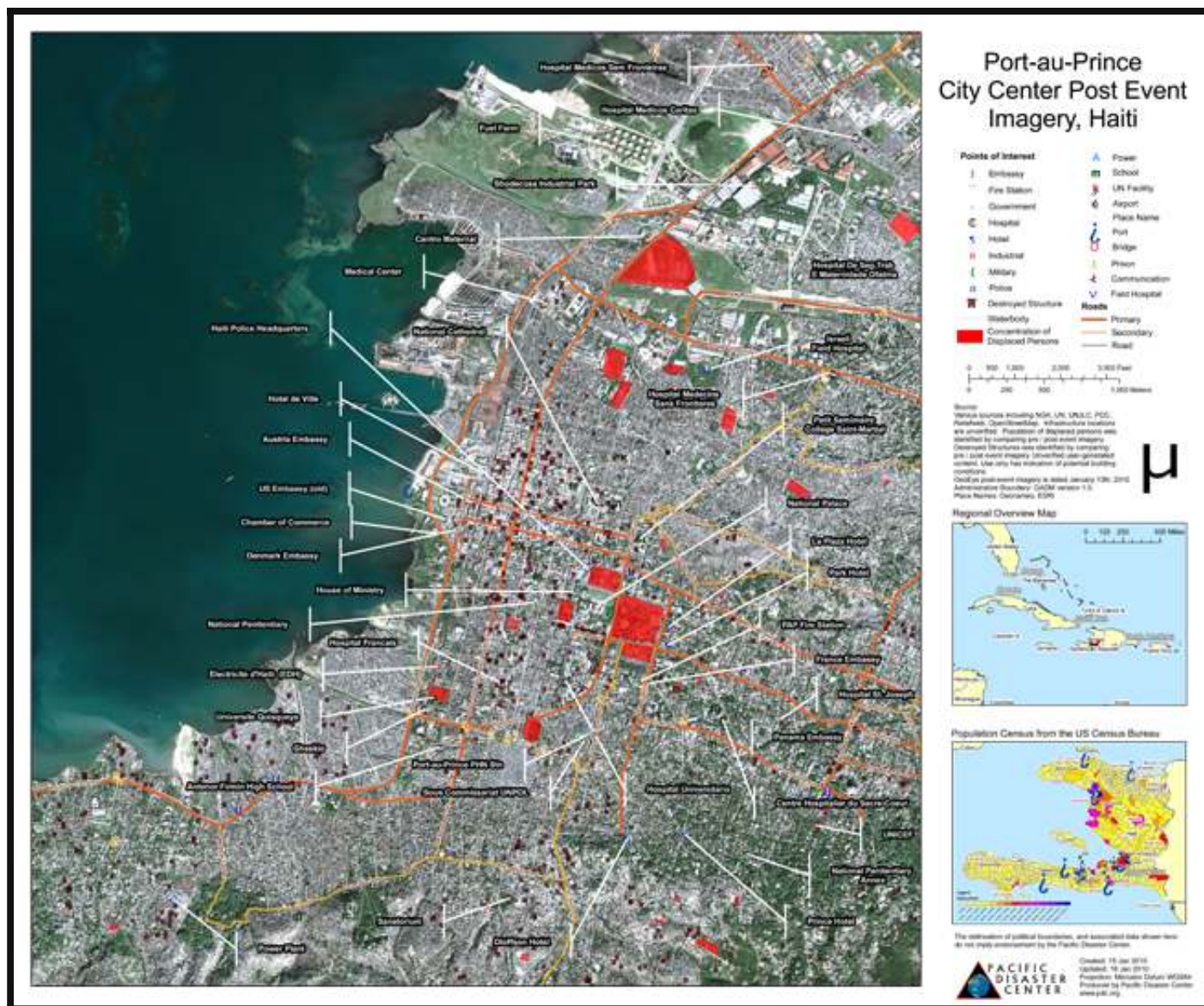
At the onset of the event, PDC began mining geospatial data from various sources to include the UN mission in Haiti MINUSTAH, Pan American Health Organization (PAHO), GeoCommons, OpenStreetMap, and leveraging crowd-sourcing through the International Network of Crisis Mappers in an effort to build a baseline dataset over Hispaniola. These datasets provided a critical understanding of what potential impacts the earthquake may have caused and enabled PDC to produce overview maps of Port-au-Prince and the surrounding communities, highlighting critical infrastructure and selected demographics while providing rapid assessments to emergency responders. With the assistance of post-event satellite imagery released in the following days, PDC analysts identified areas significantly impacted by collapsed infrastructure, impassible roads, and concentrations of spontaneous settlements established in open areas by the residents who lost, or were too afraid to return to their homes. Upon publishing these datasets and mapping products through PDC's DisasterAWARE platform and

other outreach tools such as APAN, PDC was contacted by response personnel such as Marine forces located on the USS Bataan to assist in identifying suitable positions for distribution of aid to the displaced population.

After these initial damage assessments, one of PDC's main activities became mapping health care facilities, a vital operation with so many injured and homeless, and the potential for disease outbreaks on the horizon. The challenges

in mapping the healthcare facilities were identified immediately. There were multiple datasets in Creole, French, and English complicating the understanding of the facilities types and capabilities. There were duplicate records and records in different physical locations. The challenge became to validate and fuse these datasets into a single document setting up a template for all response personnel to use. This dataset was distributed and utilized throughout the response community and ingested into other platforms such as OpenStreetMap and Sahana Foundation. These efforts led to gaps identified in the international framework of identifying the availability health care facilities and their capacity to respond to similar events.

