

Experience in Dealing with Marine Hazard Response

Capt. John Lowell, NOAA



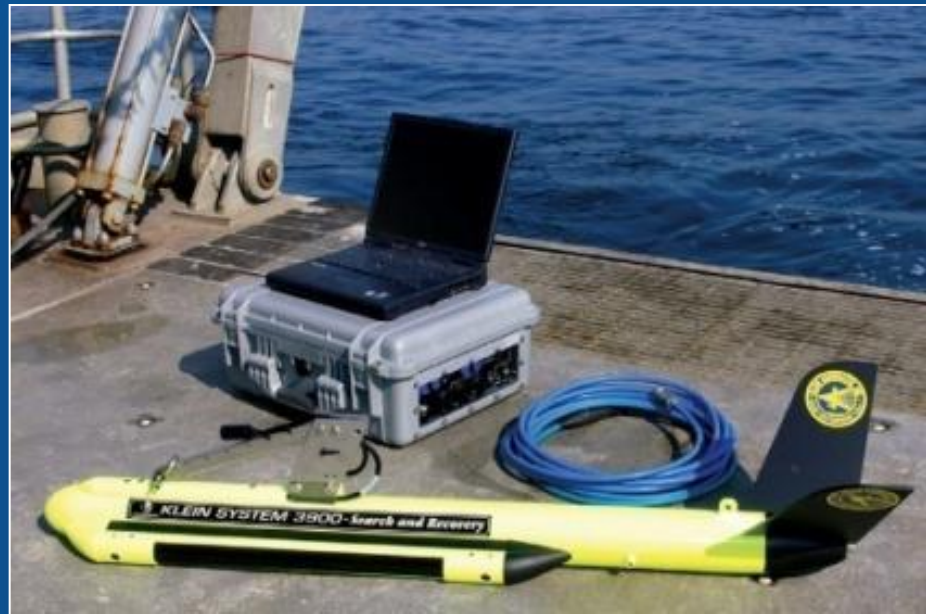
Outline

- Why Hydrographic Offices Respond
- Distinct types of responses
- Technological capacities examples
- Domestic response illustrations
- International response illustrations



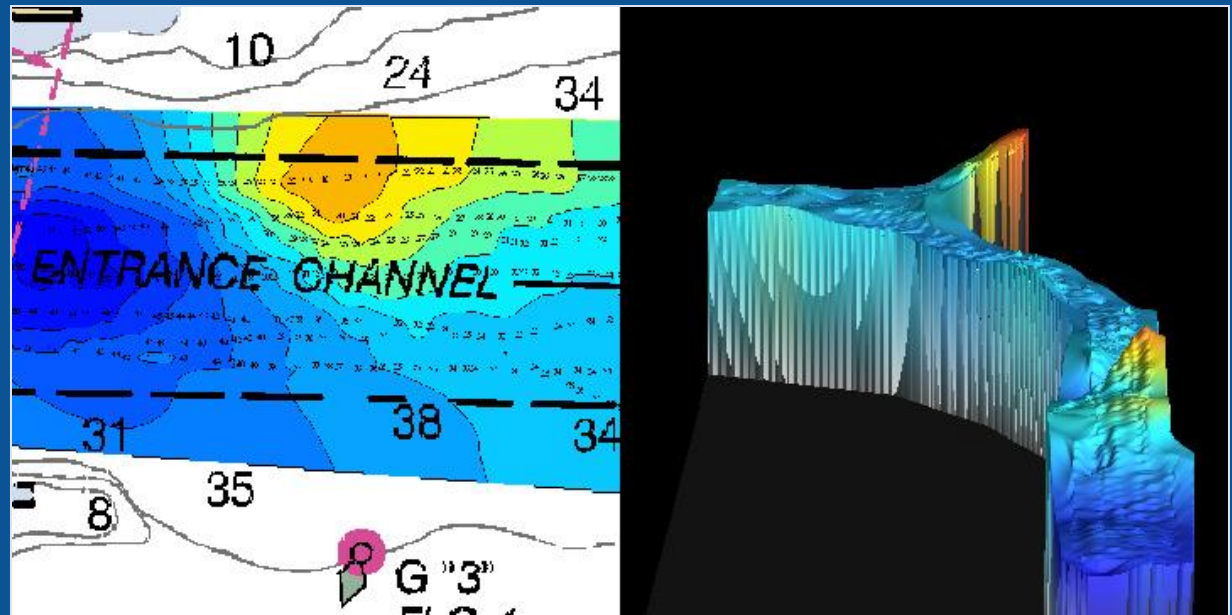
Why a Hydrographic Office?

- Reduce economic impact of hazard
- Improve safety for future use of area
- Locate and assist authorities with investigations



Why a hydrographic office?

- *Direct application of*
 - *Tools*
 - *Knowledge*
 - *Skills*
 - *Abilities*
 - *Resources*
 - *Information*
 - *Products*



Types of Response

- Expected Events
 - Known about prior to occurrence
 - Preparation and pre-deployment options
- Unexpected Events
 - Events with no prior knowledge
 - Quick response from normal operational configuration
- Assistance as requested by competent authorities

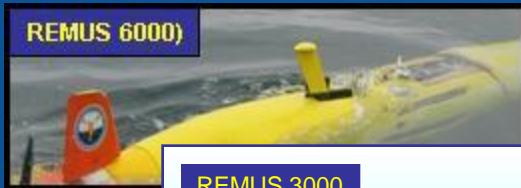
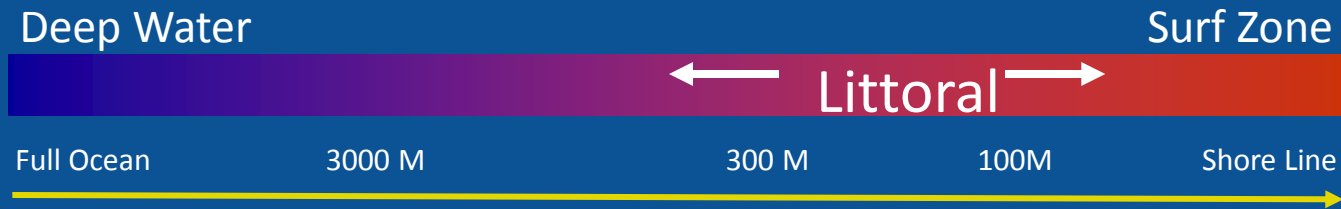


Use of AUVs for Emergency Response

- *Harbor, channel, & approach investigations using side scan sonar*
- *Easily deployed from pickup truck*
- *Minimal support requirements*



