



# Evaluation of Hurricane Evacuation Routes' Resiliency to Storm Damage

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## Problem

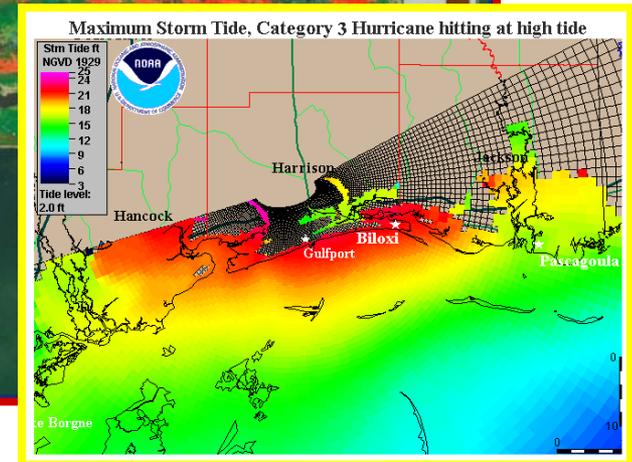
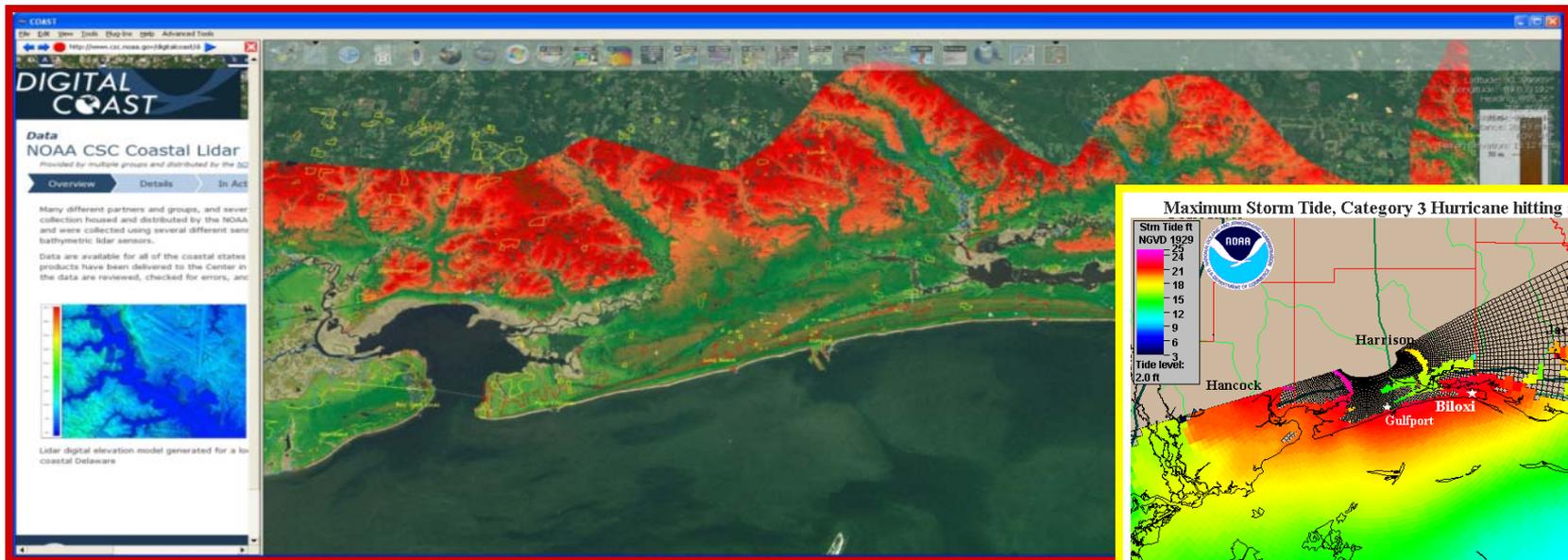
Access to post-hurricane areas may be severely hampered as evidenced by Hurricanes Katrina and Ike. Water, trees, and debris on roadways can prevent post-storm ingress and egress for emergency response, utility repair, and search and rescue teams—diminishing a coastal community's resilience to hurricanes.



## Approach to Issue Mitigation

- Analyze evacuation routes and identify areas that are at risk of sustaining flood waters and/or being heavily cluttered with debris.
- Work with partners, community planners and end-users to deliver useful products generated from the latest data and surge, flood, and wind models to enable pre-storm planning and action.

# Relevant Decision Support Systems



- NASA ICS Planning Dashboard (formerly EMAPS) used at SSC and MAF
- Coastal Online Analysis and Synthesis Tool (COAST)
- Other identified geobrowser technologies that project modeling and mapping outputs may be formatted to allow integration



**Sea, Lake, and Overland Surges from Hurricanes Derived Model Output**

Map Date: 4/3/2009

Category: 2  
Storm Direction: Northwest  
Storm Speed: 5 mph  
Tide Level: High Tide

Evacuation Route Conditions

Interstate 510: Clear  
Highway 90: Clear

Data Sources  
SLOSH Model: NOAA National Hurricane Center  
June 20, 2008  
Aerial Photographs: National Agricultural Imagery Program, 1 meter resolution  
Nov 8, 2007

This chart indicates areas that may be susceptible to storm surge to a great or lesser extent similar to the depicted storm category, speed, direction, and tide level. The product should be used for guidance only.

