

Natural Hazards Science: Reducing America's Risk

USGS Role in the Recovery of New Orleans and the Gulf Coast from Hurricane Katrina

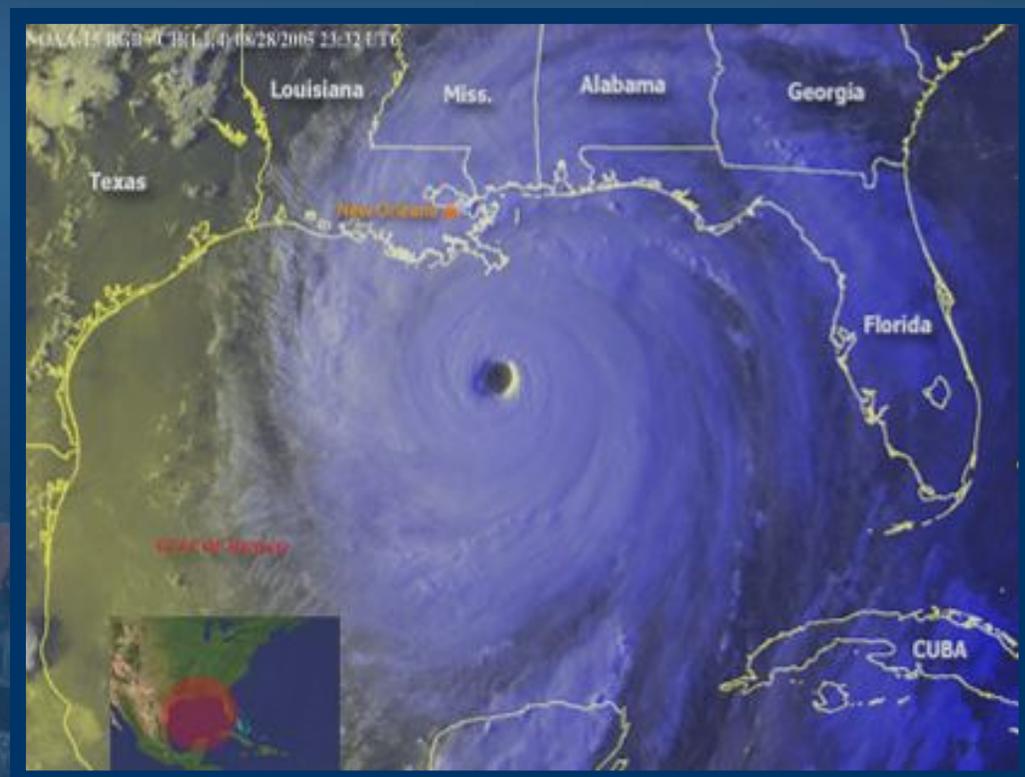
**61st Interdepartmental Hurricane Conference
New Orleans, LA
March 8, 2007**

Reducing America's Risk



USGS Storm Response Team

- Activated as needed
- Includes scientists and managers from USGS
- Includes other DOI Bureaus
 - NPS
 - US FWS
 - BOR
 - MMS
 - BLM