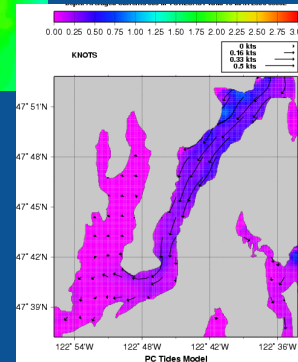
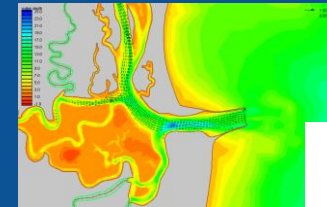
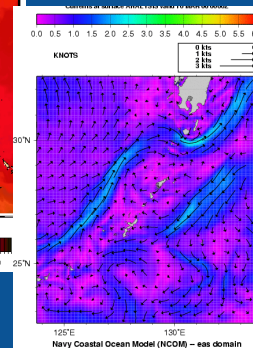
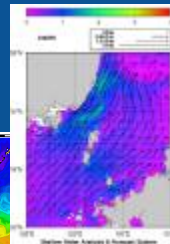
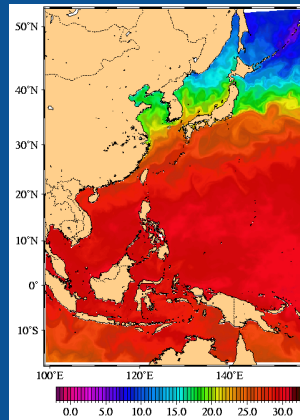
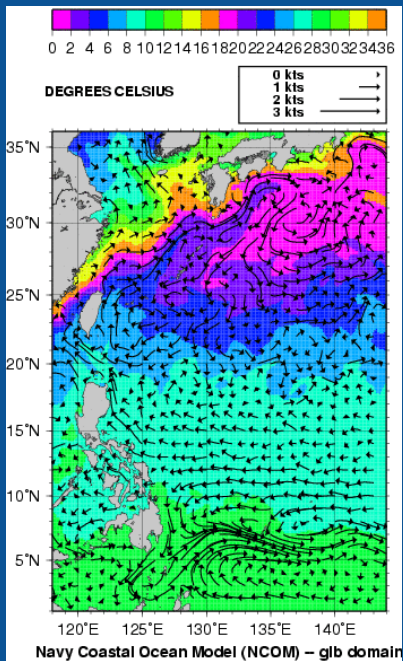
Technology - AUVs



LBSF&I UUV
FY08/09

- Side Scan Sonar
- Sub-Bottom Profiler
- Camera
- CTD
- ADCP
- GPS
- Iridium, Freewave,
& Acoustic Comms

Technology - Ocean Modeling



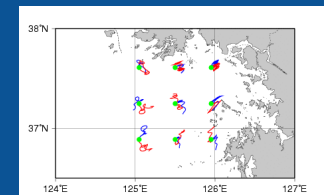
- Navy Layered Ocean Model (NLOM)
- Global Navy Coastal Ocean Model (NCOM)

3D full physics forecast models

- ADCIRC
- PC-Tides
- HydroMap
- RMA2
- Shallow Water Analysis & Forecast System (SWAFS)
- East Asian Seas NCOM
- Relocatable-NCOM

High resolution 3D forecast models

2D, rapidly placed coastal & estuary models

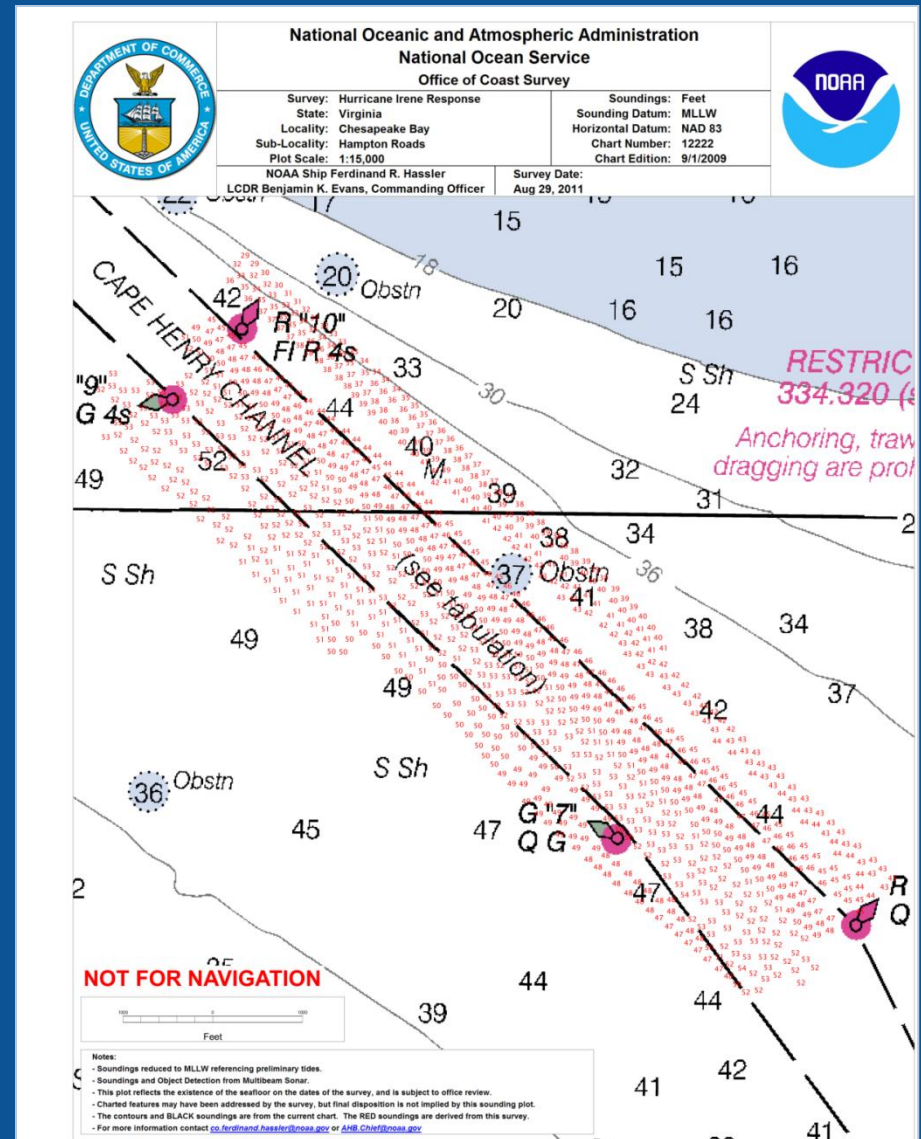


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Product example

- Custom Products to inform local authorities
- Time value of Data - Speed is Key!



Communication and coordination

- Establish communications and coordination policies and operating procedures
- Coordinate response with established response authorities
- Depending on size of event, HO assets must be integrated into response command system



