HELP for HAITI

The President speaks on the urgent situation after the earthquake in Haiti and the government’s response. Read his remarks and learn how to contribute to the relief effort.

A NEW FOUNDATION

The President’s Plan for Health Insurance Reform
Cut through the rhetoric on health insurance reform. Read the essentials of the President’s plan, and watch a video with highlights of his speech to Congress.
Enriquillo fault is deeply etched into the landscape

Source: JPL Shuttle Radar Topography Mission on GEO Haiti event supersite http://supersites.unavco.org/haiti.php
Situational awareness available in 20 minutes

Prompt
Assessment of
Global
Earthquakes for
Response

M 7.0, HAITI REGION
Origin Time: Tue 2010-01-12 21:53:10 UTC
Location: 18.46°N 72.53°W Depth: 13 km

Estimated Population Exposed to Earthquake Shaking

M 7.0, HAITI REGION
Origin Time: Tue 2010-01-12 21:53:09 UTC
Location: 18.45°N 72.45°W Depth: 10 km

Created: 20 minutes, 27 seconds after earthquake
NOAA-USGS Post-Sumatra tsunami warning initiative

EXPLANATION

- ▲ New GSN Stations
- ▲ Existing GSN Stations
- ◇ New DART Buoys
- Red Line Plate Boundaries
- ▲ Volcanoes

Earthquakes 1610 - 2004, M = 6
- ▃ 0 - 69 km
- ▃ 70 - 299
- ▃ Tsunamigenic Earthquakes 1530 - 1991
Aftershocks – the unique challenge of earthquake disasters
Stress increase on Enriquillo and adjoining faults

Risk tranblemanntè ak mezu sékirité nan Péyi Dayiti ak tout zòn Karayib-la
Komuniké Sant enspékson jéolòjik Étazini
28 janvè 2010

Echël Richtè, sé yon mannyè pou mezuré puisans yon tranblemanntè.
Yon lòt mo pou di puisans yon tranblemanntè, sé mayitud.
Yon lòt mo pou di tranblemanntè, sé sèyis, ou byen katakkis tou, ki pi jenèral.
Structural engineering team deployed at invitation of SOUTHCOM – first of several teams on the ground
USAID response to Haiti Earthquake

From handout:

- OFDA assistance: $176M
- Food For Peace: $68M
- Transition Initiatives: $20M
- Haiti mission: $11M
- Dominican Rep: $1M
- Dept of Defense: $163M

- Total: $439M
USAID (cont’d)

- DART team deployed immediately
  - Still on ground
- OFDA runs Response Management Team
  - Expected to operate for months yet
- Interacting with other groups
  - Planning for transition to reconstruction
  - Planning for hurricane season (starts June)

For updates: http://www.usaid.gov/helphaiti/
NASA’s Contribution to the Haiti Earthquake Response

Presented to the SDR
Michael Goodman, Craig Dobson and
Andrea Donnellan

4 February 2010
ASTER and EO-1/ALI Identify Haitian Areas Impacted by the Earthquake

ASTER’s 15-meter resolution is not sufficient to see damaged buildings, it can be used to identify possible landslides in mountainous terrain after large earthquakes.

Comparison of EO-1 ALI imagery of Port-au-Prince from 14 Sep 2008 and on 15 Jan 2010 post-earthquake. The pier in the center of the 2008 image, collapsed during the earthquake and is not visible in the 2010 image.

Possible landslides from EO-1 analysis with the risk of further erosion and slope failure.

EO-1 Credits: Eric Anderson and Emil Cherrington / SERVIR, Stu Frye/SGT and Lawrence Ong/SSAI at NASA GSFC
As a repeat-pass L-band InSAR, the UAVSAR was designed to provide the rapid access, short revisit interval, high resolution and variable viewing geometry to optimize observation of post-seismic deformation and landslide hazards.

The 2010 Central America Deployment (Jan. 25 – Feb. 14) is being augmented to fly the two major active fault systems in Hispaniola, (1) the Enriquillo-Plantain Garden Fault responsible for the damage in Port-au-Prince, and (2) the Septentrional Fault Zone to the north also capable of major earthquakes.

Objectives Haiti UAVSAR flights are:
1. Enriquillo-Plantain Garden (EPG) Fault
   - Post-seismic deformation
   - Deformation field of after shocks or potential triggered earthquakes
   - Landslide hazards
2. Septentrional Fault Zone (2nd priority)
   - Baseline observations for possible future events

Flight Schedule:
Enriquillo-Plantain Garden Fault – 1/27, 2/3, 2/13
Septentrional Fault Zone – 2/14 (TBD)

NASA’s Uninhabited Aerial Vehicle Synthetic Aperture Radar (UAVSAR) flown on a Gulfstream-III captured this false-color composite image of the city of Port-au-Prince, Haiti, and the surrounding region on Jan. 27, 2010, using three channels of UAVSAR polarimetric data. Port-au-Prince is visible near the center of the image.