With relief efforts still ongoing in April, a new international initiative was begun. During the 7th Annual World Health Care Congress in Washington, D.C., April 12-14, one session was called “Building a Global Healthcare Facility Database.” The initiative to build that database and to make it universally available to all persons and organizations capable of using it, was determined to be an “urgent need.” PDC was among the agencies that joined the Initiative at its founding. For detailed information, see the PDC web article, including a list of the [initial members](#).



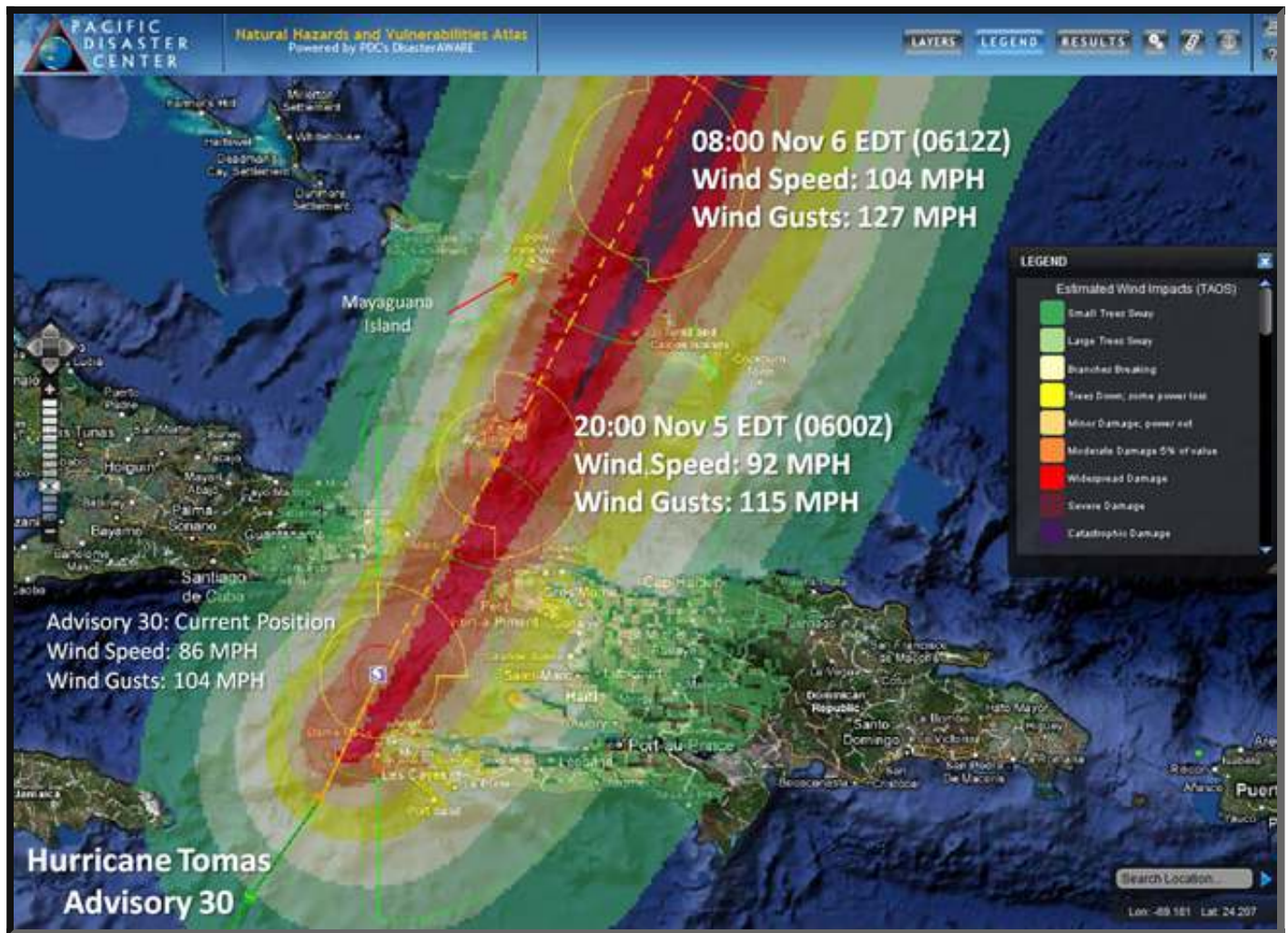
PDC map showing the displaced population in Port-au-Prince. [See larger map.](#)

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HURRICANE TOMAS

On November 5, 2010, Hurricane Tomas swept over Haiti dumping up to 15 inches of rain and causing flash floods and mudslides in the nation that still trying to recover from the destructive earthquake. After passing Haiti, Hurricane Tomas continued north north-east impacting the southern islands of The Bahamas where it caused localized flooding. PDC worked in coordination with the Center for Excellence in Disaster Management and Humanitarian Assistance (COE DMHA) to provide information to U.S. Southern Command and the Office of the Secretary of Defense in support of response operations. The reports generated by PDC and COE DMHA included weather summaries, wind-damage models

and rainfall accumulation visualizations from PDC's Natural Hazards and Vulnerability Atlas.



PDC's Natural Hazards and Vulnerabilities [Atlas](#).

