



the WHITE HOUSE PRESIDENT BARACK OBAMA

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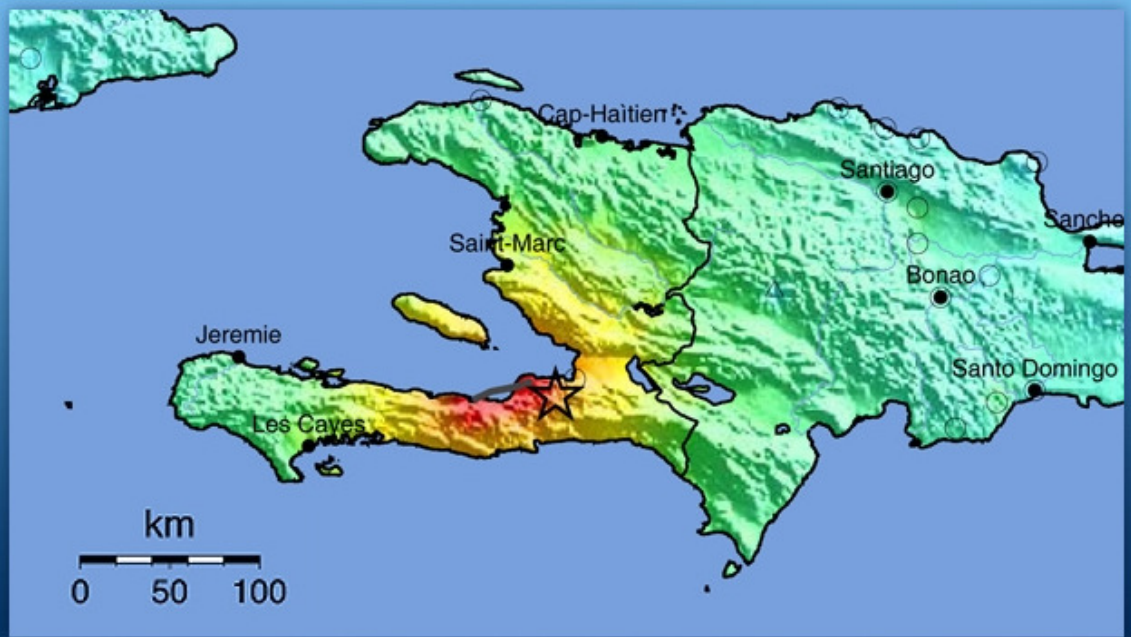
BLOG PHOTOS & VIDEO BRIEFING ROOM ISSUES the ADMINISTRATION the WHITE HOUSE our GOVERNMENT

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.

Learn More

1 2 3 4



Map courtesy of USGS

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.

SEARCH the SITE

Search WhiteHouse.gov Search

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 21:53:09 UTC
Location: 18.45°N 72.45°W Depth: 10 km



USAID
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PAGER Version 1

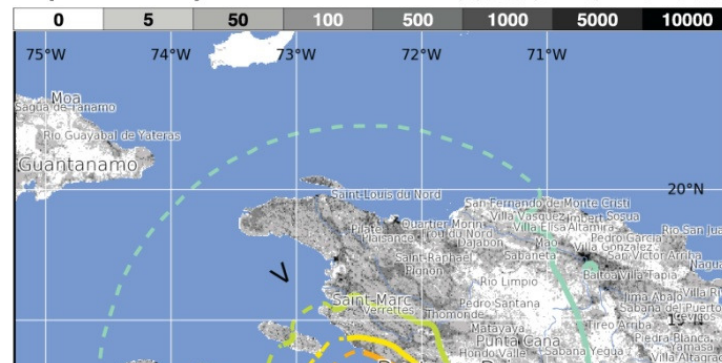
Created: 20 minutes, 27 seconds after earthquake

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--*	--*	7,269k*	6,027k	1,093k	433k	981k	1,849k	3k	
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+	
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme	
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area.