The large linear east-west valley in the mountains south of the city is the location of the major active fault zone responsible for the earthquake: the Enriquillo-Plantain Garden fault. Subsequent flights will enable deformation analysis.
NOAA Activities

NWS Southern Region
• Provided 67 daily forecasts, outlooks and updates for Miami, Guantanamo Bay Naval Station, and Port-au-Prince

NOS Remote Sensing
• Aerial Surveys for damage assessment and response planning

OCIO IT Services
• Posted NAVO imagery data

International Affairs Council
• NOAA Annex to DOC Operational Response Haiti: details NOAA capabilities for short, medium and long term response

Standing By:
• Hydrographic survey response teams
• Hazardous materials spill and response
NOAA Remote Sensing

- 3298 images delivered
- 692 sq miles covered
- 921 miles of flight lines
- 670 GB NOAA data uploaded to USGS
- 9.66TB NOAA data downloaded from USGS (as of Jan 26)
- Private entities downloading NOAA data, value adding it, and making it available to the public:
  - Google, ESRI, Leica Geosystems (ERDAS)

Imagery Over-flights January 17-26, 2010 superimposed on the USGS Shake Map and Google Earth
In support of the crisis in Haiti, the National Geospatial-Intelligence Agency is providing a website open to public access.

**NGA Support to Haiti Earthquake**

Click one of the following links for additional Haiti Support information:

- Visit the [NGA-Earth Satellite Imagery and Map Viewer for Imagery](https://www.nga.mil/NGA-Earth)
- Participate in the publicly accessible GEOINT Online (GO) community for [Haiti US Census Bureau Data](https://www.census.gov/geo/cen/haiti/)
- Try out the [Haiti Population Calculator](https://www.nga.mil/NGA-Earth) and Hurricane Tracker.
- For additional support, click on the tabs above for NGA products (currently under construction).

### Downtown Port-au-Prince 13 January 2010

![Image of downtown Port-au-Prince after the earthquake]

This image shows the devastation in downtown Port-au-Prince after the 2010 earthquake.
National Science Foundation
Activities Supported to Study the January 12, 2010 Haiti Earthquake

• Current NSF awardees, supported for rapid, post-earthquake, perishable research data gathering, deploying to Haiti and will broadly disseminate findings:
  – Earthquake Engineering Research Institute (EERI) Learning from Earthquakes (LFE) Program (NSF support for several decades), to focus on multidisciplinary data (e.g., engineering, social sciences).
  – Geo-engineering Extreme Events Reconnaissance (GEER) Association, to focus on geotechnical observations and data.
  – Natural Hazards Center (University of Boulder, CO), to focus on social science observations and data.
  – A small engineering team from the NSF-supported EERI/LFE, GEER, and Network for Earthquake Engineering Simulation (NEES) projects, in collaboration with the USGS and with assistance from the U.S. military (SOUTHCOM), have already deployed to Haiti for early data gathering. Data gathered will be used to inform follow-on EERI, GEER, and other NSF-supported teams.

• NSF’s RAPID Response Awards (to date)
  – Purdue University geophysicist, Dr. Eric Calais, is leading a team to study the cause of the Haitian quake and regional risk - will map the area of the fault that ruptured, resurvey existing GPS markers, and install 10 new continuous GPS sites to monitor future changes to the fault. The Haitian Bureau of Mines and Energy and the Haitian Civil Protection Agency invited Calais and his team to the country, as the researchers had prior NSF support to study the seismicity in the region. Findings from that study, published and disseminated to the Haitian government in 2008, identified the risk for a magnitude 7.2 earthquake along the Enriquillo and Septentrional Faults on Hispaniola.
Data Available for Response and Research

- University of Texas at Austin *Texas Advanced Computing Center (TACC)*, as part of the NSF-supported TeraGrid, is providing the *Corral* data resource - and its 1.2 petabytes of storage - to rapidly compute and distribute large data sets under the current emergency conditions.
  - To aid collaborators at the NASA-supported Center for Space Research (CSR) at the university, CSR’s Mid-American Geospatial Information Center (MAGIC) repository provides accurate satellite and aerial imagery to disaster researchers and first responders.
  - As new fault and devastation data arrive, TACC and the MAGIC team members prepare those files for use in Haiti.

- NSF-supported OpenTopography portal (http://www.opentopography.org/) at the University of California, San Diego/San Diego Supercomputer Center hosts airborne LiDAR data collected over Haiti by the National Geospatial Intelligence Agency. Those data may be of utility for geoscience research efforts in the region, and may be broadly accessible through the portal.

- As part of NEHRP, the NSF-supported NEES - 14 earthquake engineering experimental facilities operated by universities - is available for post-earthquake laboratory studies and for deployment of mobile equipment for structural and geotechnical field studies.

National Science Foundation
Activities Supported to Study the January 12, 2010 Haiti Earthquake
Haiti Earthquake Response
Situation Update

- CDC has 340 staff involved in the response
  - 23 in Haiti, 3 in DC, 1 in Miami
  - 313 supporting EOC in ATL
- CDC is supporting HHS as one of 157 members in the UN Health Cluster organizing the Haiti public health and medical response
  - Needs assessment
  - Health surveillance
  - Health education
  - Medical stockpiles

Quick “dashboard” view of current public health issues in Haiti