CHOLERA EPIDEMIC

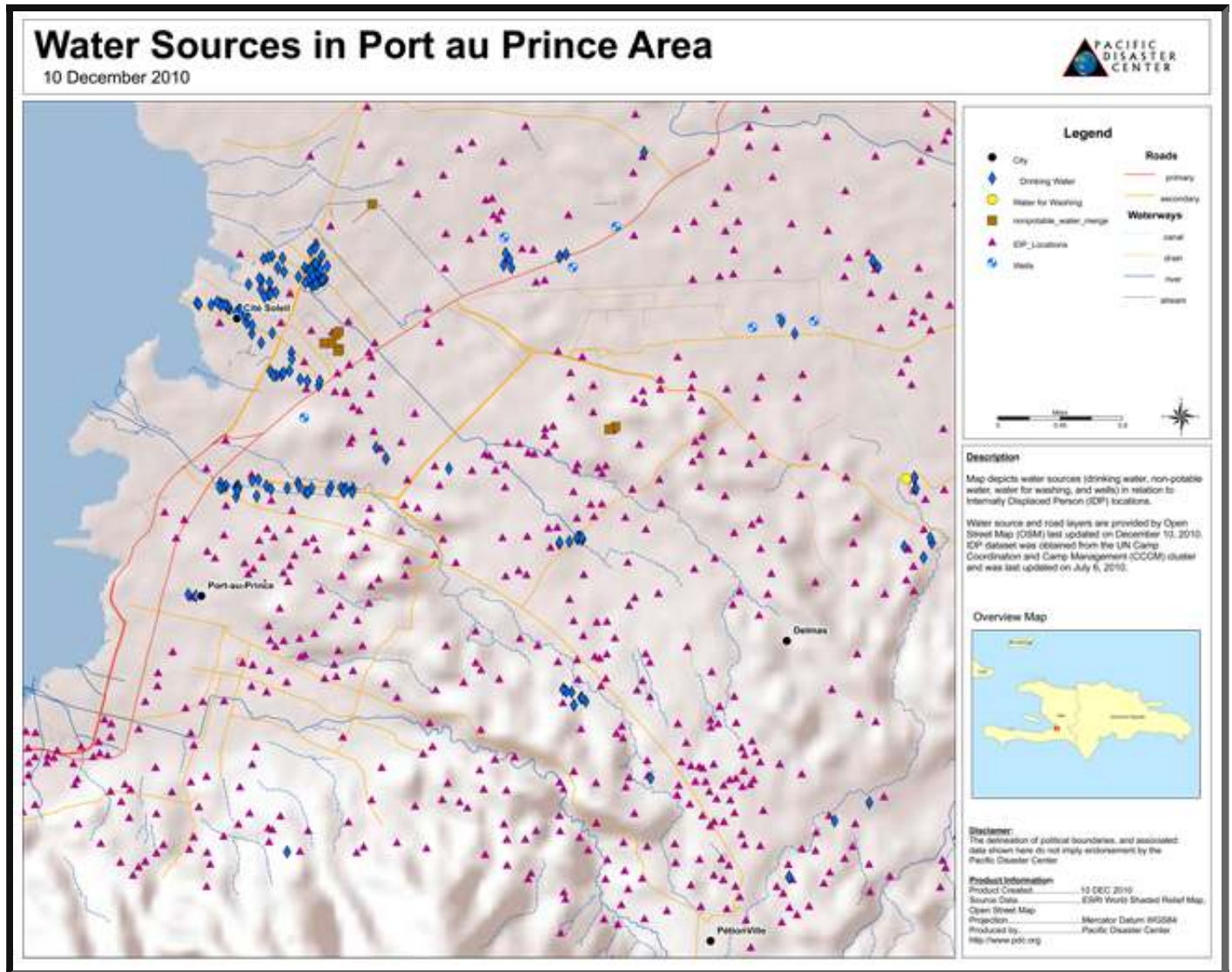
By December 14, 2010, PDC was working with the Viz Center at San Diego State University, as well U.S. Government agencies, the United Nations and many non-governmental organizations to support relief efforts in connection with the cholera epidemic in Haiti. The cholera outbreak and the shortage of safe (potable) drinking water was bringing increased suffering and the potential for heightened violence to the disaster-stricken nation. Through use of geospatial tools and risk analysis, PDC is helping to identify problem areas throughout Haiti, and to connect people and communities in extreme need with the right resources. For more information on the developing situation on Haiti, use the links below. They will take you to the web resources of many different agencies, many of which are PDC partners or are using PDC products:



Cholera victims await treatment in Gonaives, Haiti.
(Image: Rick Loomis/Los Angeles Times)

- PDC's Natural Hazards and Vulnerabilities Atlas has a [Haiti Regional Response](#) section