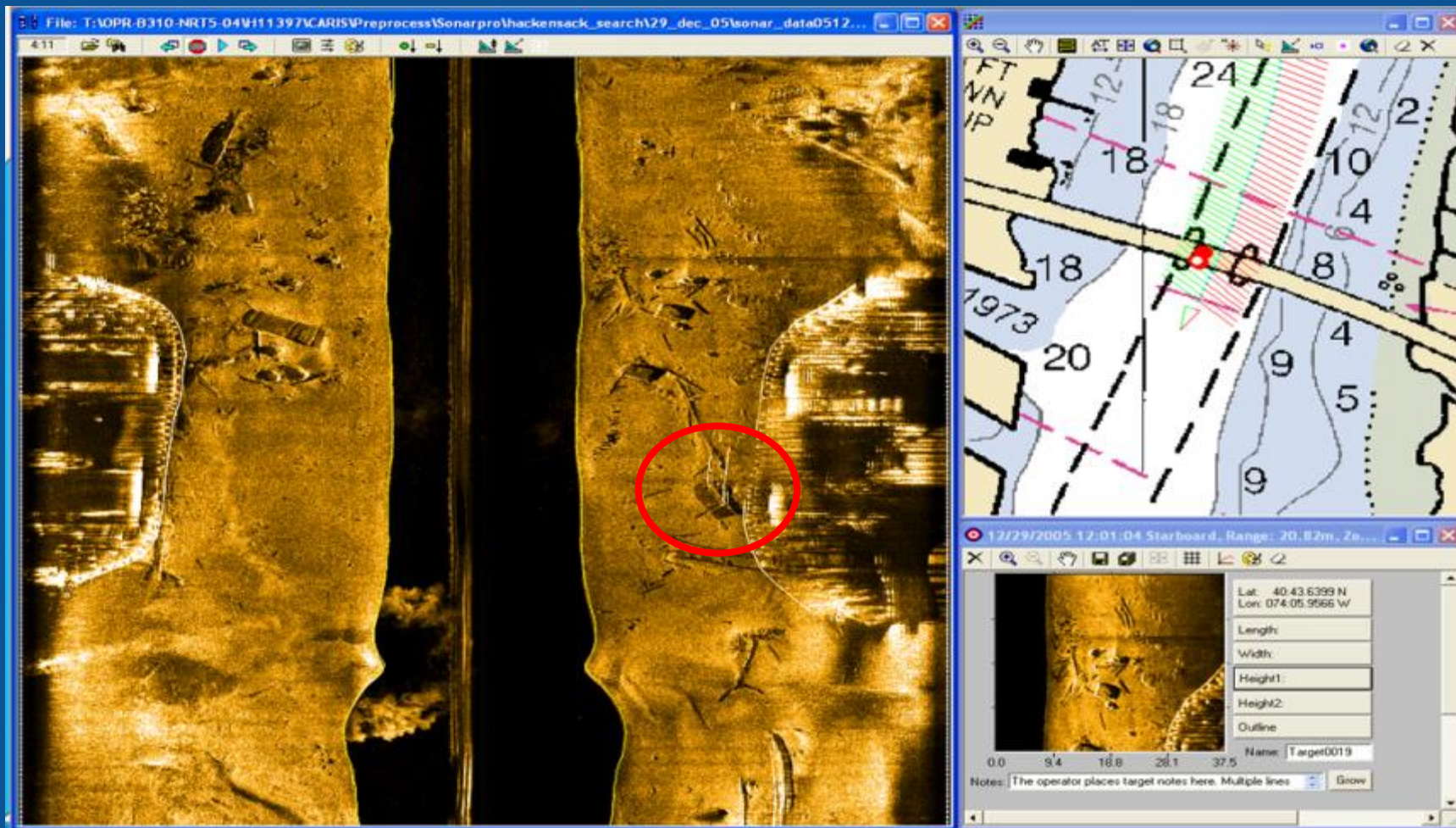
Fleet Survey Team

A specialized team of military and civilian experts providing hydrographic and oceanographic knowledge of the littoral environment to support COCOM and fleet missions

- Rapidly deployable team
- Expeditionary surveys
- Theater security cooperation
- Security assistance
- Humanitarian assist / disaster relief
- International cooperative surveys
- Leveraging international resources



Using expertise to locate missing vehicle

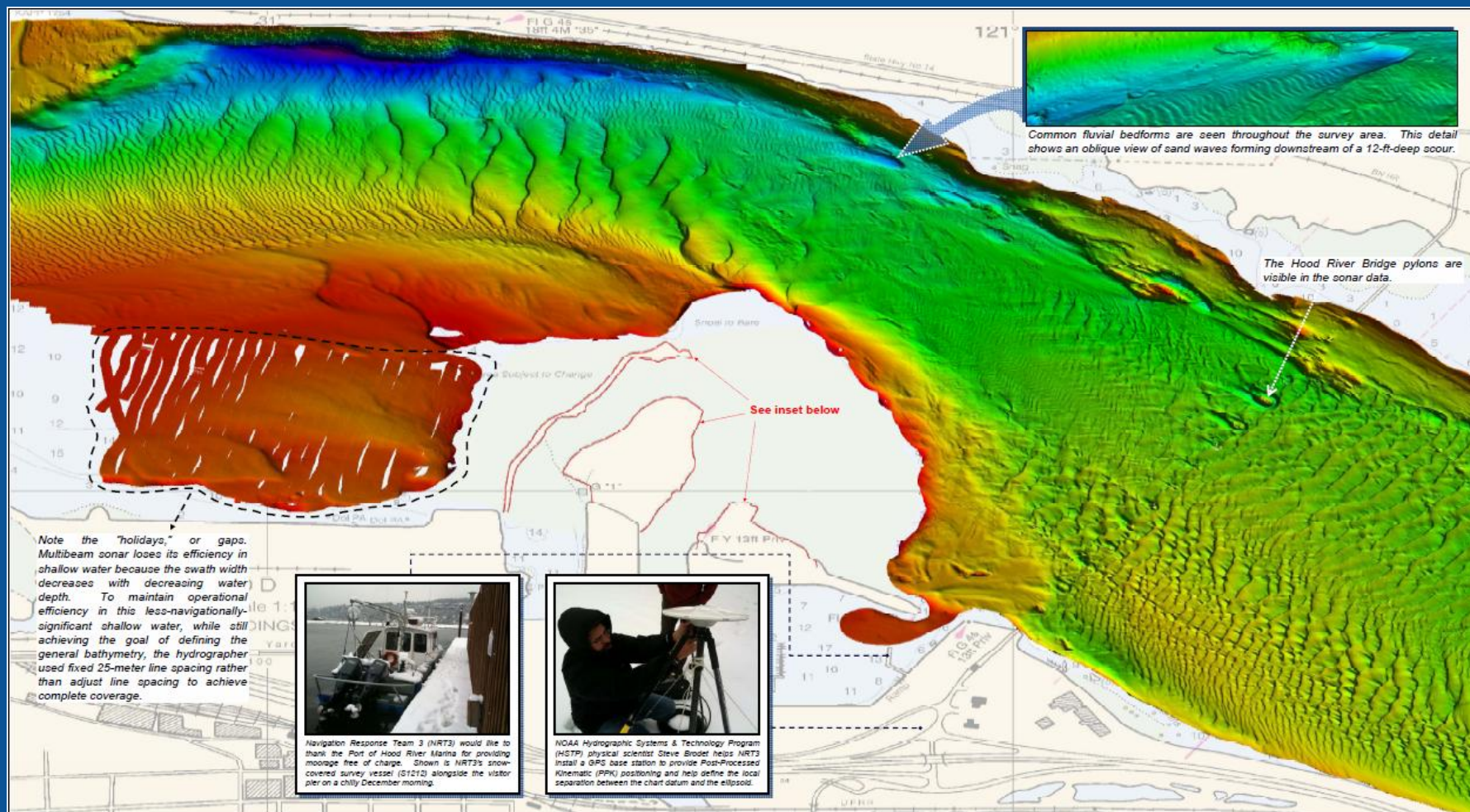


New York, NY (2005)

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Responding to fuel barge groundings