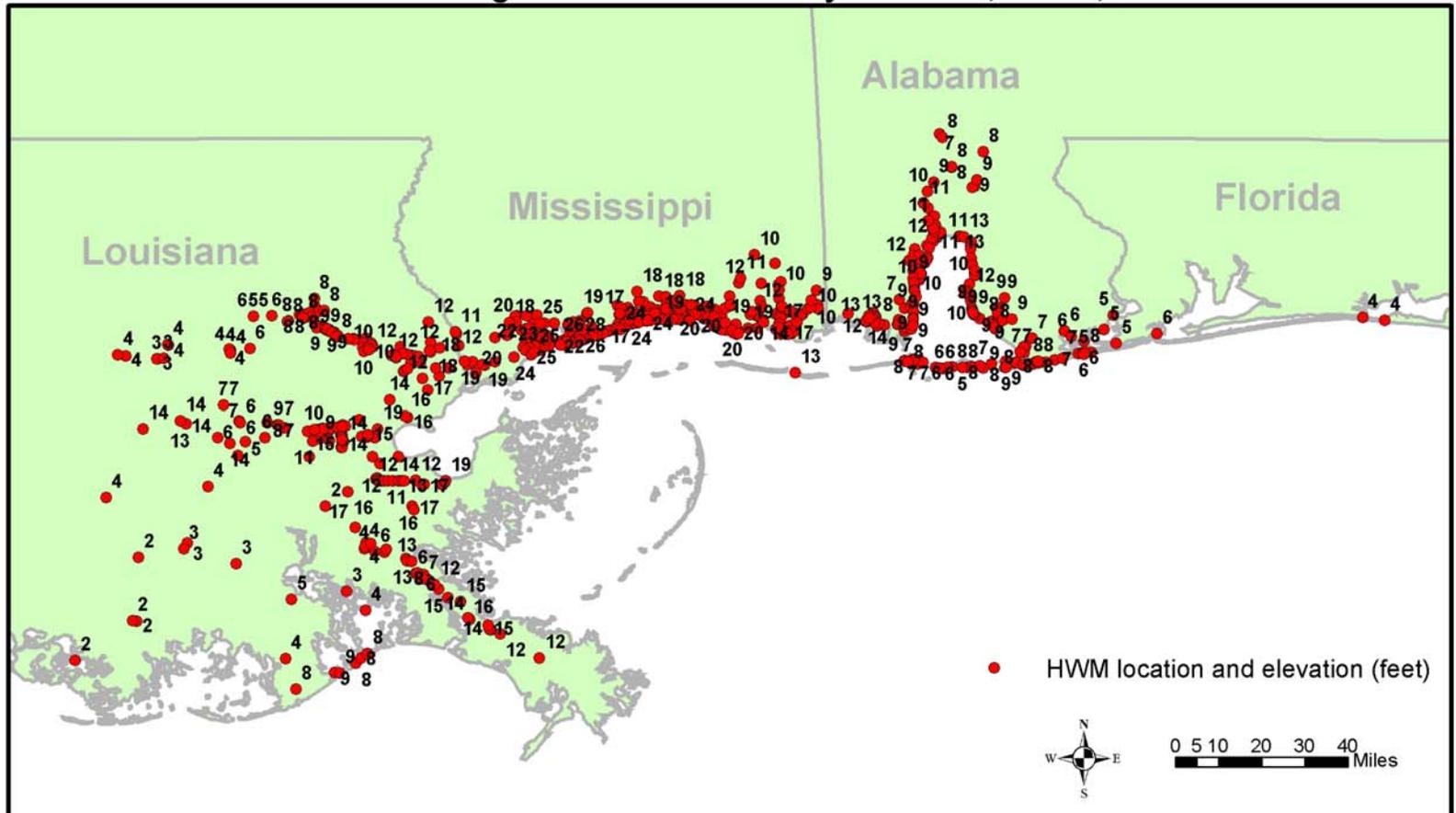


USGS – NPS – US FWS Coordination

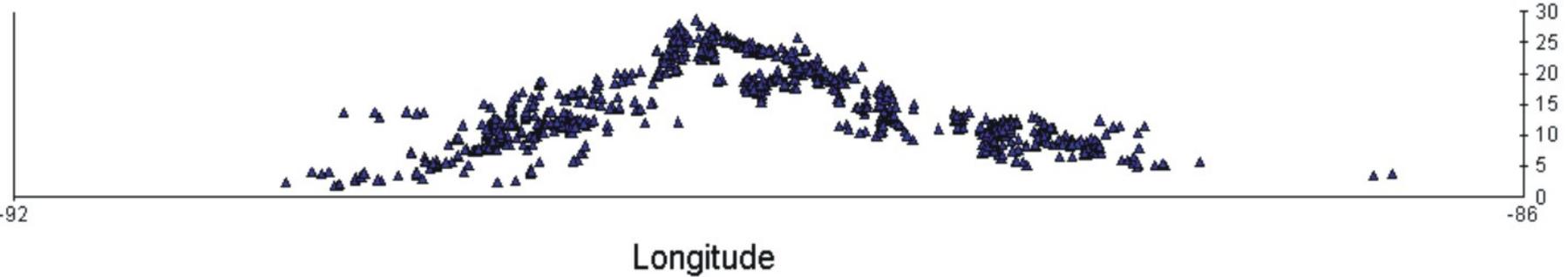


Mapping Storm Surge High-Water Marks

Katrina Storm Surge HWMs recovered by USACOE, FEMA, and USGS

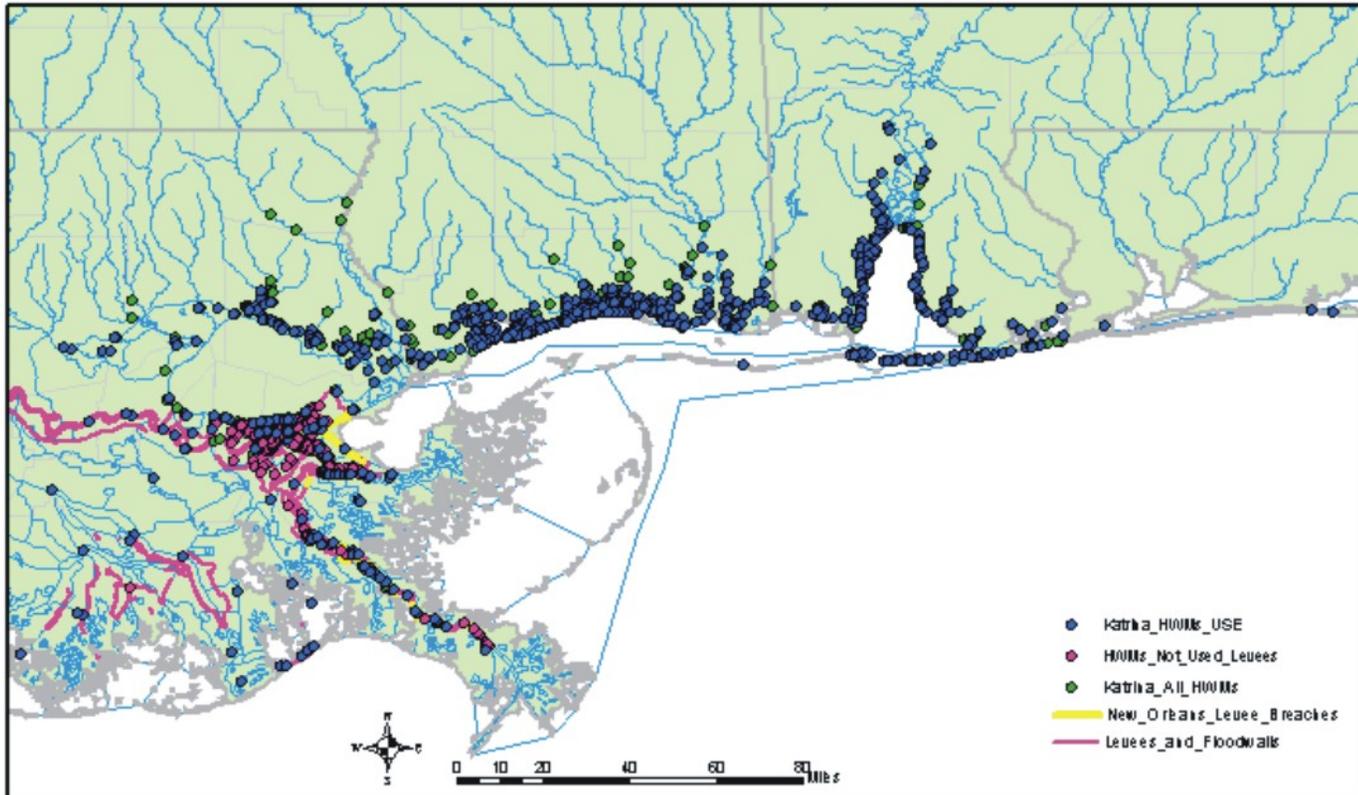


Graph of Katrina HWMs USE



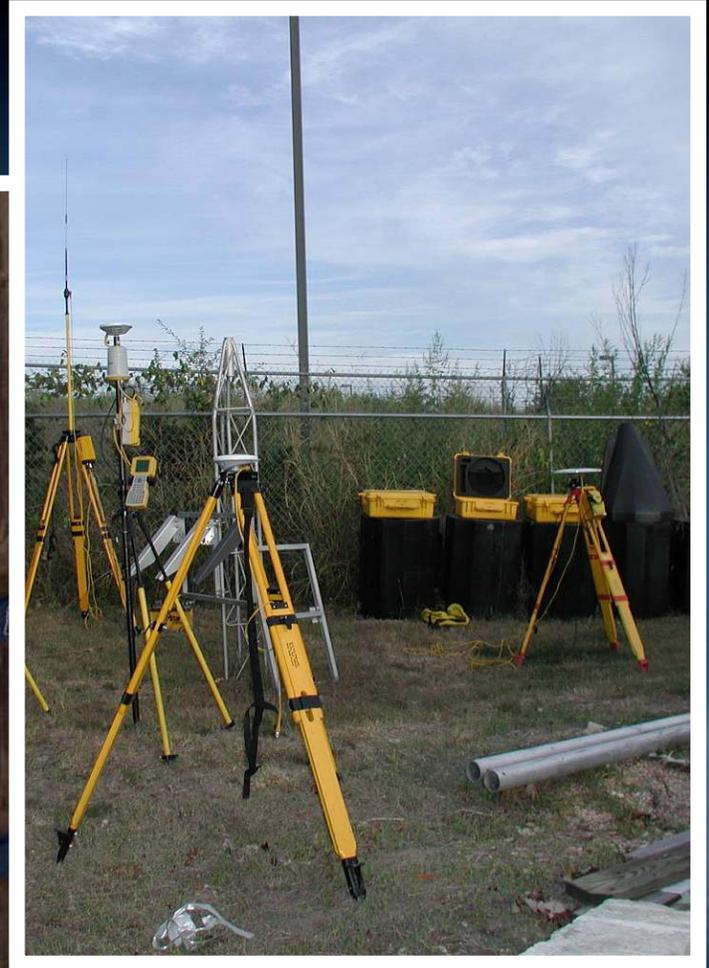
Longitude

Katrina HWMs for Louisiana, Mississippi, and Alabama