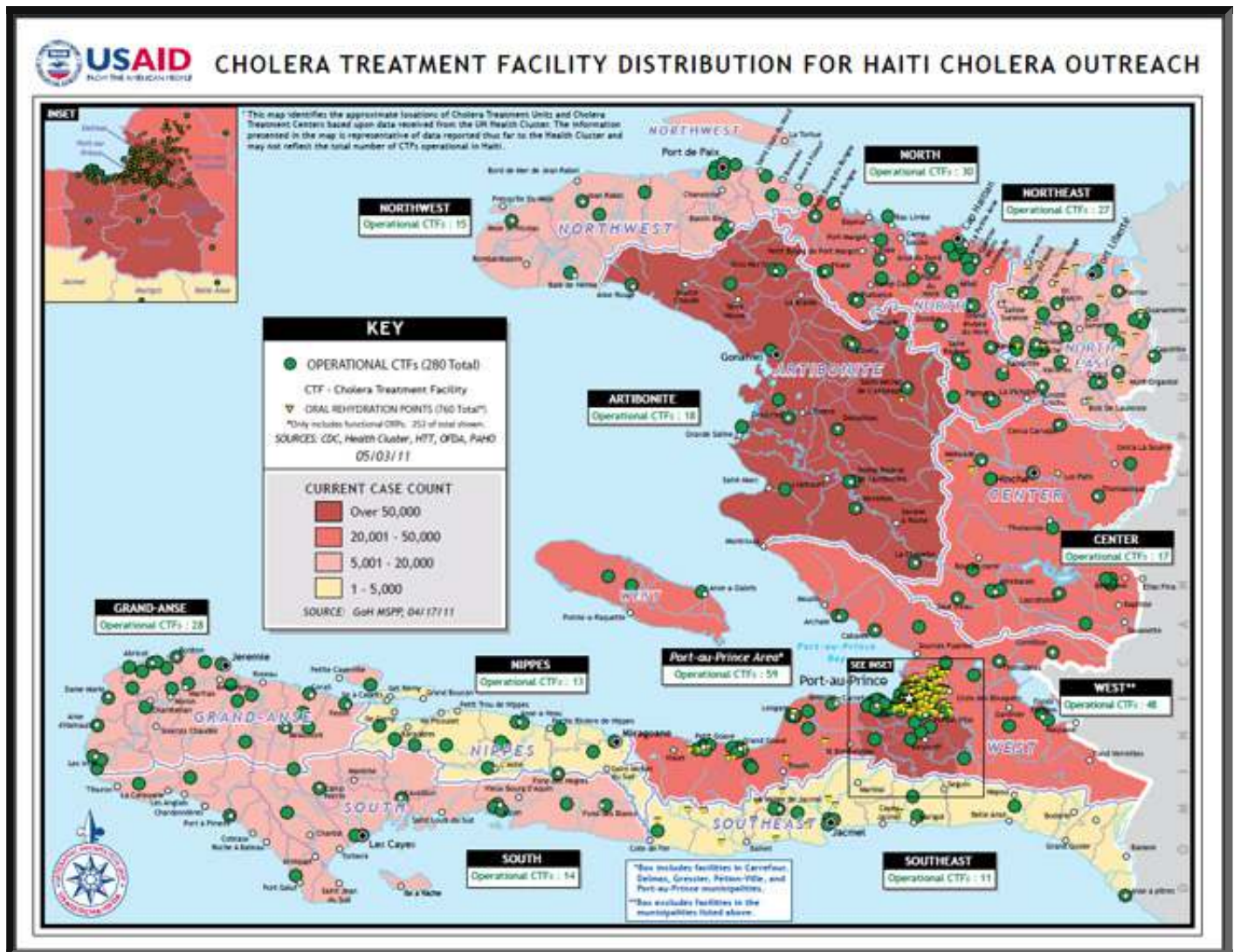
- InRelief.org is regularly updated. Events remain visible at the site while they are active.
- The Viz Center at San Diego State University is a vital participant in Haiti relief.
- The Viz Center has a special page for the Haiti Cholera Outbreak.
- LifeGivingForce LLC is engaged in providing safe water to Haiti.



PDC map showing the location of displaced persons and sources of water in Port-au-Prince. [See larger map.](#)

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HAITI EARTHQUAKE AND CHOLERA SUMMARY OF U.S. AID (TO MAY 5, 2011)



The United States Agency for International Development (USAID) published this map on May 3. It shows the distribution of cholera treatment facilities in the area of the cholera outbreak.

USAID issued a report on May 3, 2011, summarizing the aid “from the American people” provided to Haiti in fiscal year 2010 and to-date in fiscal year 2011. Recent events deemed by USAID to be “key developments” are listed below. The complete joint report—issued by USAID Bureau for Democracy, Conflict, and Humanitarian Assistance and USAID Office of U.S. Foreign Disaster Assistance—is available [here](#).

- As of April 15, the Health Cluster—the lead organization for coordination of health activities—reported that although cholera caseloads are increasing in West and Nippes departments, the overall caseload trend continued to decrease or stabilize throughout Haiti. In addition, the number of hospitalizations stabilized at approximately 2,000 per week during the end of March.
- During the week of April 24, USAID/OFDA and USAID/Haiti health staff monitored earthquake- and cholera-related programs in Artibonite Department. During site visits, USAID/OFDA staff reported that grantees continue to provide shelter solutions for earthquake-affected populations. In addition, USAID/OFDA staff noted the positive impact of cholera sensitization programs in raising awareness on better hygiene practices in Artibonite Department.
- The USAID/OFDA senior humanitarian advisor (SHA) met with Mr. Nigel Fisher, the U.N. Deputy Special Representative of the Secretary General. During the meeting, the SHA and Mr. Fisher discussed current USAID/OFDA programming, as well as plans for current and future U.N. activities in Haiti. Mr. Fisher plans to meet with other donors during the coming weeks to discuss humanitarian coordination in-country.
- Mr. Fisher also reported that the U.N. continues to work on preparations for the 2011 hurricane season. In recent weeks, humanitarian organizations have engaged in preparedness activities and disaster simulation exercises in anticipation of the upcoming season, which begins on June 1. In addition, Mr. Fisher noted adequate commodity supply levels in the cholera logistics pipeline.

EARTHQUAKE ANNIVERSARY & CHOLERA: JAN. 12-31, 2011

The January 12 anniversary of the Haiti Earthquake inspired a great deal of media coverage of the state of affairs in Haiti a year after the disaster that killed more than 200,000 and left a very significant portion of the population of the country homeless.