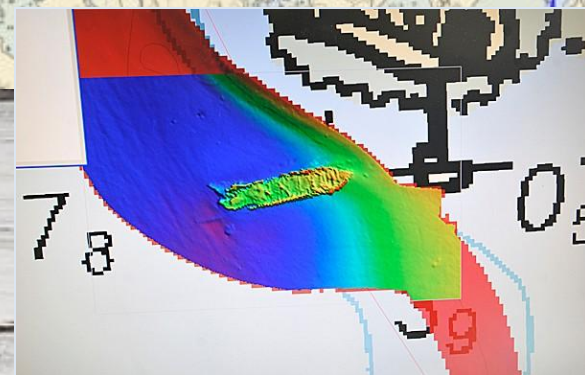
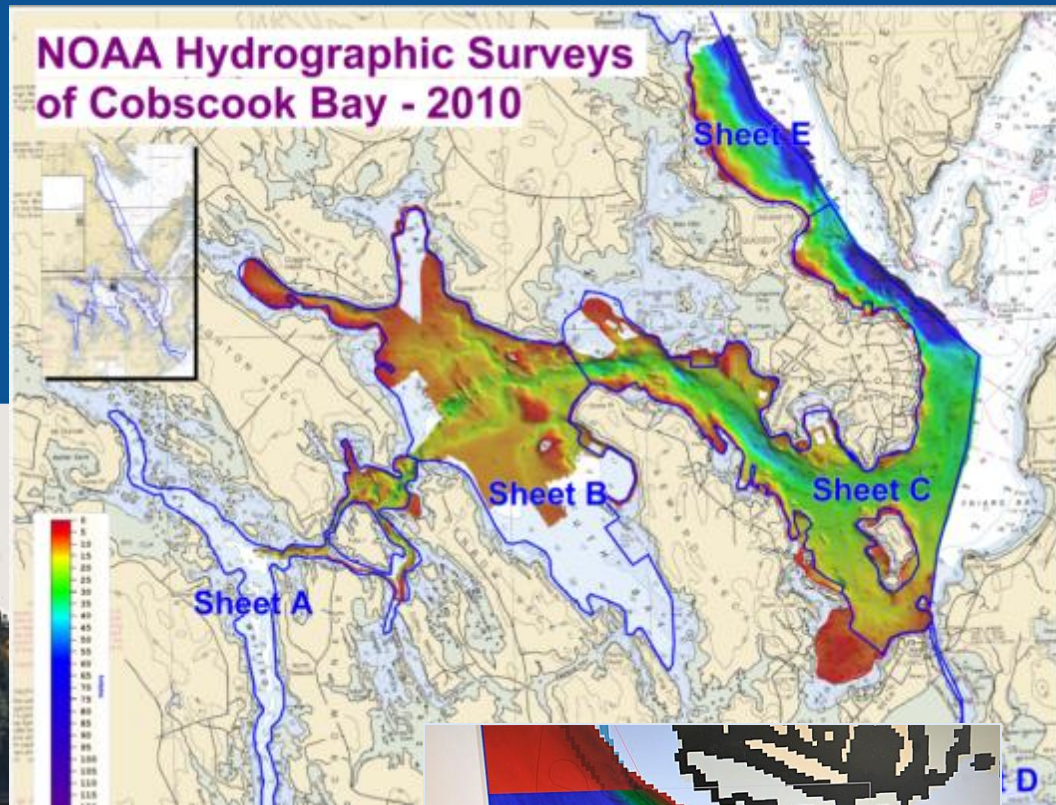


Hood River, Oregon (2009)

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Reducing future risk in changing use of area

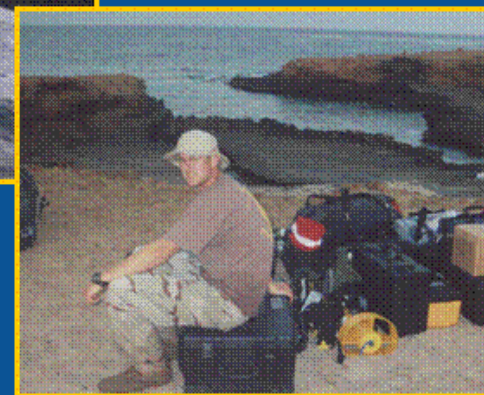
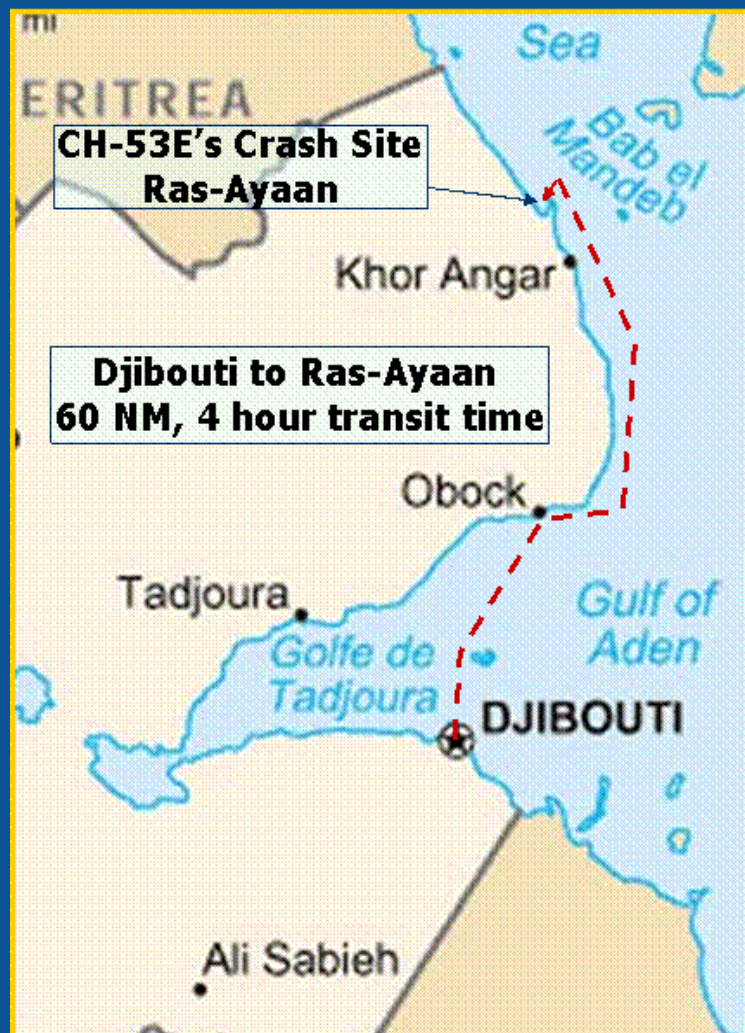


Cobscook Bay, ME (2010)