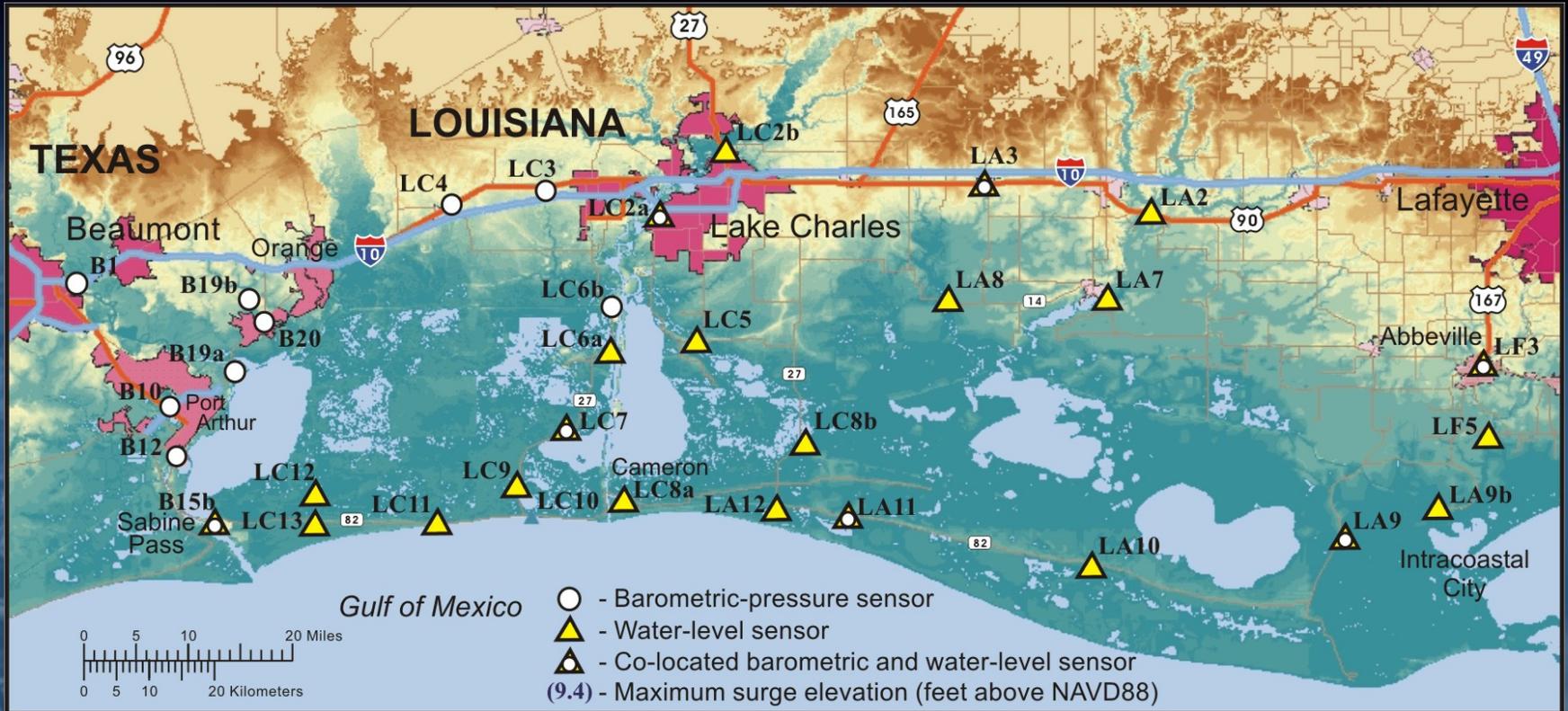


K. Van Wilson, USGS, 8-16-06

USGS - Monitoring Inland Storm Surge

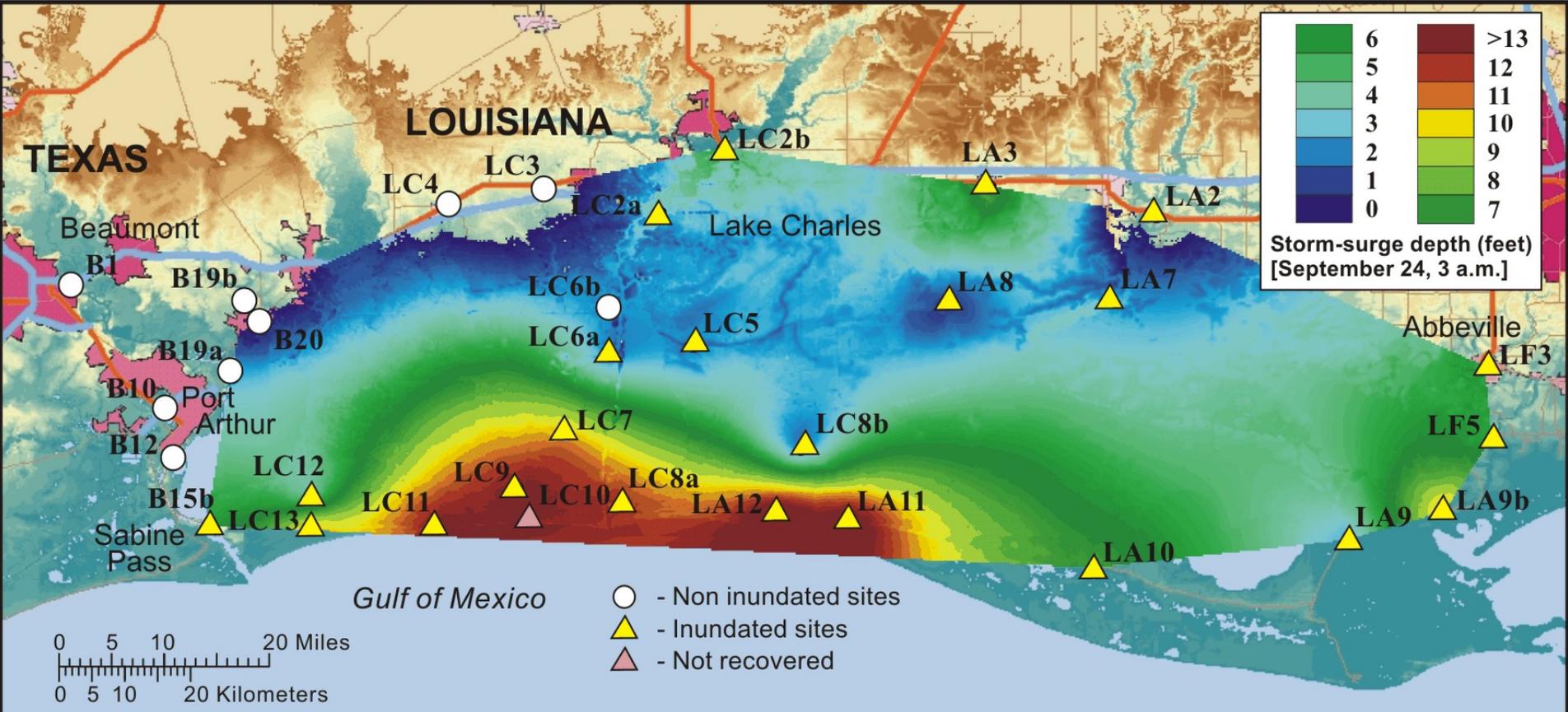


Storm Surge Sensor Sites



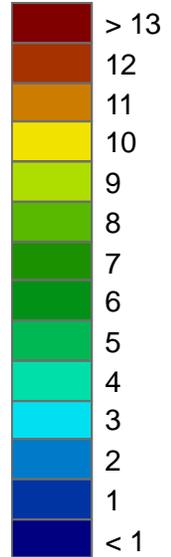
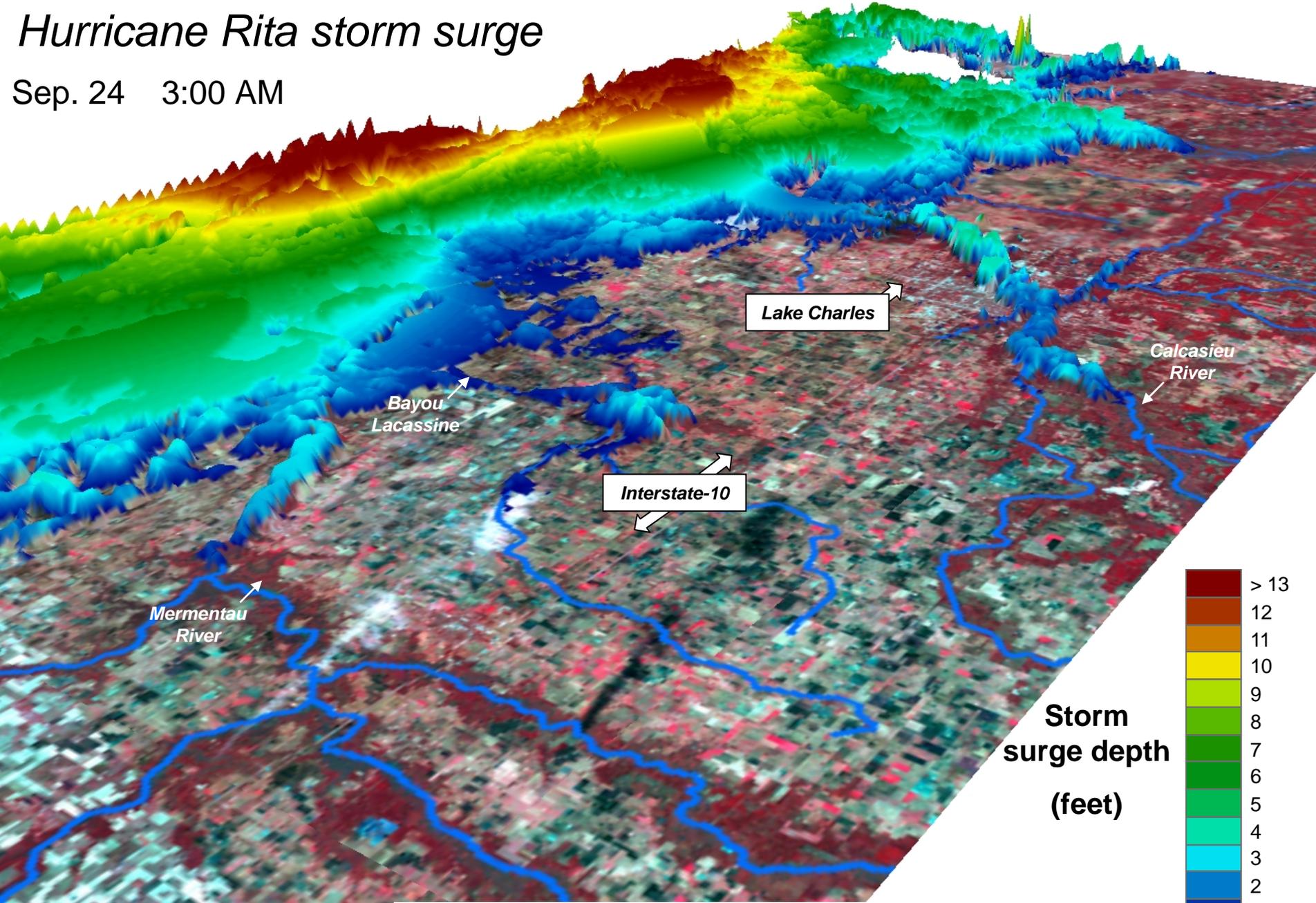
- Forty-three sensors deployed at 33 sites

Storm Surge Simulation



Hurricane Rita storm surge