At the same time, PDC and its partners were among the many organizations still supporting recovery from the earthquake and response to the ongoing cholera epidemic.



Seated on the rubble that was once a cathedral in Port-au-Prince, Haiti, these people mark the anniversary of the earthquake. This photo was taken on January 12, 2011, by Ramon Espinoza for Associated Press (AP) and was widely published. PDC first saw it in the [Guardian](#) with a story by Andres Schipani and Rory Carroll.

Other news coverage of special interest around January 12 to 19

The U.S. Agency for International Development (USAID) Office of Foreign Disaster Assistance (OFDA) released three public reports on the occasion of the Haiti Earthquake anniversary:

- One-Year [Health](#) Overview
- One-Year Water, Sanitation and Hygiene ([WASH](#)) Overview
- One-Year [Shelter](#) and Settlements Overview

The New York Times published a major [retrospective](#) on the year in Haiti, starting with the effects of the earthquake.

Procter and Gamble teamed with American Red Cross to help Haitians with mobile [laundry facility](#).

Death Toll Continues to Rise

The official count of those directly affected by cholera, through January 11, in Haiti is recorded in this table:

	Département	Hospitalized Cases	Cases Seen	Deaths
1	Artibonite	21,178	55,098	851
2	Centre	6,056	15,396	306
3	Grande Anse	7,885	10,736	592
4	Nippes	1,221	1,261	112
5	Nord	23,929	23,929	597
6	Nord-Est	5,299	5,639	230
7	Nord-Ouest	8,485	14,463	229
8	Ouest	8,318	11,844	218
♦	Port-au-Prince	17,772	44,072	375
9	Sud-Est	1,385	1,518	167
10	Sud	3,973	3,973	161
	Totals	105,501	187,929	3,838

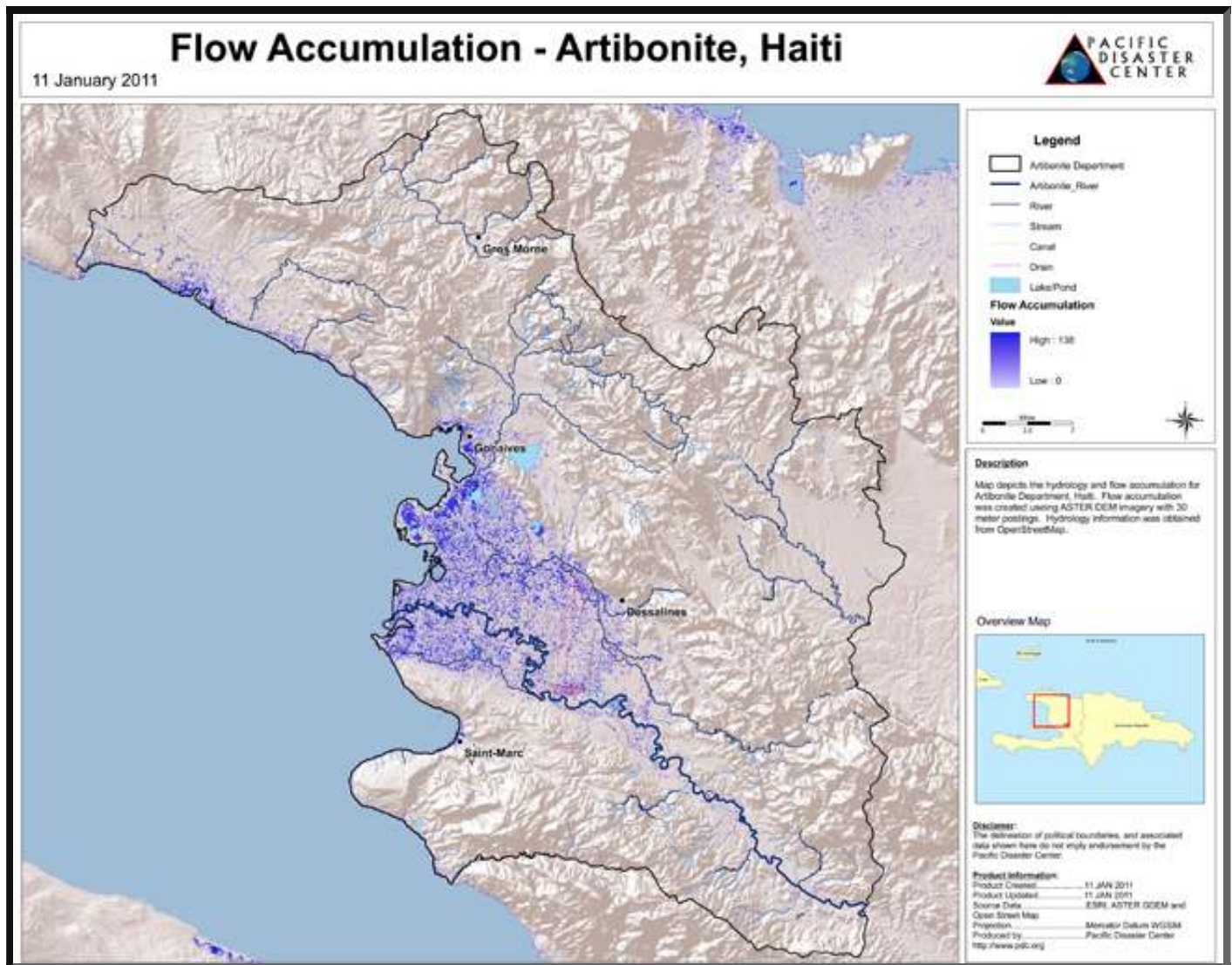
The map below, showing the départements of Haiti numbered in alphabetical order was made by [Golbez](#) from public domain sources and published in Wikipedia, 24 December 2005. Permission to use it is granted under the terms of the