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Djibouti Search and Rescue

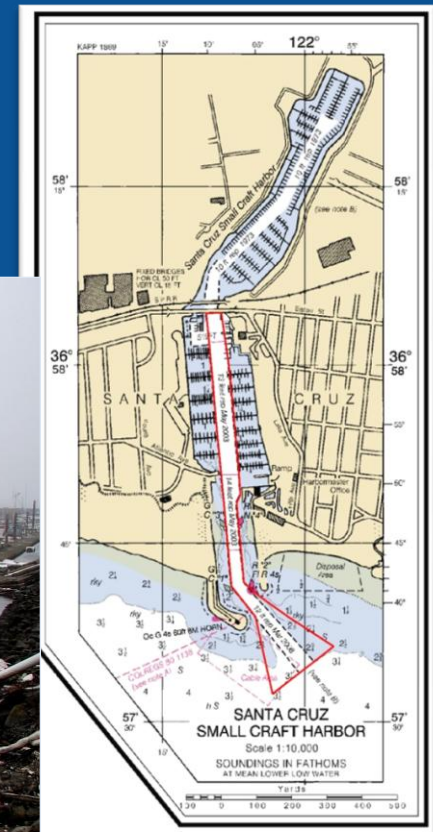


Rapid Response SAR Team

- Team, departed DJ 18FEB06
- On site and began search at 1200L
- Geo-located both CH-53E's
- Spent the night on site
- Returned to DJ 19FEB06

Assisting U.S. Coast Guard and Army Corps of Engineers

*Responding in
Crescent City and Santa Cruz
after tsunami (2011)*

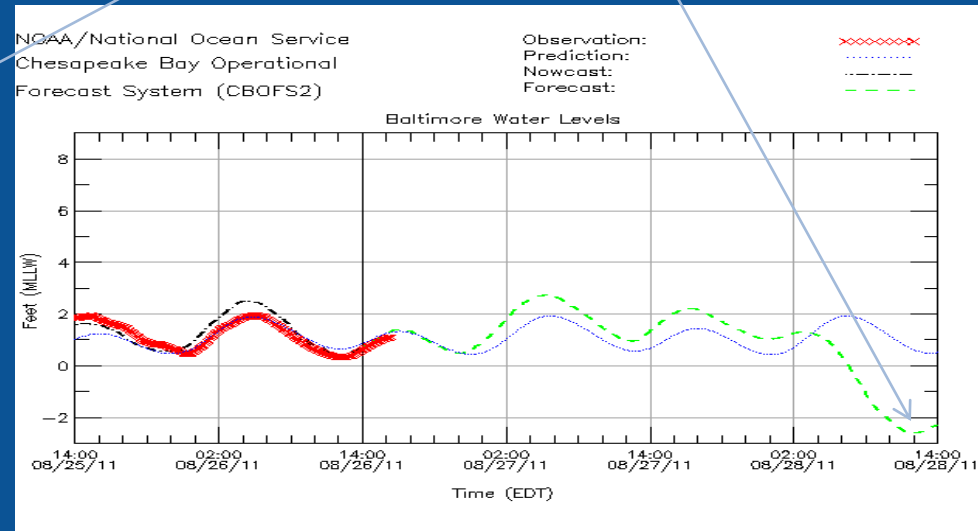
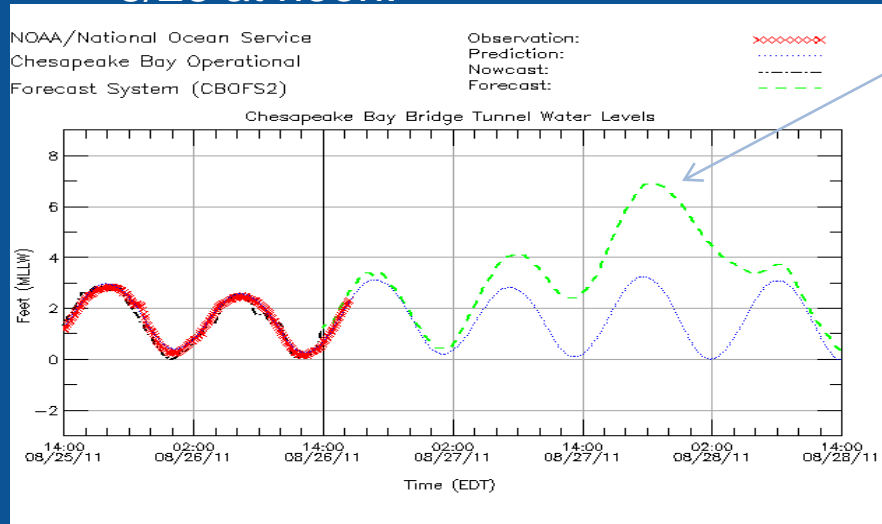


Responding in Hampton Roads

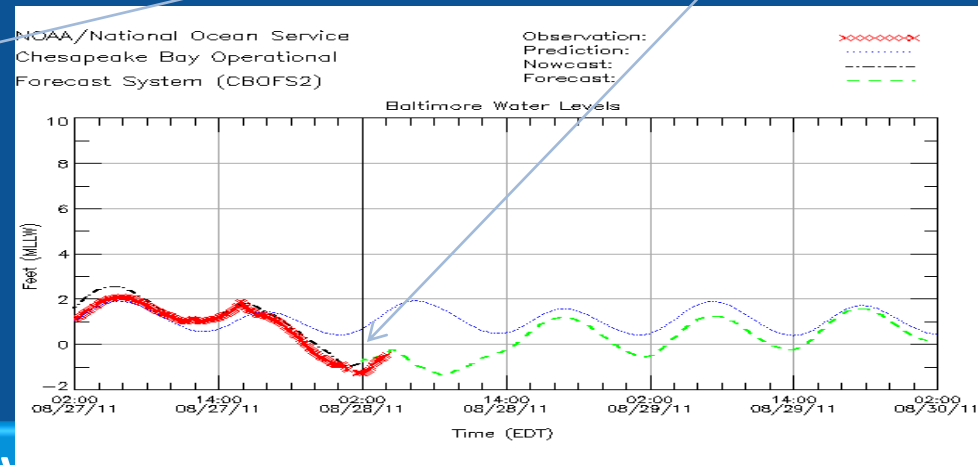
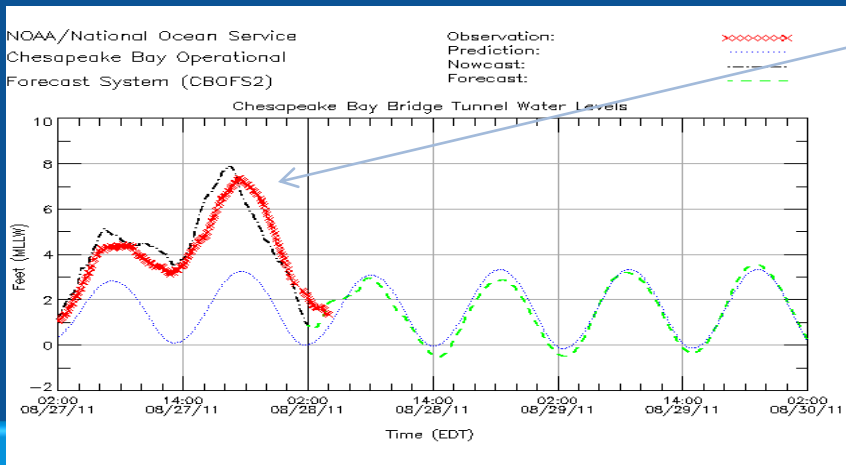