Population Exposure

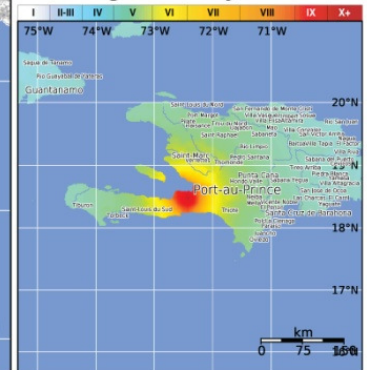


Selected City Exposure

MMI City	Population
IX Carrefour	442k
VIII Gressier	4k
VIII Port-au-Prince	1,235k
VIII Leogane	12k
VIII Kenscoff	5k
VIII Cayes Jacmel	2k
VIII Delmas 73	383k
V Verrettes	49k
IV Santo Domingo	2,202k
IV Guantánamo	273k

bold cities appear on map (k = x1000)

Shaking Intensity



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



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PAGER Version 8

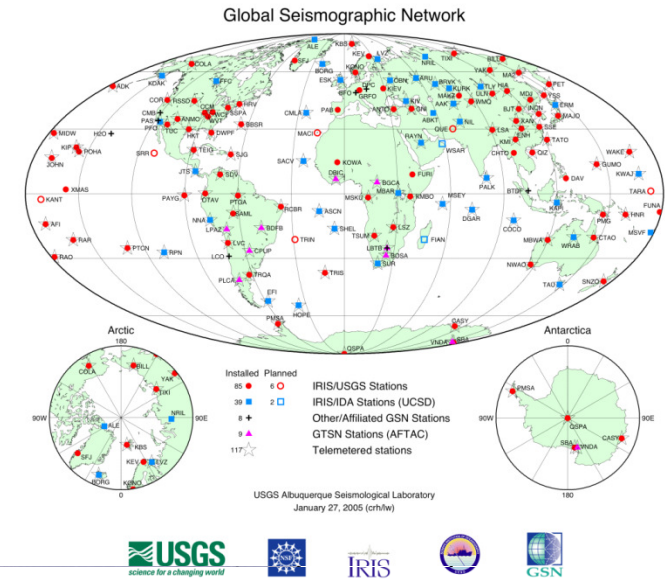
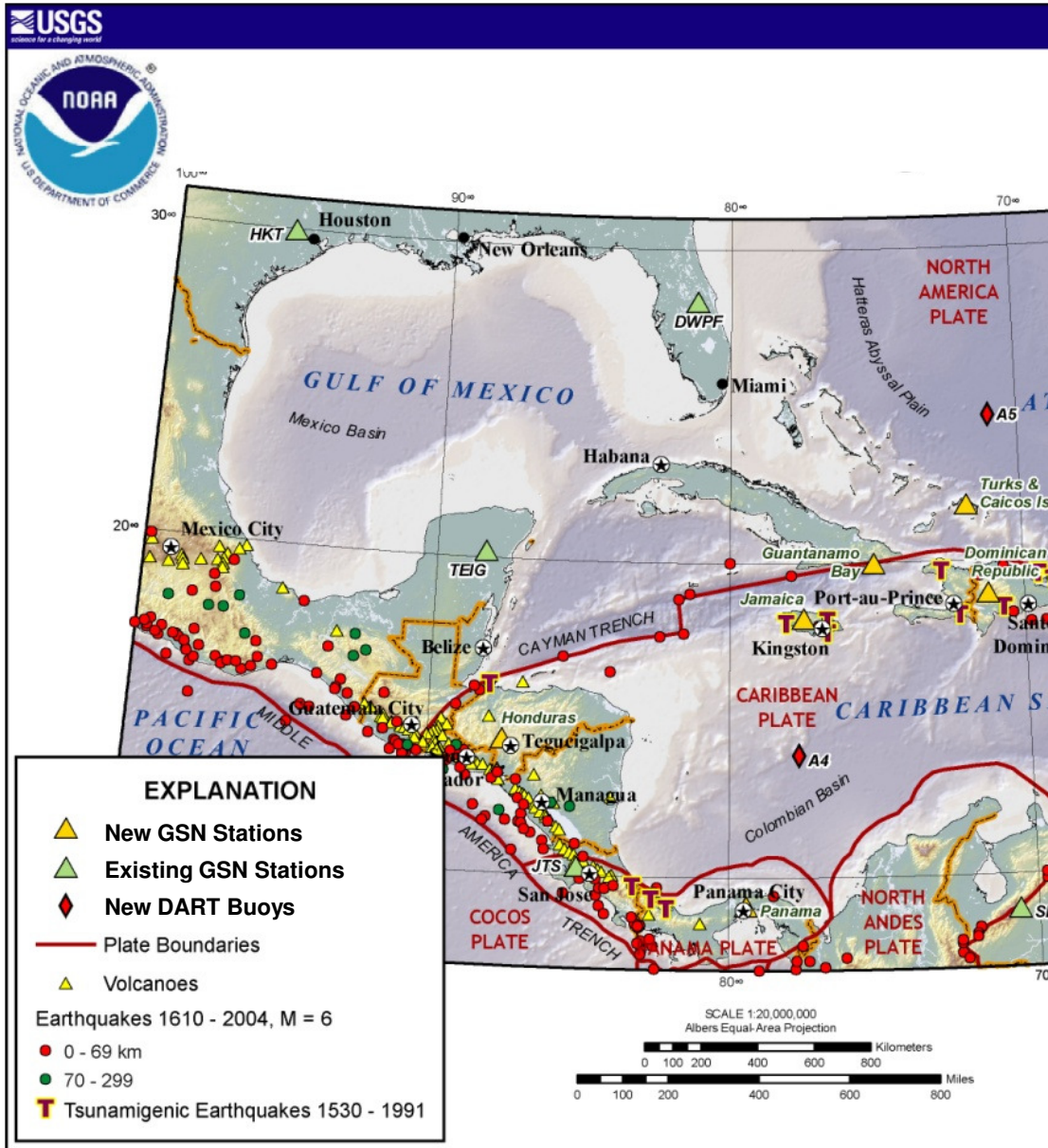
Created: 1 day, 20 hours after earthquake