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PDC support for relief organizations in Haiti

On Tuesday, January 11, the PDC Haiti Project Team provided a situational awareness update on the island nation and the ongoing cholera epidemic to all interested parties, including the U.S. Southern Command. The update included creating and sharing map products that were distributed to PDC Partners in San Diego State University (SDSU) and then both through SDSU and directly to any other organization able to use the data. The first map depicted the hydrology and areas of standing water (areas of inundation, rice fields and marsh/swamp) in the Artibonite Département of Haiti. The second map product included analysis to determine areas of water (flow) accumulation in Artibonite Département.



This PDC map, used as an adjunct to the "standing water" map (above) of the same area, increases responders' understanding of water and water resources in the vitally important Artibonite area of Haiti.

Lessons Learned from Disaster Response are Always Important

On January 21, a commentary was published titled "Web 2.0 and Disaster Recovery." The article by Phil Leggiere, Business Editor/Online Managing Editor of *HS Today: Homeland Security News, Insight & Analysis* appears below. This Leggiere commentary was posted to some Facebook accounts, republished at Technorati.com (and tagged into two subdirectories: emergency and preparedness), presented online by both Berita Indonesia and as a "security debrief" by the Adfero Group.

Web 2.0 and Disaster Recovery

By Phil Leggiere, *HS Today*, January 21, 2011
Report: <http://www.knightfoundation.org/dotAsset/377221.pdf>

For all its tragic devastation last year's earthquake in Haiti may have had one silver lining, according to a new report from the non-profit Knight Foundation: the ushering in of "a new culture in disaster relief", employing Web 2.0 technologies to speed response and mitigation.

"Every modern disaster has required modes of communication, but in Haiti, the importance of the media rose to a new level," the report, *Media, Information Systems and Communities: "Lessons from HAITI"*, explained.

"Haiti," the report added, "became the first real-world crisis laboratory for several media platforms that had only recently emerged. These were applied to support rescue efforts, assist displaced populations and coordinate massive

relief operations. The Haitian earthquake marked the first large-scale application of new approaches to create dialogue between citizens and relief workers, such as crowd-sourcing and projects that combined the reach of cell phones and radio technology."

A decade ago, the report noted, when the World Trade Center was attacked, killing over 2,700 people, "New York City's communications faltered. Local television stations aired mistaken reports that 10 additional planes were en route to attack. New York City police and firefighters operated on different radio frequencies and had no means of direct communication with each other. United States military, first responders and relief workers tripped over each other at the site, duplicating some actions and overlooking others. Families seeking missing loved ones resorted to taping flyers to store windows."

This event, the report added, "offers a glimpse of the dynamics of disaster relief in the era of Web 1.0. Americans had access to the Internet, television and cell phone service, but these were still largely "top-down" technologies that had not yet built out their interactive capacities."

Web 2.0 principles, on the other hand, according to the report, "are strikingly applicable to disaster relief since a stricken population can offer the most immediate information about its own conditions," advancing the ability of individuals to dialogue and partner with relief agencies, rather than being consigned to the role of passive victims.

These trends, the report maintains, were significantly in evidence in Haiti, driven by several recent developments in the integration of communications and humanitarian information into disaster response.

First, according to the report, "the media development sector had developed projects to work with local media to create humanitarian reporting programs and platforms to offer feedback for humanitarian providers."

In addition, the report explains, "digital media practitioners and information technologists formed a growing community to focus on new Internet and mobile platforms to promote mapping, geotagging, crowdsourcing, microtasking, application development and citizen journalism."

Specifically, the report noted, relief workers crowd-sourced information - and acted on it. "Reports of trapped people and medical emergencies collected by text were plotted on an online map then used by relief workers," the report says. "In one example, the US Marines brought water and sanitation devices to a camp after receiving reports that drinking water was in short supply."

Additionally, SMS texts broadcast critical information to Haitians, with cell phone companies, relief groups and media created and used the code 4636 to send messages to tens of thousands about important public health issues.

Finally, the report noted, volunteers created open-source maps as guides by using handheld GPS devices to create up-to-date maps to help guide humanitarian groups and the public trying to navigate affected areas.

The report contains a series of recommendations for technology groups, media development and humanitarian organizations, national governments and donors on improving coordination in future recovery efforts.

"It is unlikely that a single, universal tool will emerge to solve humanitarian information needs," it concludes. "Rather, we should expect the evolution of different networks and communities, along with multiple tools and solutions. We should aspire to design processes that are resilient, scalable and available for the next crisis."