Hurricane IRENE, Port of Virginia, 2011

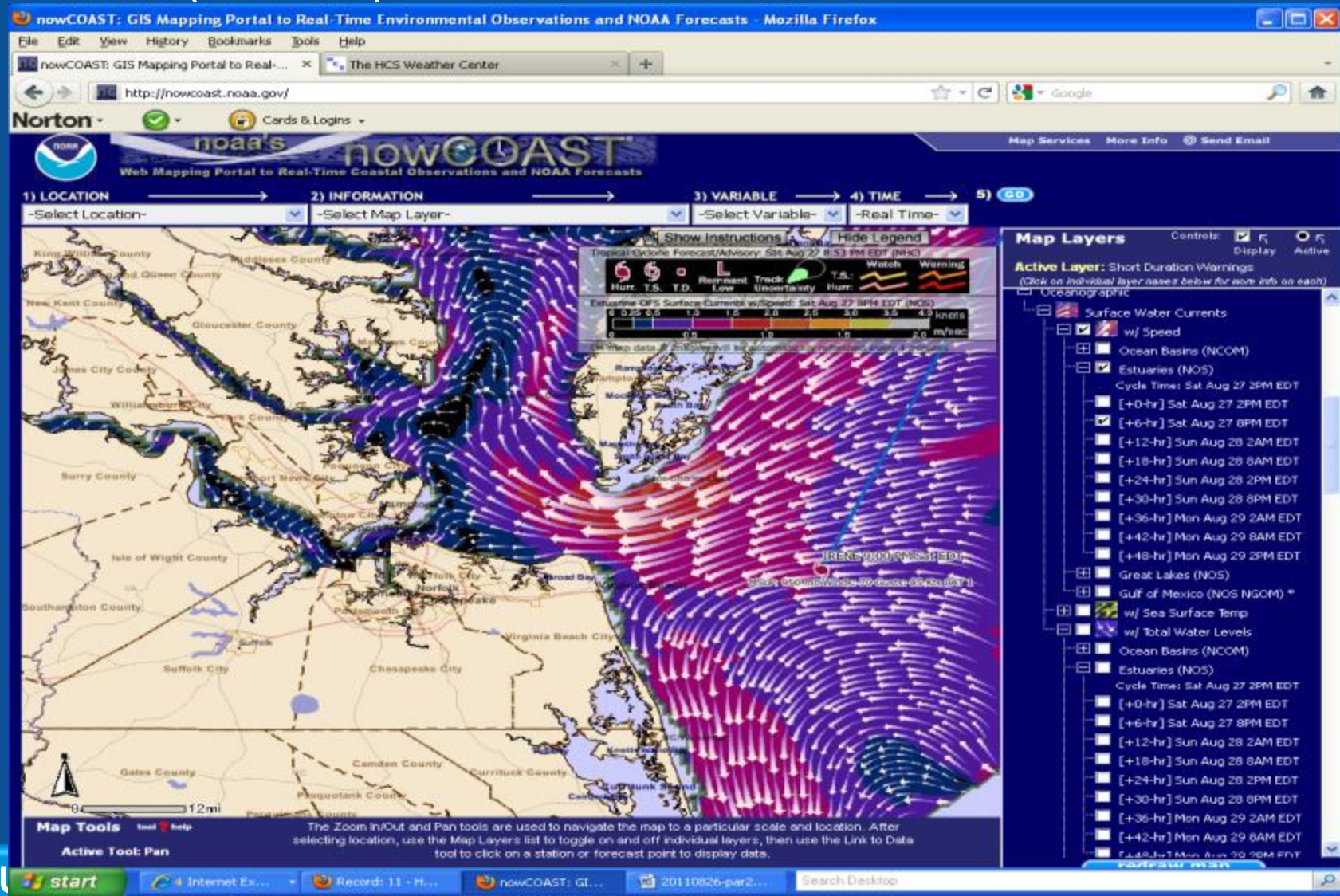
- 08/26 1400 EDT: CBOFS predicted a 4' surge in the lower CB for 8-10 pm on Saturday 8/27; ~2' mid-bay; and a negative surge in Baltimore of -3' Sunday 8/28 at noon.



- These forecasts were corroborated by the observed water levels at CBBT and Baltimore on 8/28 at 2 am, as Irene passed over the Chesapeake region



NowCOAST screenshot: NOS CBOFS 6-hr Surface Currents Forecast (Valid: 8PM EDT Sat. Aug. 27, 2011) and NHC Present Location (9PM Sat) and Track Forecast