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--*	--*	5,887k*	7,261k	1,049k	571k	314k	2,246k	332k	
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+	
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme	
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

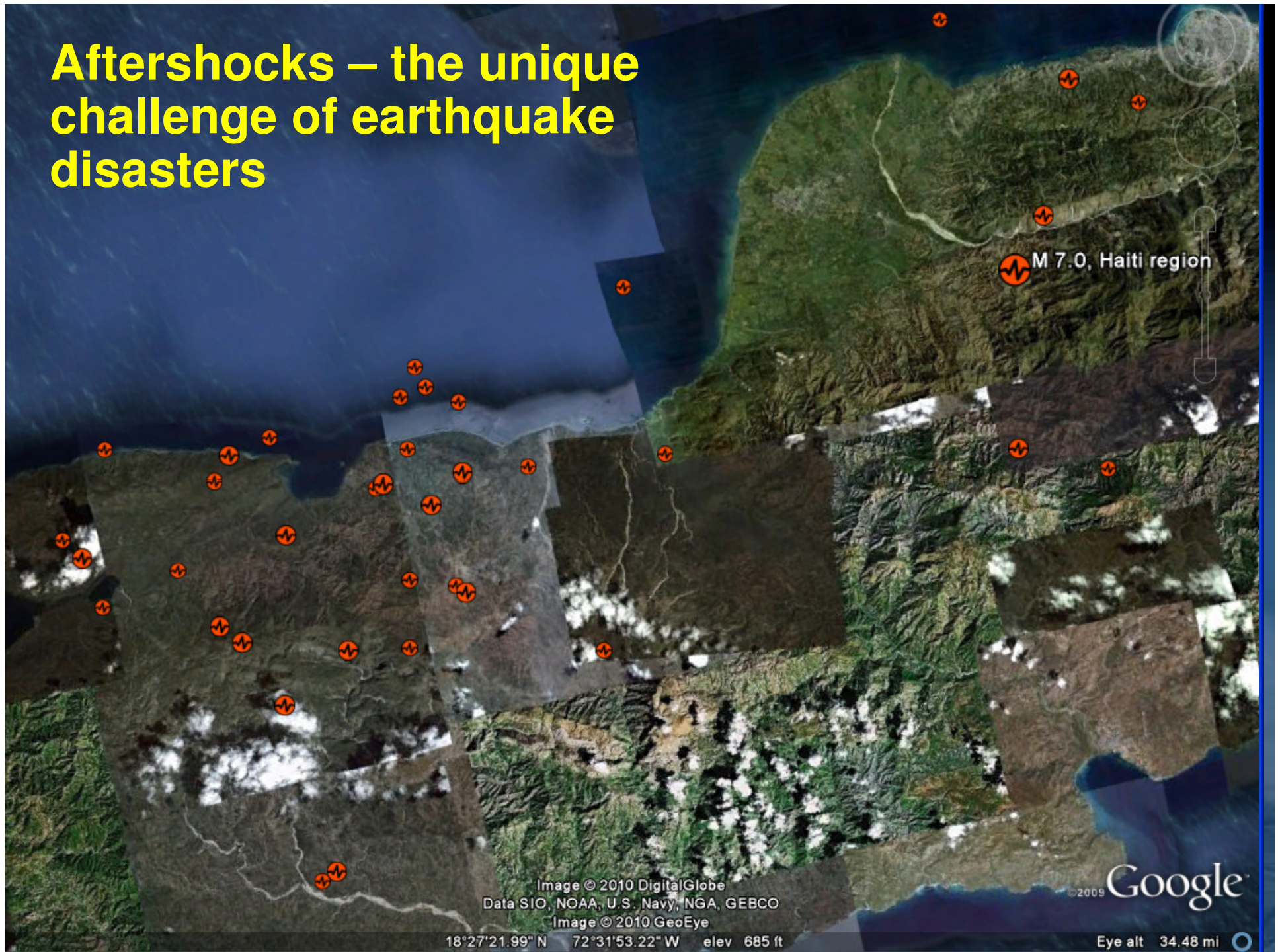
*Estimated exposure only includes population within the map area.