CHOLERA EPIDEMIC: UPDATE TO JANUARY 11, 2011

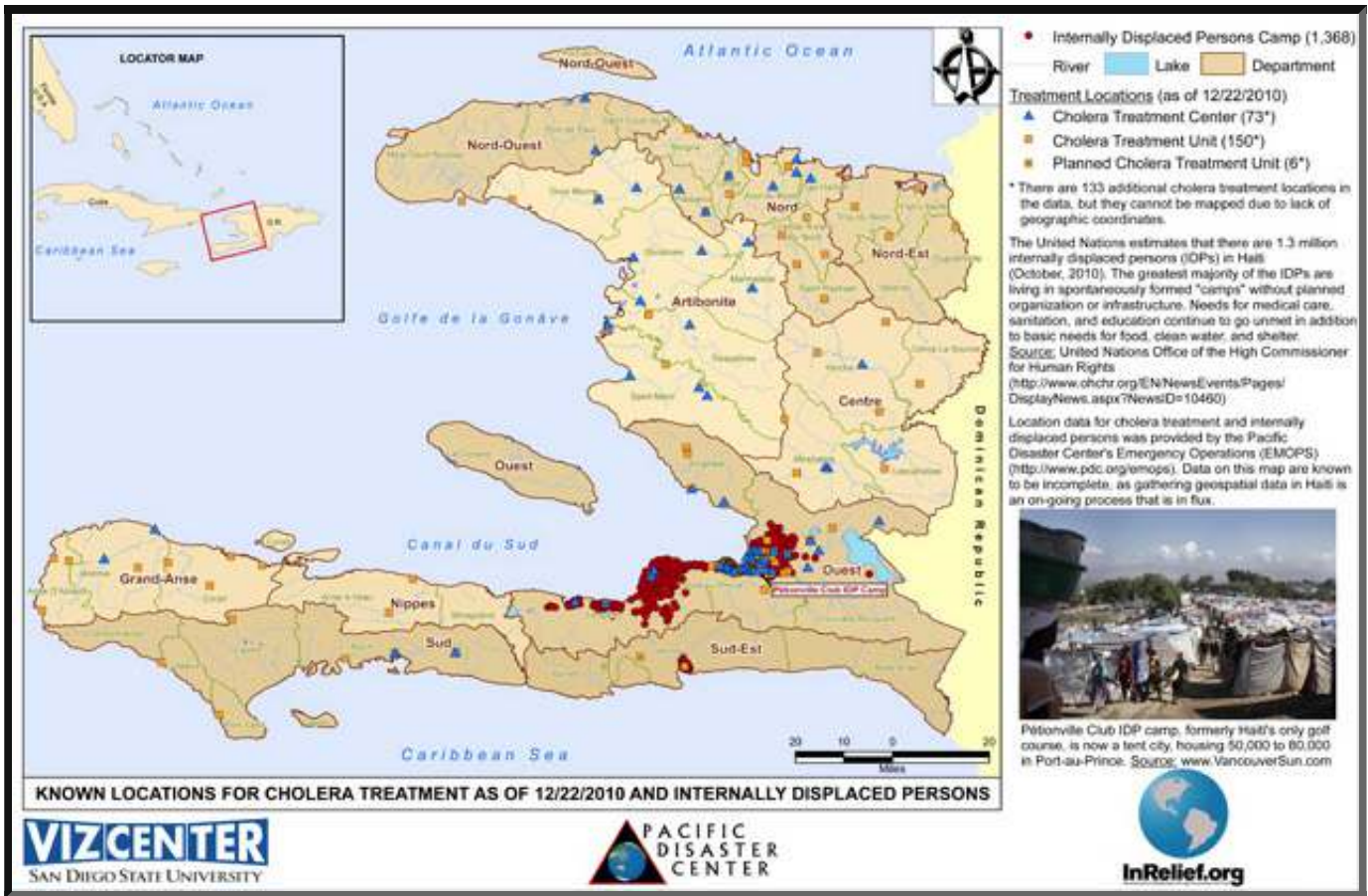
In late December, PDC developed GIS resources, including finished maps and map layers, in support of the response to the Haiti cholera epidemic. The data and newly developed viewer layers were distributed by way of the Viz Lab at San Diego State University (SDSU) to organizations/workers in Haiti, as well as to decision makers and others able to use information on water resources, internally displaced persons (IDP), etc. PDC also provided the processed data for water wells and IDP (in Excel format) to the Sean Penn Haitian Relief Organization (J/P HRO) and other groups so the information could be displayed in their own mobile viewers, too. Dr. Eric Frost, Director of the SDSU Viz Lab, also produced hard copies of the maps to be rushed to the four command centers in Haiti, saying that the information is still "priceless," and that PDC's maps are "better than anything by far" available in the country.

From late December 2010 to-date, PDC personnel in Colorado Springs, Colorado; Washington, DC; and Maui, Hawaii, continued to develop and distribute Haiti cholera-epidemic products, and to provide analytical support to the U.S.