Sep. 24 3:00 AM

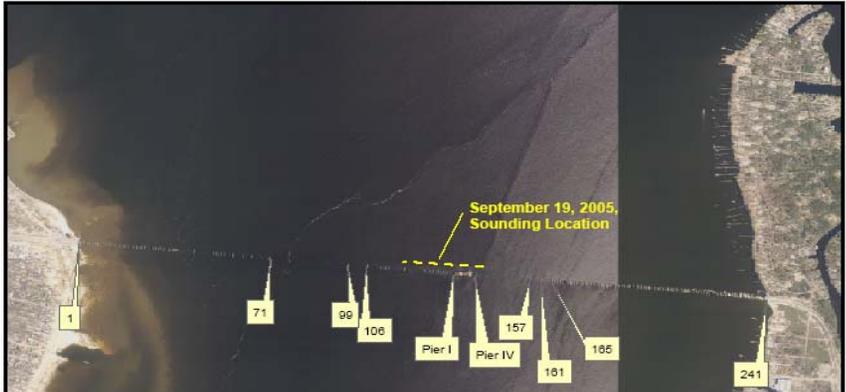


Storm surge depth (feet)

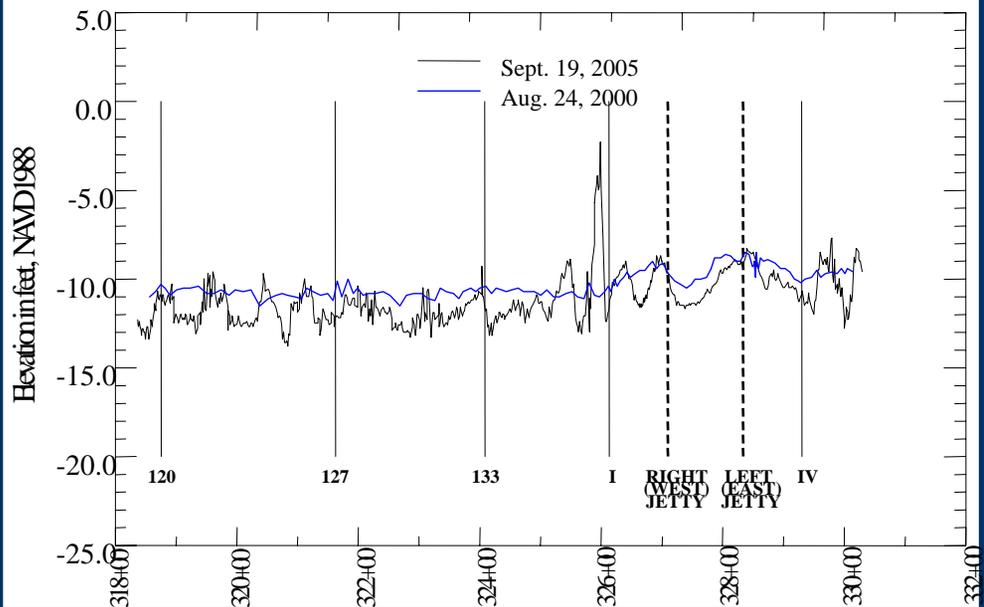
Provided by Dean Gesch, USGS, NMD, 2006
(View looking from the northeast toward the southwest)

Bridge Damage & Bed Scour

St. Louis Bay at U.S. Highway 90, Hancock County, Mississippi



Cross-section profile 150 feet North of U.S. Highway 90 at St. Louis Bay.