NOAA-USGS Post-Sumatra tsunami warning initiative

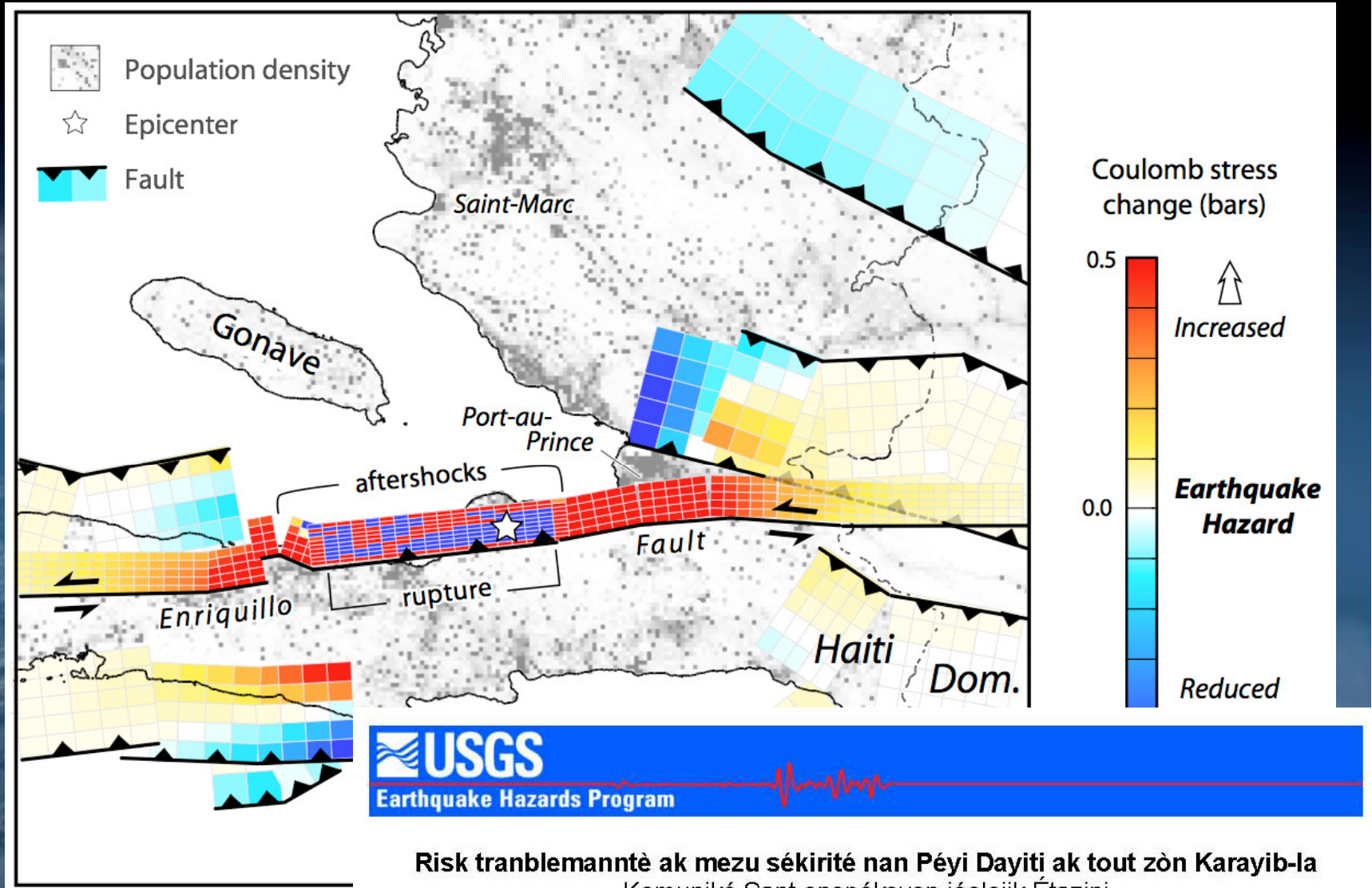


3 August 2005 1230 MDT

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 enspéksyon jéolojik Étazini
 28 janvyé 2010

Échèl Richtè, sé yon manyè pou mezuré puisans yon tranblemanntè.
 Yon lòt mo pou di **puisans** yon tranblemanntè, sé **mayitud**.
 Yon lòt mo pou di tranblemanntè, sé **séyis**, ou byen **kataklis** tou, ki pi jénéral.



Structural engineering team deployed at invitation of SOUTHCOM – first of several teams on the ground



 USGS

USAID response to Haiti Earthquake

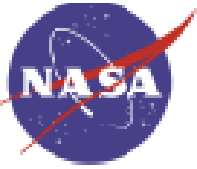
From handout:

•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/>

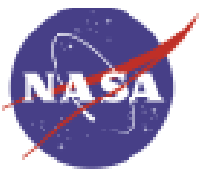


NASA's Contribution to the Haiti Earthquake Response

Presented to the SDR

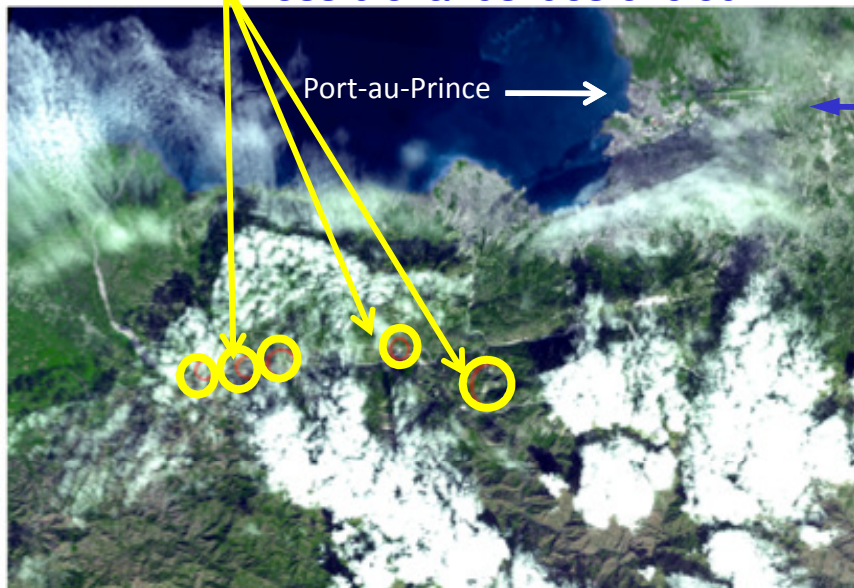
Michael Goodman, Craig Dobson and
Andrea Donnellan

4 February 2010



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

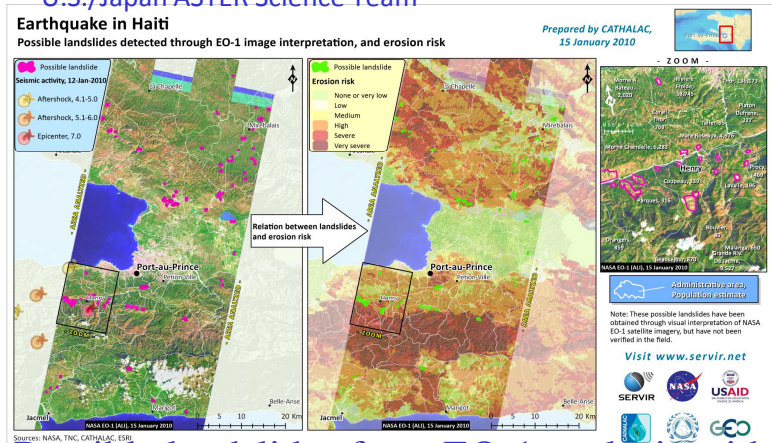
Possible landslides circled



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

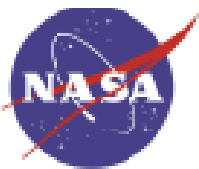
ASTER Credit: NASA/GSFC/METI/ERSDAC/JAROS, and U.S./Japan ASTER Science Team



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



Observing Hispaniola Fault Zone Mechanics with UAVSAR

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.

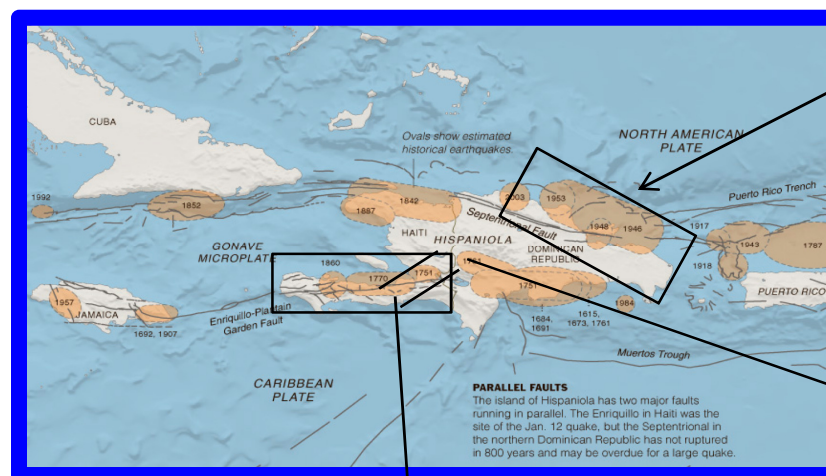
The 2010 Central America Deployment (Jan. 25 – Feb. 14) is being augmented to fly the two major active fault systems in Hispaniola, (1) the Enriquillo-Plantain Garden Fault responsible for the damage in Port-au-Prince, and (2) the Septentrional Fault Zone to the north also capable of major earthquakes.