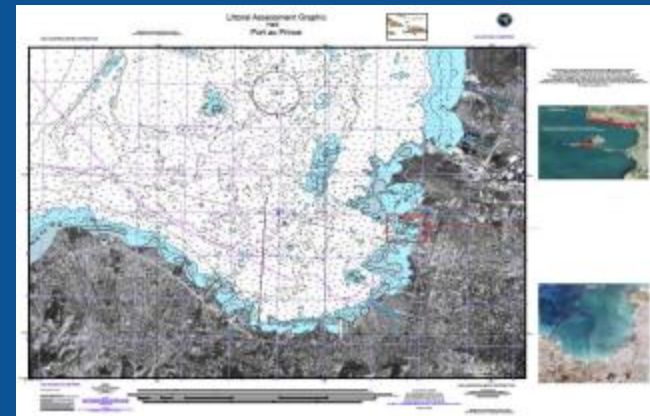
Haiti earthquake



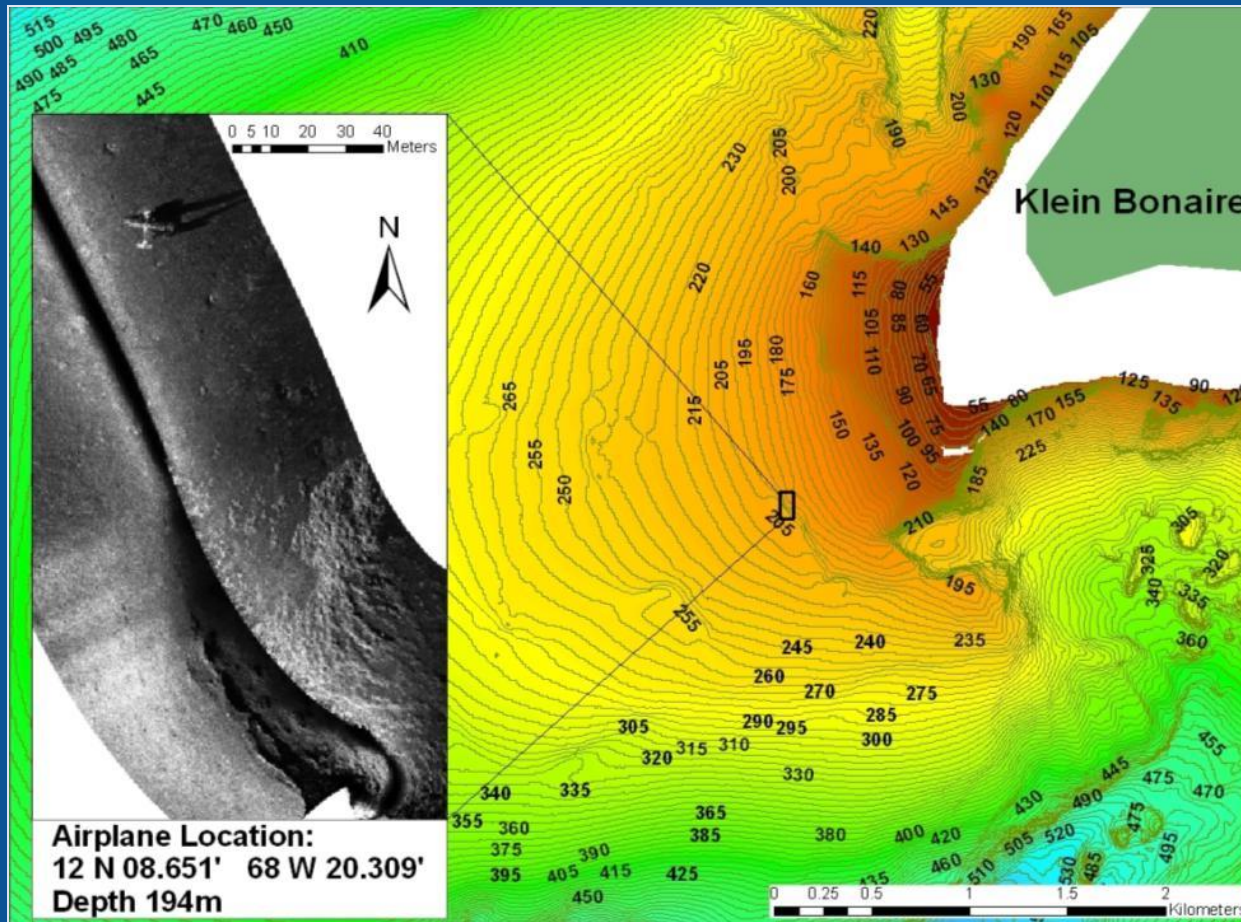
- Requirement:
 - Conduct pier facility, anchorage and beach approach clearance surveys
- Tasking:
 - Earthquake occurred on 12 Jan 10
 - COMUSNAVSOUTH requested hydrographic survey support on 14 JAN 10
 - Team deployed 16 Jan 10 via GOV and MILAIR
 - Began data collection on 19 Jan 10

Haiti earthquake cont.

- NGA Maritime Support
 - Haiti Port facility graphics
 - Imagery and graphic support to MSC
 - Port-au-Prince Littoral assessment graphics
 - Maritime Watch Office NAVAREA messages
 - Public release of DNC data over Haiti and DR