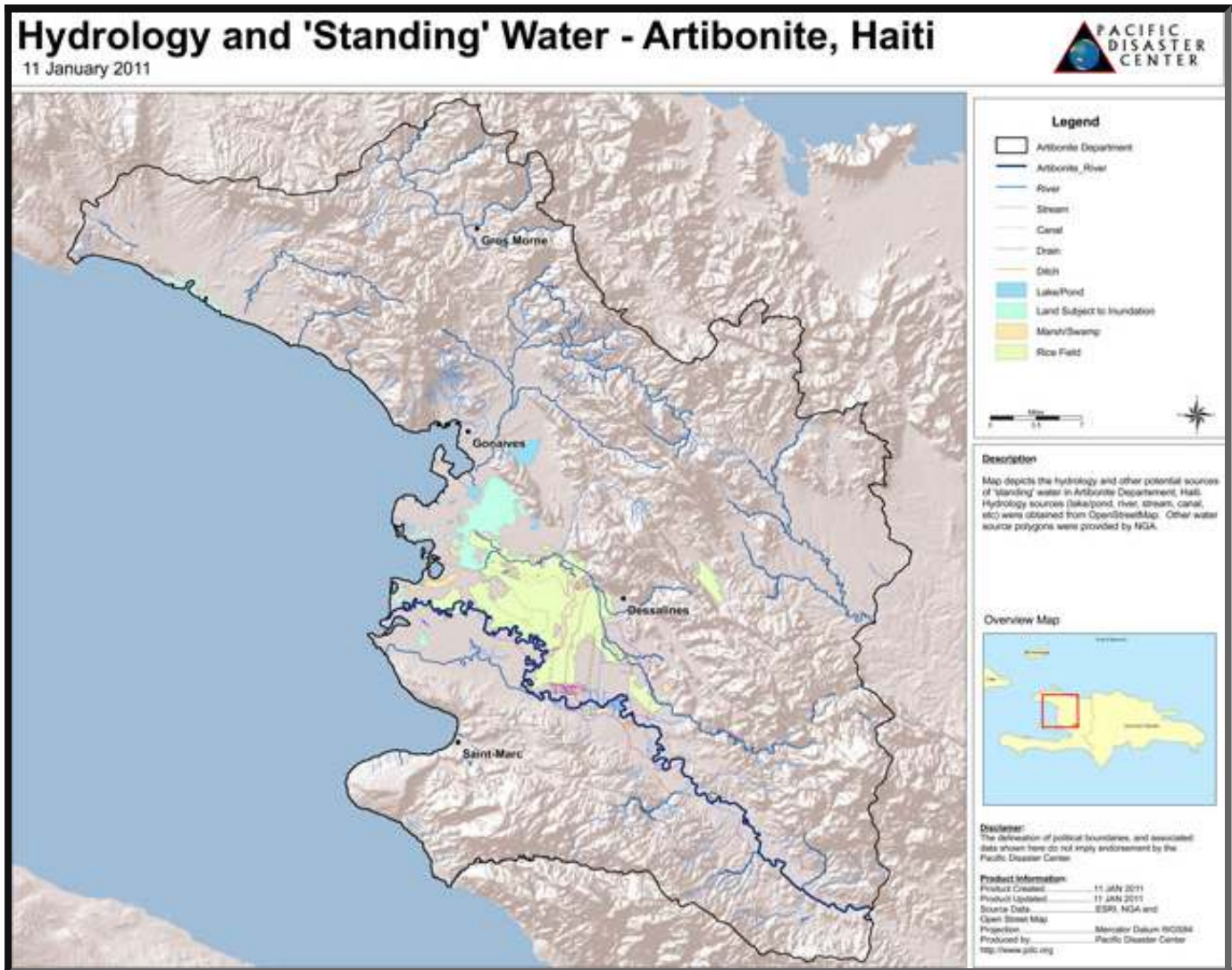
Southern Command (USSOUTHCOM) and other responders working in Haiti. For mapping and GIS analysis efforts, PDC worked in conjunction with San Diego State University's Viz Center and Dr. Mike McDonald, Director of the Center for Health Security and Infrastructure at the University of Maryland, School of Public Health. The focus of this support has been on the identification of fresh water sources and developing location mapping services, general mapping services, and supporting partner outreach to organizations and agencies responding to the Haiti cholera outbreak. Cholera cases have now been reported in all Haitian départements, across the country. The difficulties associated with acquiring/providing clean drinking water—and the mapping of water sources—continues to present a challenge for governmental and non-governmental relief agencies. PDC activities will remain focused on linking responders with the most accurate, timely decision-support data and display tools.



This image, captioned "Russia to take part in Haiti cholera epidemic probe," when it appeared in RIA NOVOSTI was captured by Agence France-Presse (AFP)/Tony Belizaire. It is a reminder of the importance of safe, clean water in any disaster response, and especially in managing and treating cholera.



This map produced by PDC and the Viz Center at San Diego State University was one of the first products of that collaboration. It locates cholera treatment units and centers, current and planned, as well as identified water sources.



This PDC map, produced on January 11, is helping responders in Haiti to correctly identify the types/sources of standing water in the Artibonite area of Haiti.

Additional Information Sources on the Web

- Haiti pages in the Medical and Public Health Information Sharing Environment ([MPHISE](#))
- [Haiti Resilience System](#) includes earthquake reconstruction and cholera epidemic information.
- The Haiti [BioSwarm](#) (USSOUTHCOM UHF Doppler) site includes cholera news, much more.
- Haiti: [Operational Biosurveillance](#) was set up for earthquake recovery, now includes cholera.
- [HealthMap](#) is a CrisisMappers/Humanity Road website presenting alerts and a cumulative map.
- The Pan American Health Organization ([PAHO-Outbreak](#)): "Cholera Outbreak" map online.

Note: The [Haiti Epidemic Advisory](#) page on Facebook is not much in use at of January 2011.

News related to the Haiti cholera epidemic on or near January 10, 2011

- Canadian Broadcasting Company story on the current state of earthquake recovery and the cholera epidemic: "[Reconstruction and Haiti in the Time of Cholera](#)"
- U.S. Department of State press release "[Conversations with America: On Haiti in 2011: The Way Forward](#)"
- Voice of America commemorates the one-year anniversary of the Haiti Earthquake: "[One Year After Earthquake, Haiti Still in Ruins](#)"
- Examiner.com (Denver, CO, USA) reports on five cases of cholera in the Philippines: "Vibrio cholerae seen in [Cebu town](#)"

Note: In Florida, as early as December 23, there have been some cases of cholera among Haitians who visited relatives in Haiti; in the Dominican Republic some cases were reported very early in the Haitian outbreak

period, and in India, some suspected cases of cholera were reported in late December 2010 and early January 2011.

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