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

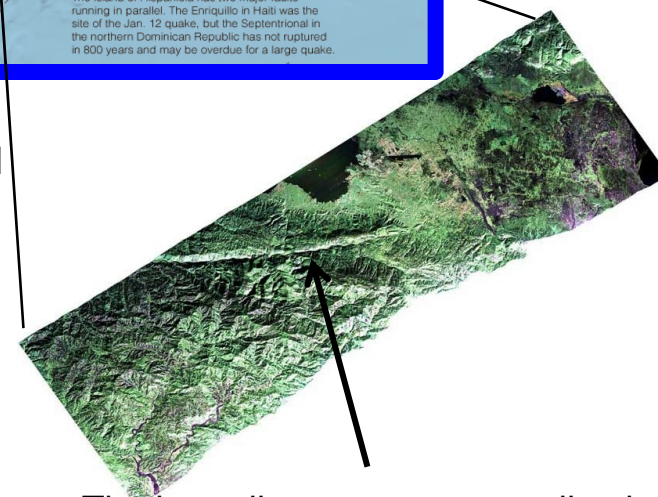
Flight Schedule:

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



Septentrional Fault Zone

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

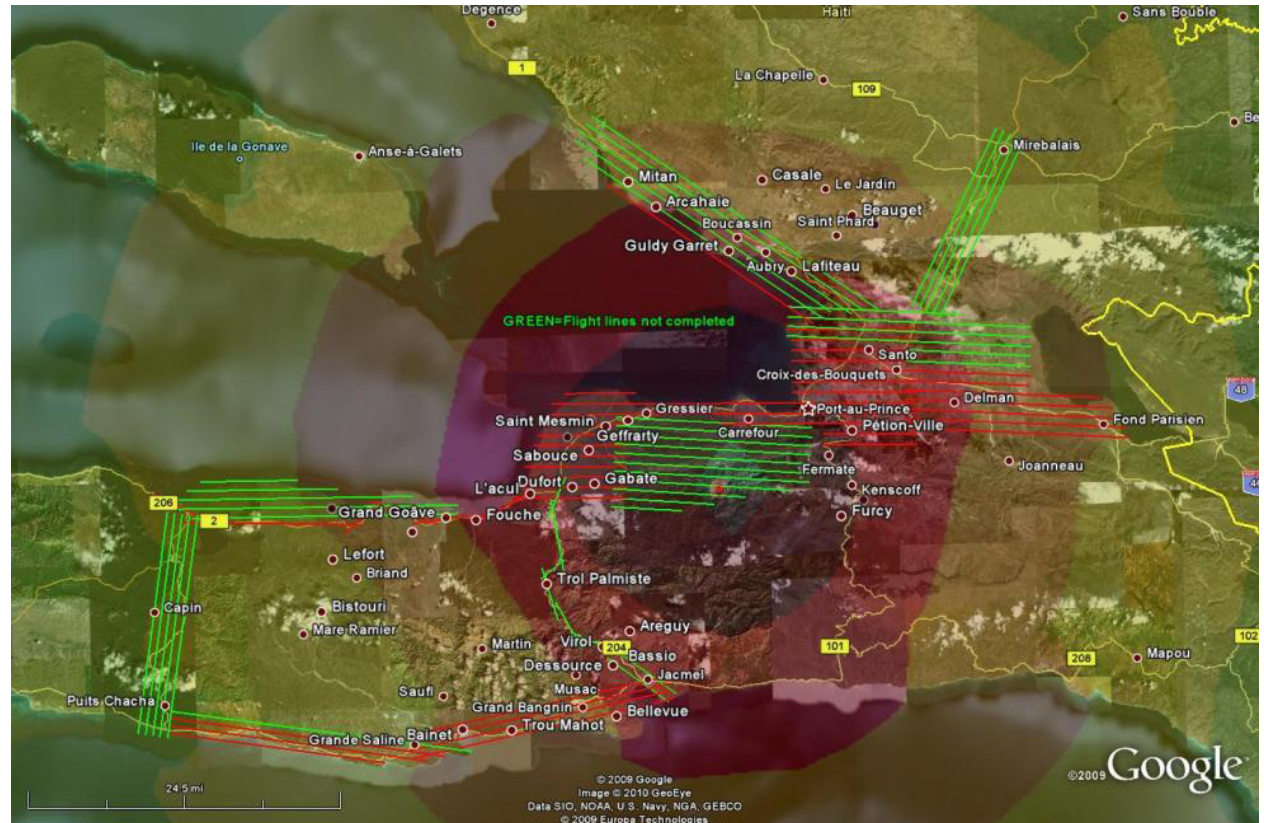
Standing By:

- 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



Haiti Earthquake Crisis Relief

A GEOINT ONLINE Community

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In support of the crisis in Haiti, the National Geospatial-Intelligence Agency is providing a website open to p

NGA Support to Haiti Earthquake

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

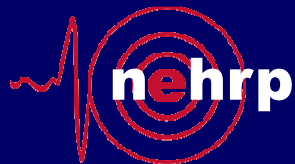
- Visit the [NGA-Earth](#) Satellite Imagery and Map Viewer for Imagery
- Participate in the publicly accessible GEOINT Online (GO) community for [Haiti US Census Bureau Data](#)
- Try out the [Haiti Population Calculator](#) and Hurricane Tracker.
- For additional support, click on the tabs above for NGA products (currently under construction).

Downtown Port-au-Prince 13 January 2010



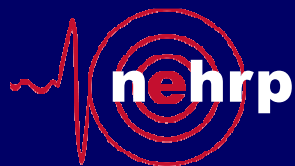
Activities Supported to Study the January 12, 2010 Haiti Earthquake

- 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.

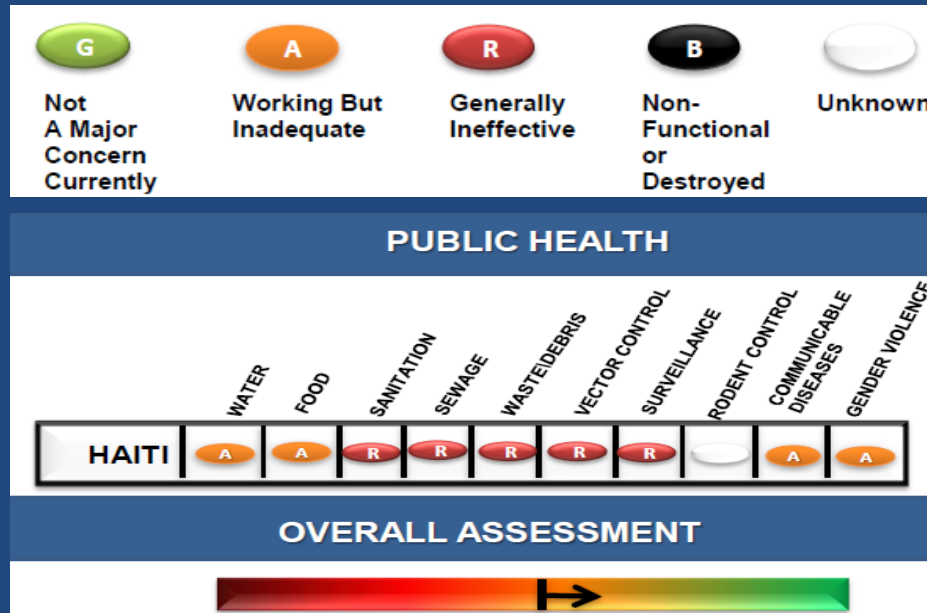


Activities Supported to Study the January 12, 2010 Haiti Earthquake

- 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



Haiti Earthquake Response Situation Update



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

- 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