MS DOT
FWHA
USGS



Extreme coastal change

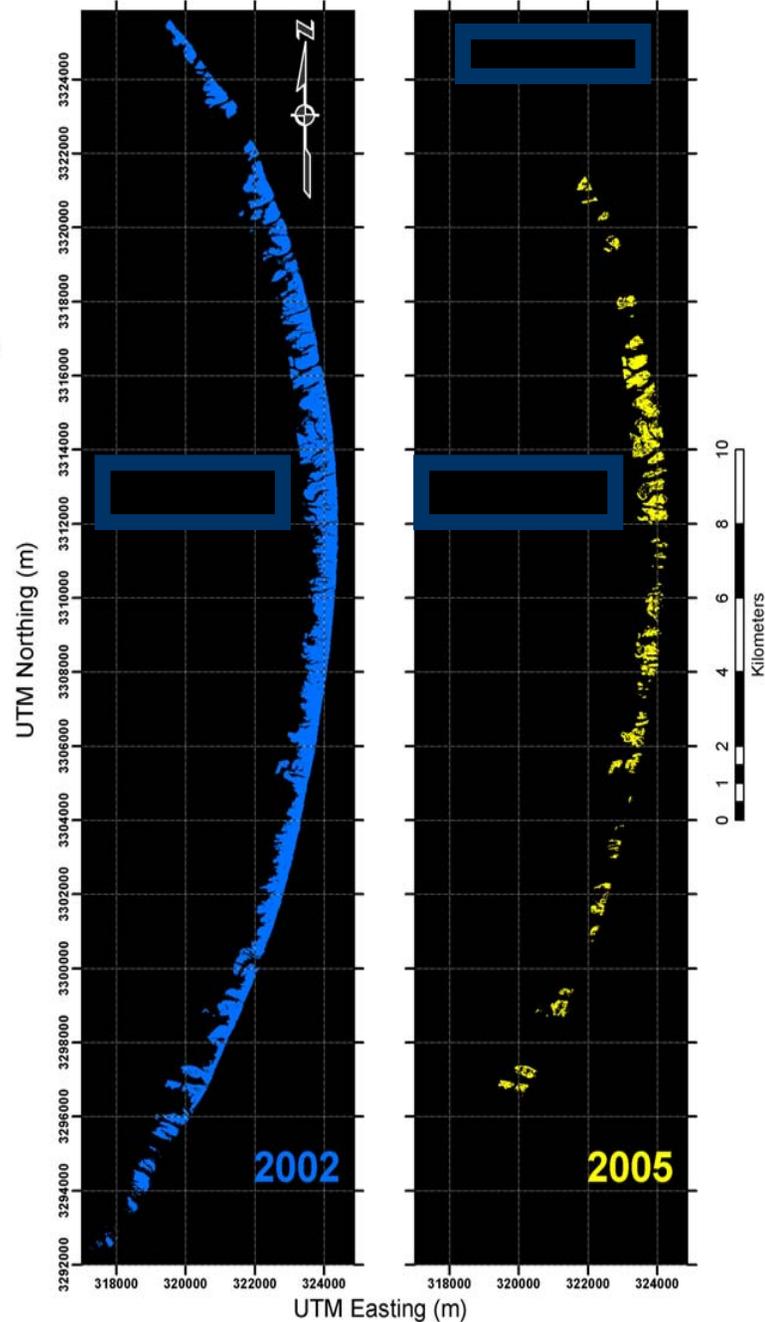
July 17, 2001



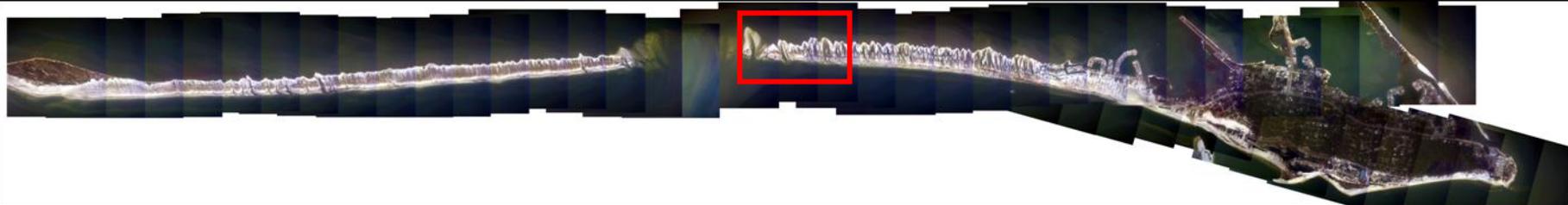
August 31, 2005



Chandeleur Islands, LA



Dauphin Island, AL: Post Hurricane Katrina



August 31, 2005

Gulf of
Mexico

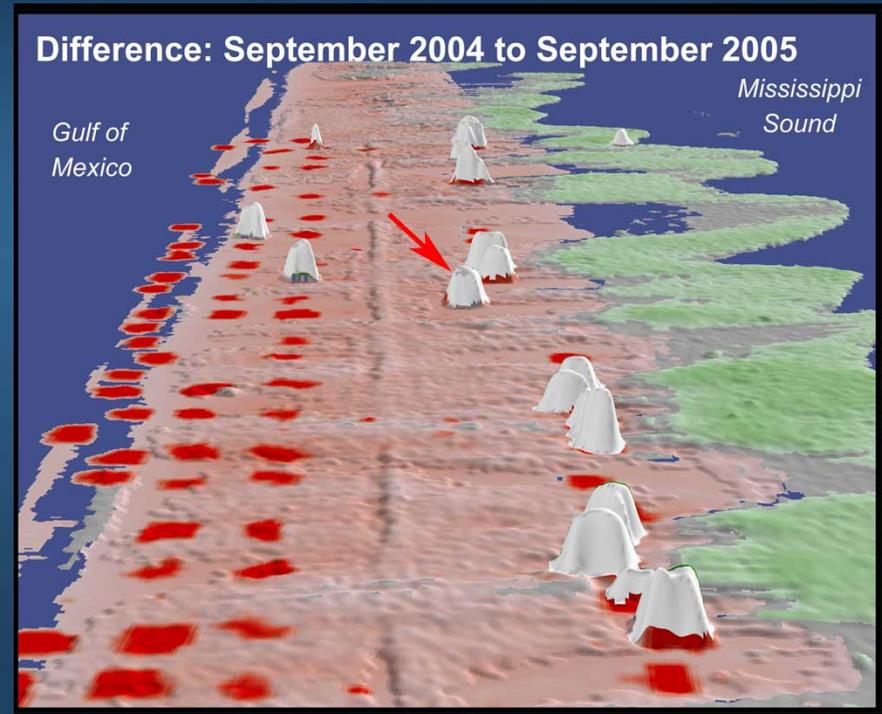
Mississippi
Sound