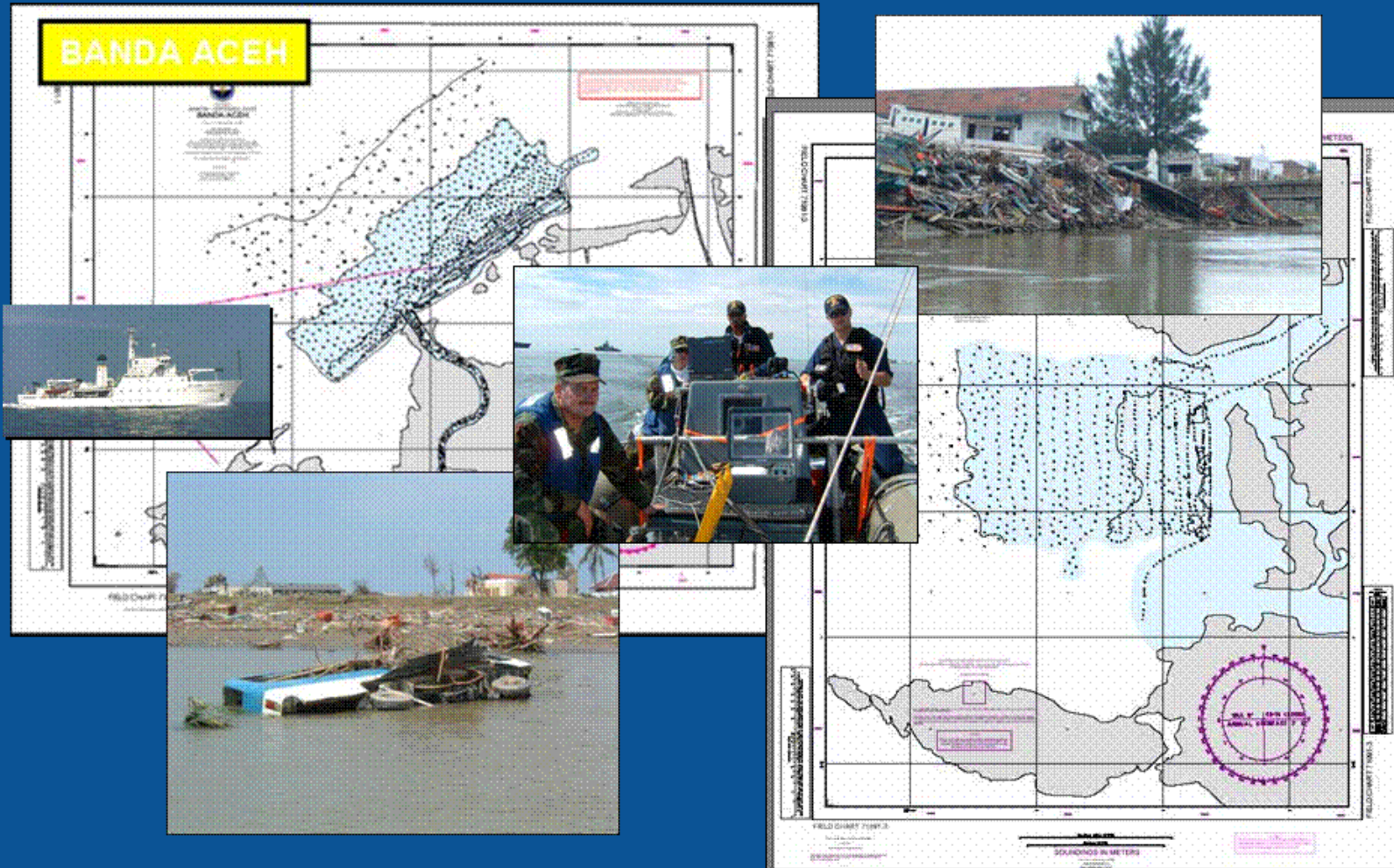


Locating aircraft wreckage in the Caribbean



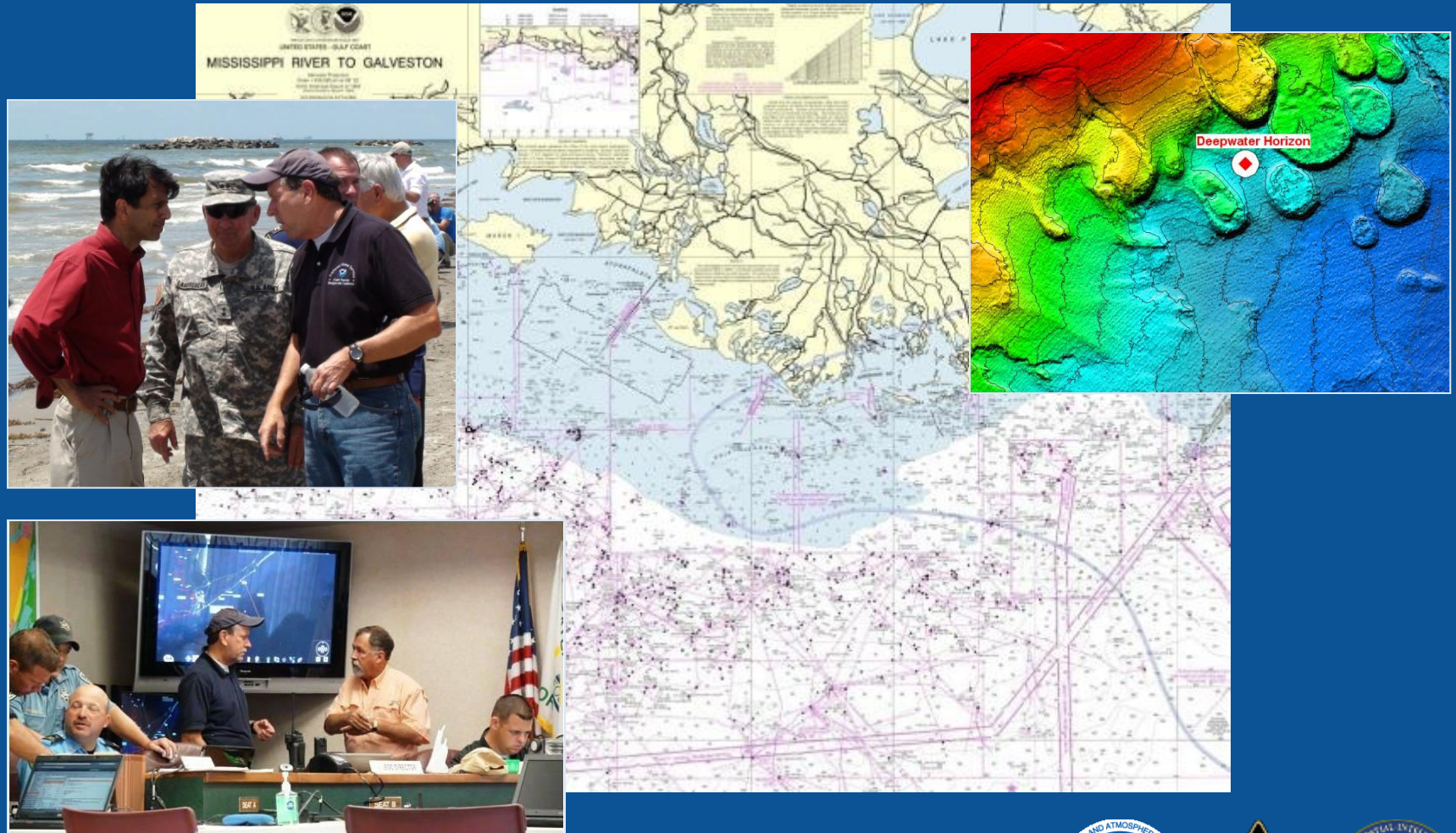
USNS Henson used multibeam and sidescan sonars to locate and map the wreckage of a plane missing in the waters of the Netherland Antilles

Indonesia tsunami relief



Responding to a release of hazardous materials / oil spill

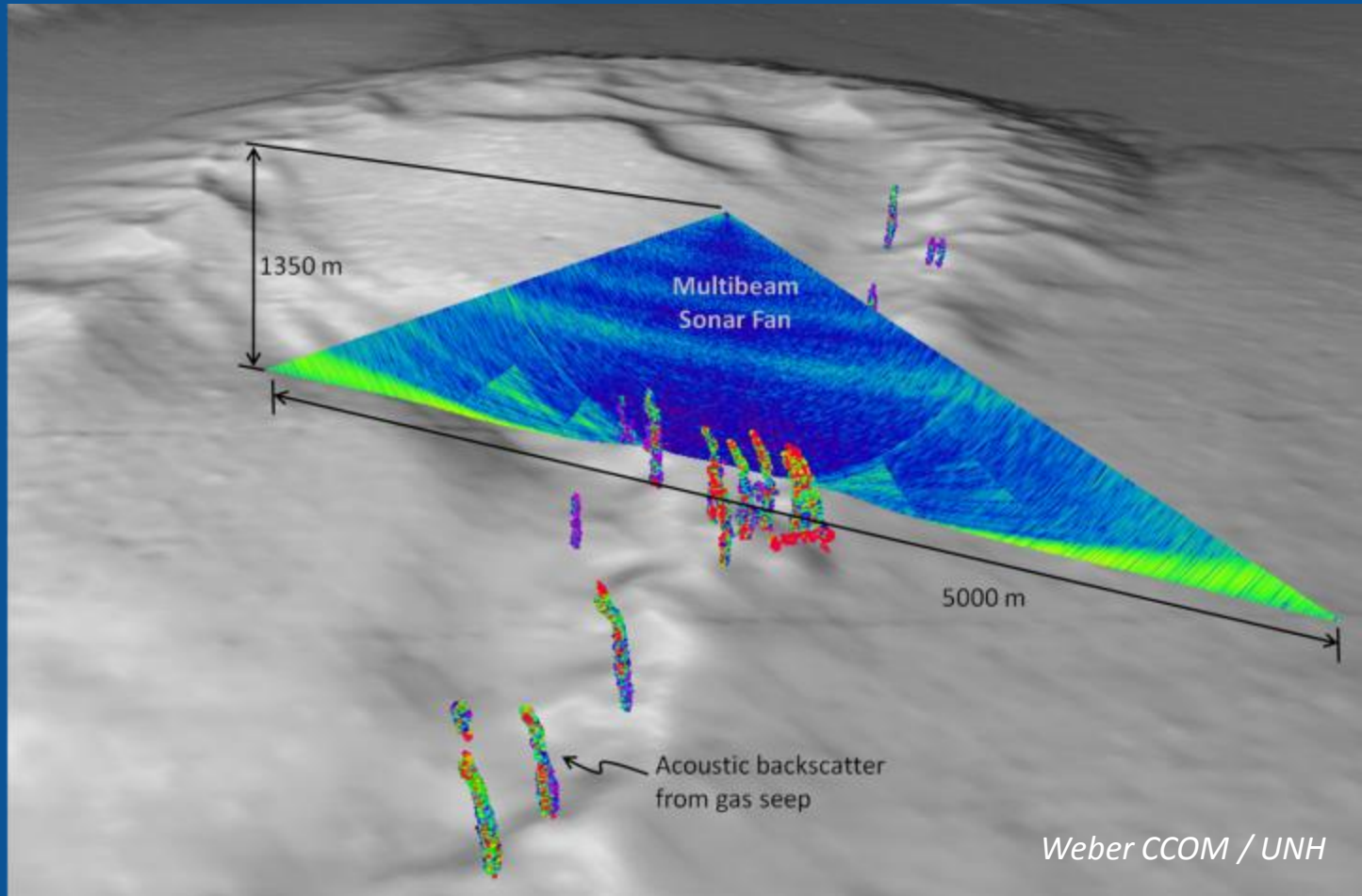
Deepwater Horizon



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Investigating Use of Multibeam Technology to Locate Possible Methane Gas Seeps



<http://www.nauticalcharts.noaa.gov/>
<http://nga.mil/maritime>
<http://www.usno.navy.mil>



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