

USAID/OFDA HAITI ONE-YEAR GEOHAZARDS OVERVIEW – JANUARY 12, 2011

The magnitude 7.0 earthquake that struck 10 miles southwest of Haiti's capital on January 12, 2010, was the most powerful earthquake to impact the nation in more than a century. To reduce the risk from future large earthquakes in Haiti, USAID/OFDA deployed an Earthquake Disaster Assistance Team (EDAT) of seismologists and geologists from the U.S. Geological Survey (USGS) to work with counterparts from the Haitian Bureau of Mines and Energy (BME) in addressing immediate geohazard needs. The EDAT traveled to Haiti in March to participate in geological investigations, landslide studies, and the deployment of seismic stations. Team members also developed an updated seismic hazard assessment map for Haiti.



U.S. and Haitian scientists survey the effects of the earthquake on Haiti's coast. (Courtesy of USGS)

INCREASING SEISMIC HAZARD KNOWLEDGE

Prior to the January 12 earthquake, Haiti had only one poorly functioning seismic station to monitor earthquakes. EDAT worked with the BME to install eight temporary seismic stations throughout the country to help seismologists determine the size and location of aftershocks. Data from the seismic stations helped seismologists characterize the structure of the fault that produced the earthquake, leading to better information regarding earthquake-prone areas in Port-au-Prince. The new information will help guide reconstruction efforts, allowing urban planners to properly plan for areas most at risk of seismic activity.

IMPROVING SEISMIC HAZARD ASSESSMENT MAP FOR HAITI

The EDAT and colleagues created a more detailed and accurate national seismic hazard map than the general document that existed before the earthquake by incorporating current data on earthquake fault slip rates, as well as historical and more recently recorded activity.

LOCATING EARTHQUAKE-INDUCED LANDSLIDES

The EDAT landslide team determined that the earthquake triggered between 4,000 and 5,000 landslides, mainly within 60 km east and west of the epicenter and throughout the entire north-south extent of the peninsula west of Port-au-Prince. As areas that experienced landslides may be susceptible to future land slippage during heavy rains, aftershocks from the January 12 earthquake, or another large earthquake, identifying their locations allows planners to take those vulnerabilities into account during reconstruction efforts.

ASSESSING THE GEOLOGICAL IMPACTS OF THE EARTHQUAKE

An EDAT team determined that the earthquake caused only a small surface rupture near Port-au-Prince. That evidence helped scientists determine that the earthquake occurred on a different fault than initially thought. Therefore, the same hazard exists on the fault near Port-au-Prince as before the January 12 earthquake—a discovery that will help prevent a second major earthquake from taking the nation by surprise.

For more information on USAID/OFDA geohazards sector activities, please visit:

http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/sectors/risk_reduction.html

RELATED IMPACTS

- The USAID/Haiti Watershed Initiative for National Natural Environmental Resources project provided funding for five seismic stations to become part of the permanent National Haiti Seismic Network.
- An EDAT member served as a U.S. Embassy Science Fellow for one month to advise on disaster risk reduction activities.
- USAID/OFDA and the National Science Foundation co-sponsored a workshop for Haitian scientists and colleagues from the Caribbean, Central America, Mexico, and the United States to develop collaborative efforts to improve the geophysical understanding of the region and bolster societal resilience to seismic hazards.
- The U.S. Trade and Development Agency hosted an Earthquake Monitoring Technology Initiative Reverse Trade Mission for the Caribbean that involved BME staff visiting USGS seismology facilities to learn more about earthquake hazard mitigation in the United States.