Difference: September 2004 to September 2005

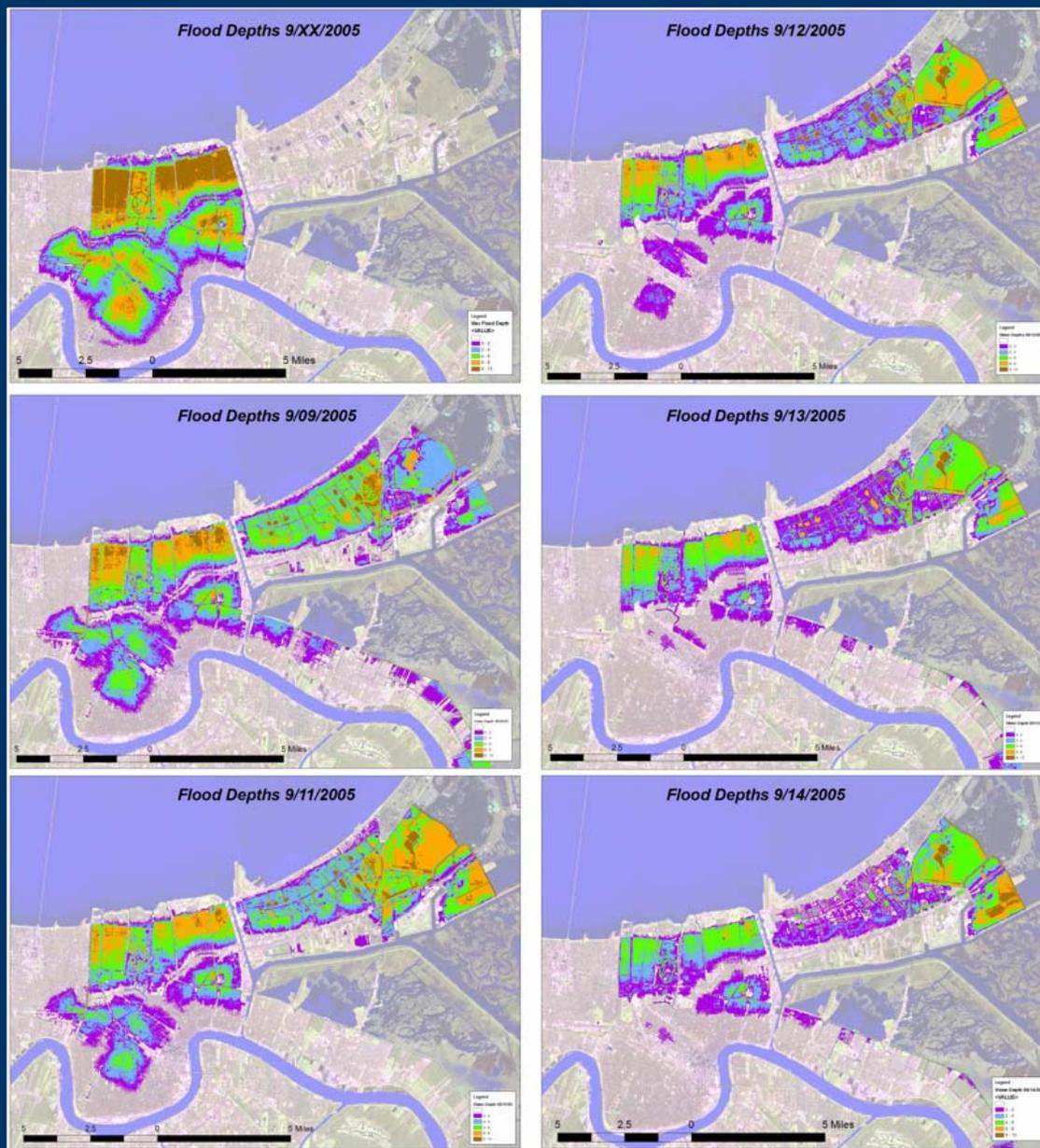
Gulf of
Mexico

Mississippi
Sound



Monitoring of Dewatering - New Orleans

USGS
US ACOE
LA FWS



New Orleans Flood Depths



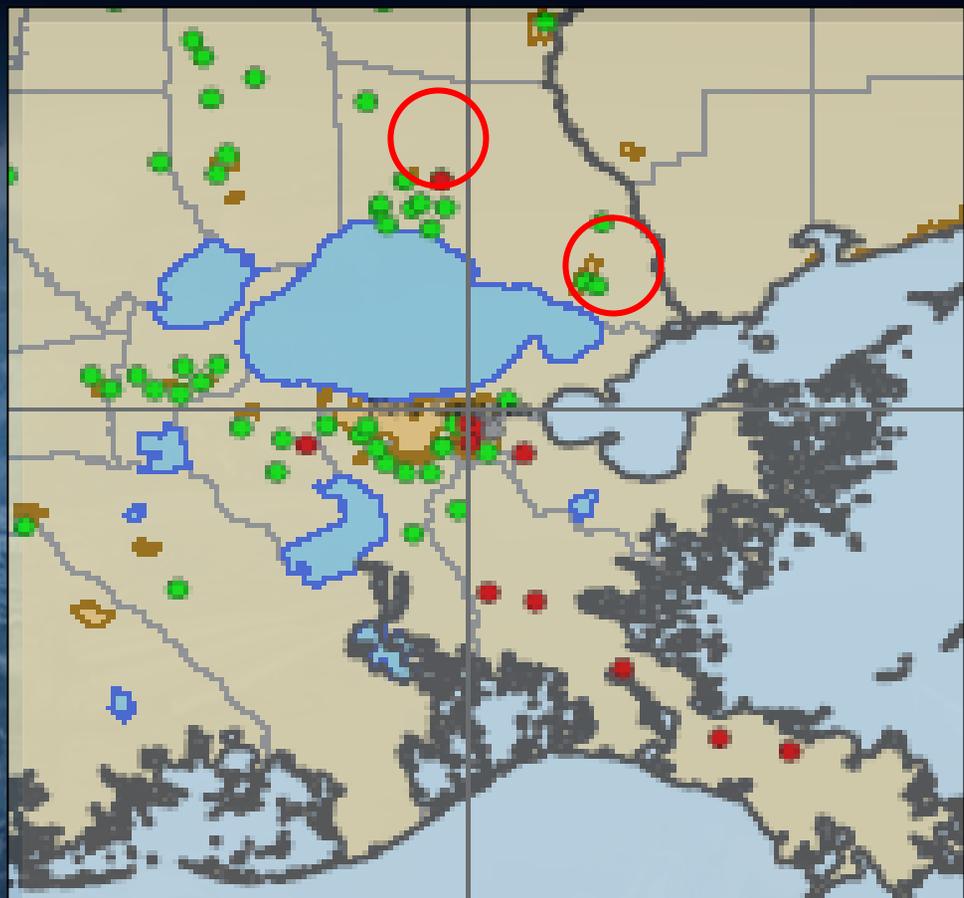
Post-Hurricane Katrina/Rita Water and Sediment Quality Assessments



Municipal Waste Water Facilities Affected by Hurricanes Katrina/Rita

Includes Both Major & Minor Facilities

As of 10/01/05



Legend

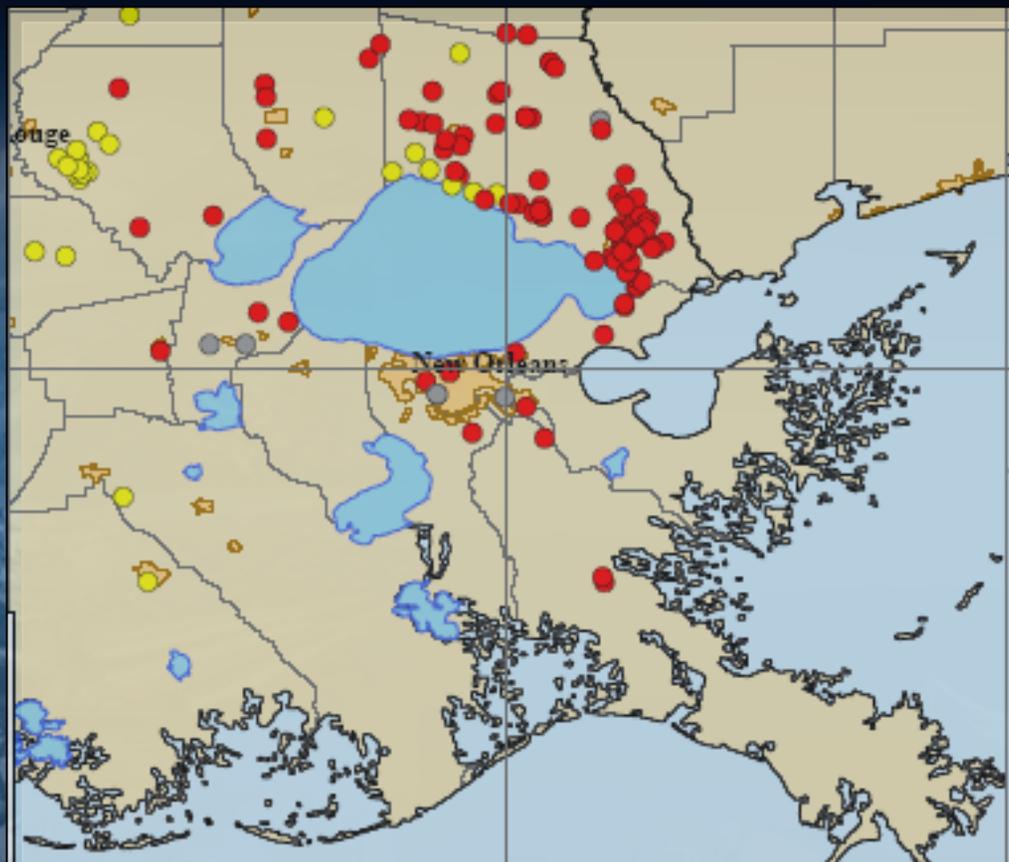
STATUS

- Operating
- Not Operational
- Awaiting Further Information



Drinking Water Facility Locations Affected by Hurricane Katrina

As of 10/01/05



Legend

Operating Status

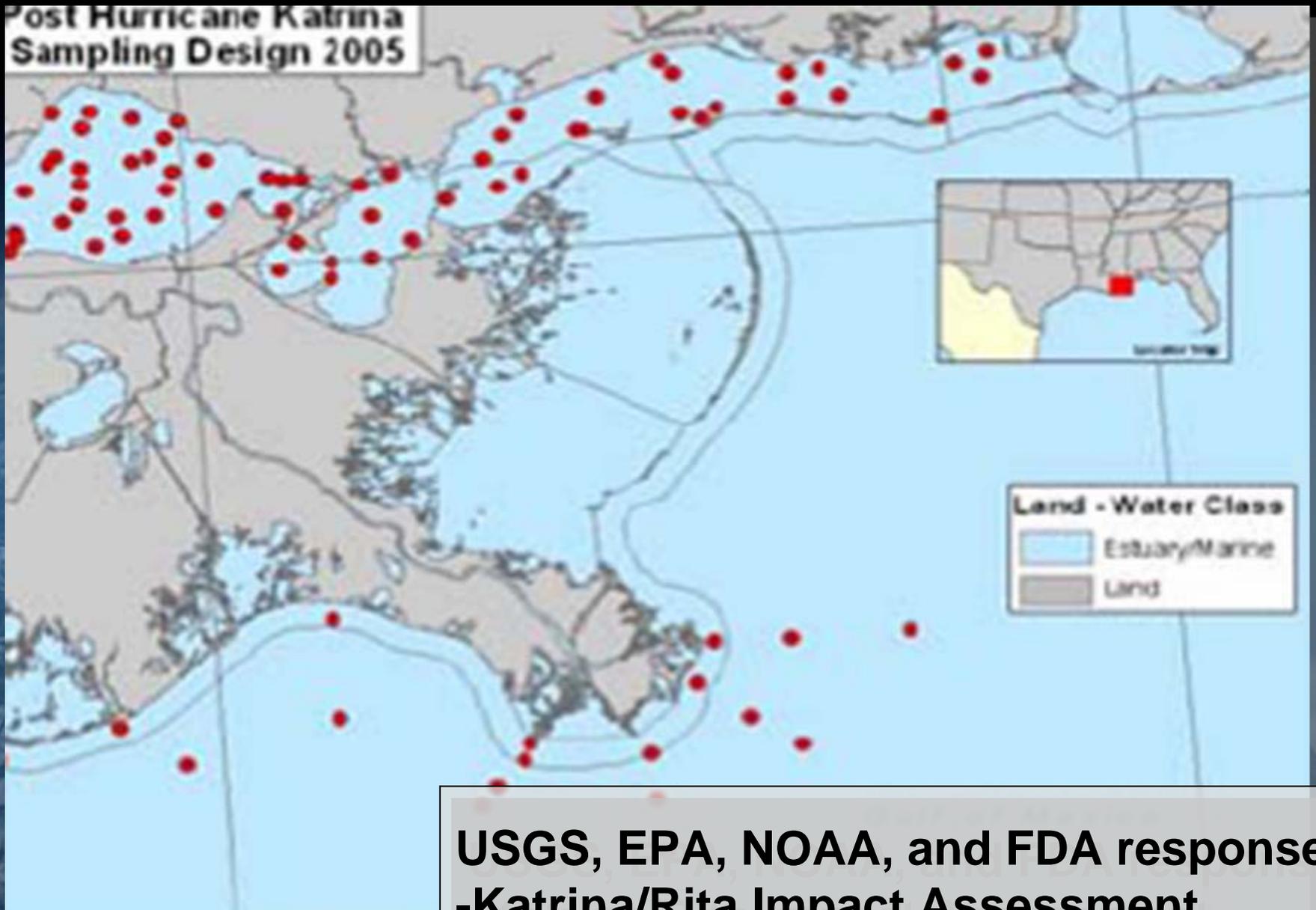
- Not Operational
- Operating Under Boil Order
- Unknown



Bacteria / Chemical Sampling

- Lake Pontchartrain
- Coastal Tributaries in MS.
- GW in areas of coastal inundation
- Floodwater sediment deposits in New Orleans
- Bottom sediments in Lake Pontchartrain
- Plumes of the floodwater pumped into the lake





**USGS, EPA, NOAA, and FDA response
-Katrina/Rita Impact Assessment**

USGS Land Remote Sensing - Hurricane Katrina Response

- FEMA has designated USGS as the Hurricane Katrina civil agency distribution site for land remote-sensing data
- Numerous agencies provided data to USGS for general and restricted distribution
- Value-added products were developed and distributed
- Helped guide the rescue and restoration efforts in response to Hurricane Katrina

USGS Land Remote-Sensing Data

Landsat

NASA MODIS and ASTER

Advanced Land Imager (ALI)

Hyperion

Aerial photography

Declassified Satellite Imagery

**Nat. Land Characterization Data
Base**

Nat. Elevation Data

Nat. Hydrologic Data

SPOT

ENVISAT

Radarsat

IKONOS

Digital Globe - Quickbird

Indian Remote Sensing

DMC

OrbImage

GIS Data Collections

LIDAR

USGS Land Remote Sensing – Hurricane Katrina Response

Agency Interfaces:

- FEMA
- NOAA
- USDA
- EPA
- USGS
- EPA
- USACE
- CDC
- NGA
- US Army
- States
- Universities



Temporal Analysis of Flood Water Depth and Volumes after Hurricane Katrina in New Orleans

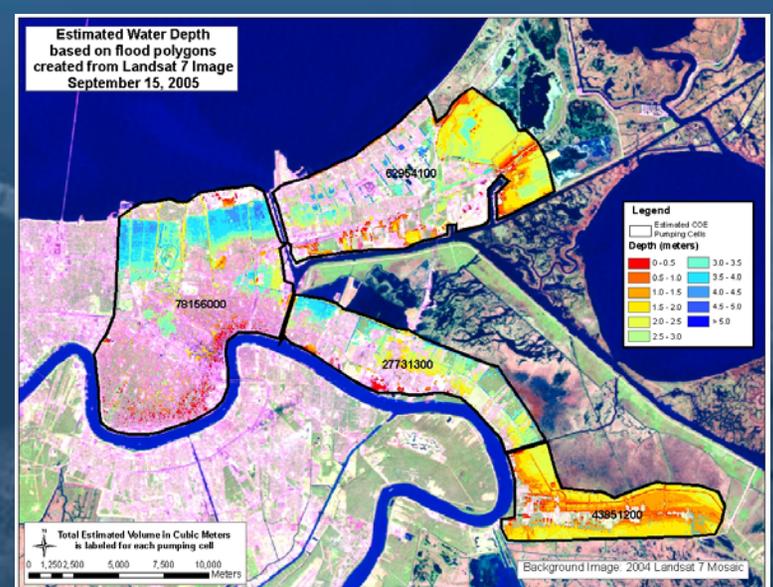
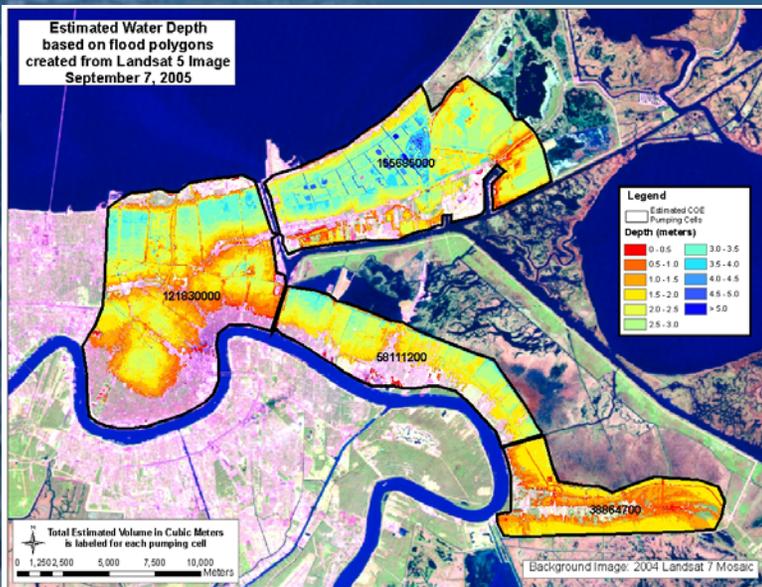
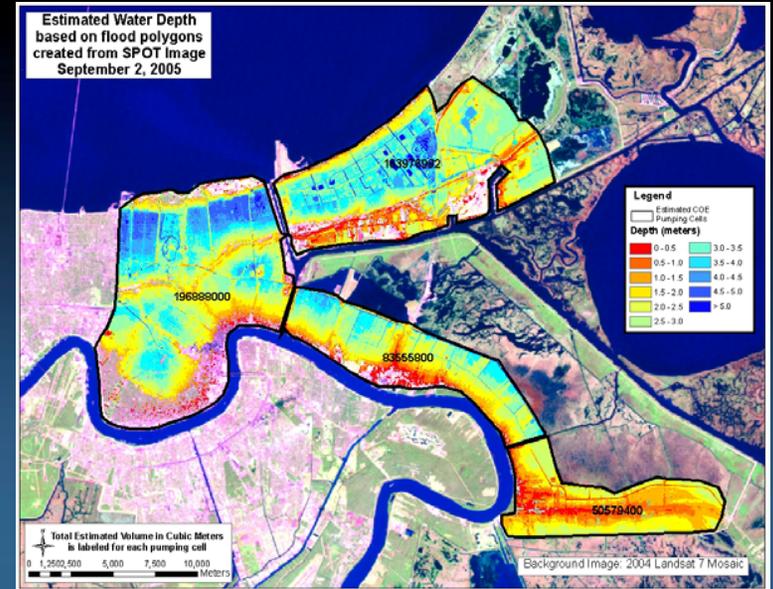
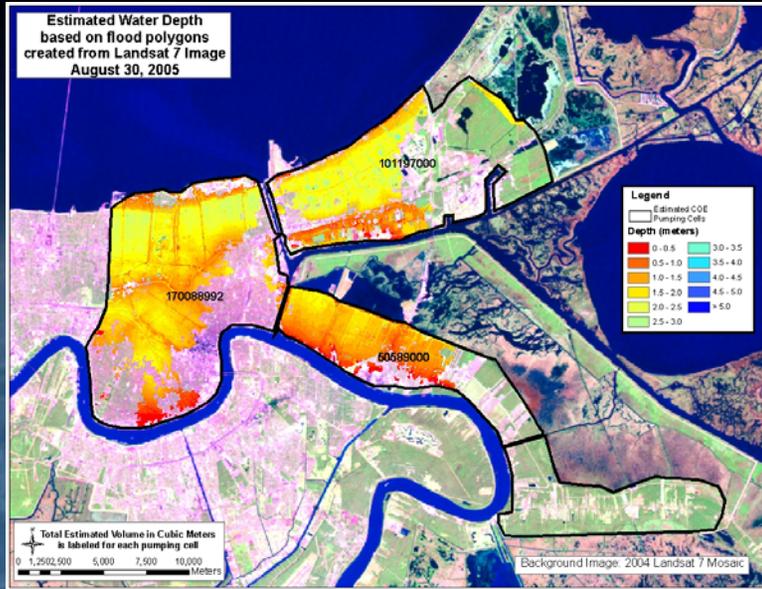
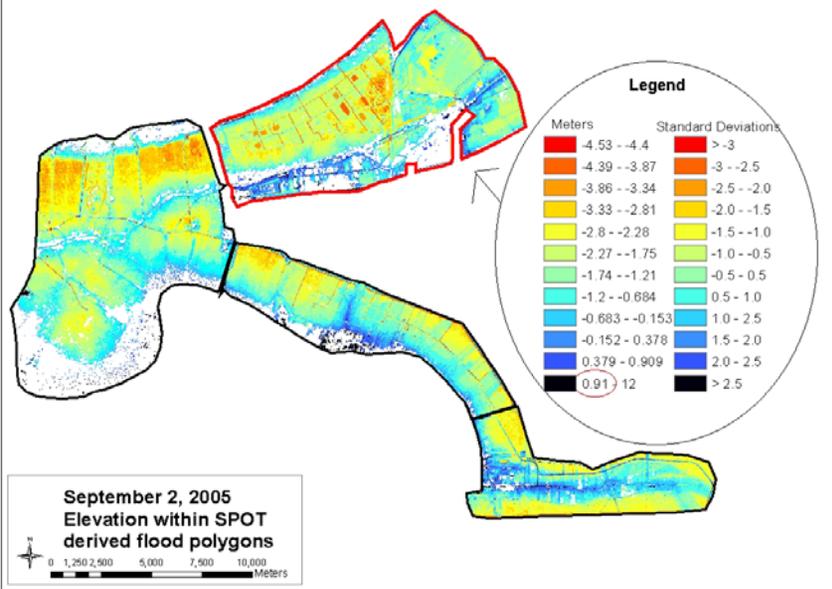
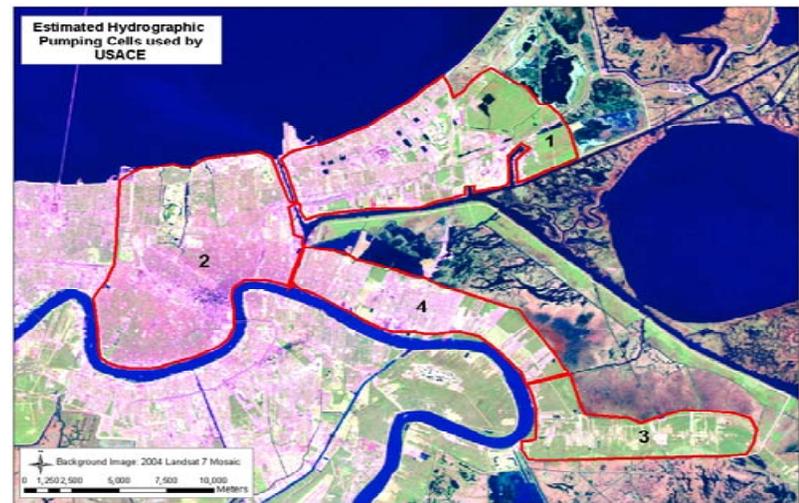


Figure 1: Determination of Maximum Inundated Elevation



Water Volume



Volume Estimates (m³)

	L7-Aug 30	SPOT-Sep 2	L5-Sep 7	L7-Sep 15
1	101,197,000	163,977,000	155,685,000	62,954,100
2	170,089,000	196,888,000	121,830,000	78,156,000
3	0	50,579,400	38,864,700	43,851,200
4	50,589,000	83,555,800	58,111,200	27,731,300
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	321,875,000	495,000,200	374,490,900	212,692,600