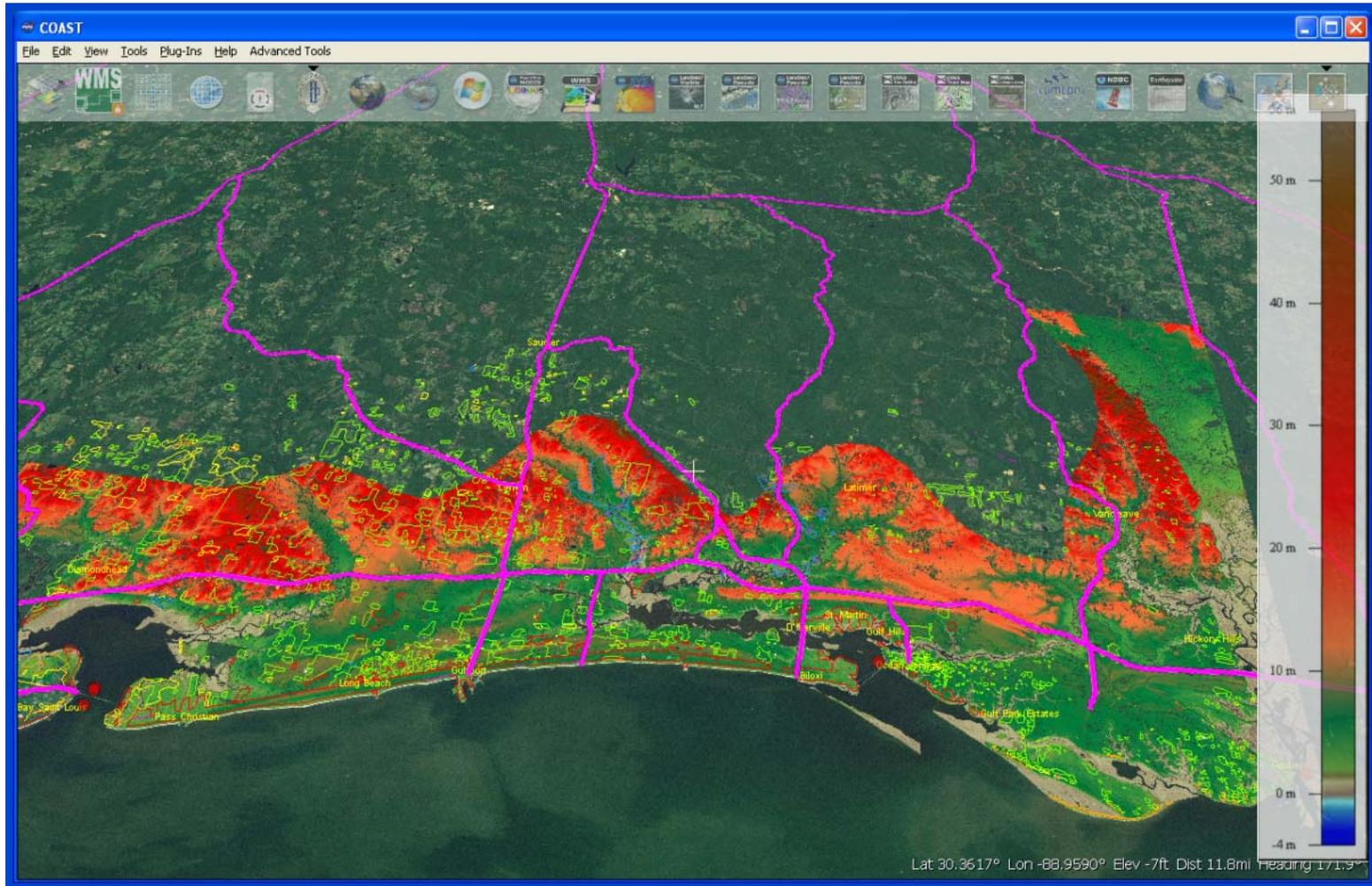
Note: This product is derived from SLOSH model outputs using LIDAR data circa 1992.

ent of Surges

Done

Unknown Zone

# Model Output Integration



*Example of preliminary data fusion/mapping in COAST showing Evacuation Routes, NOAA Coastal LIDAR data layer and NGA Hurricane Katrina damage levels for reference.*

# Project Partners & Potential End-Users



NASA Emergency Operations Centers at SSC and MAF will have full access to the product functions through the ICS Planning Dashboard and the Coastal Online Assessment and Synthesis Tool (COAST) will integrate results into a client viewer that is accessible to others

## Potential End-Users

- 1) Utility repair crews and emergency response personnel, e.g., police and fire departments, that require immediate post-storm access to damaged areas
- 2) EOC Teams at SSC and MAF
- 3) Personnel that could not evacuate, e.g., ride out crews at NASA facilities
- 4) Military personnel at affected bases

## Implementation Team

NASA Applied Sciences

Applied Geospatial Technology

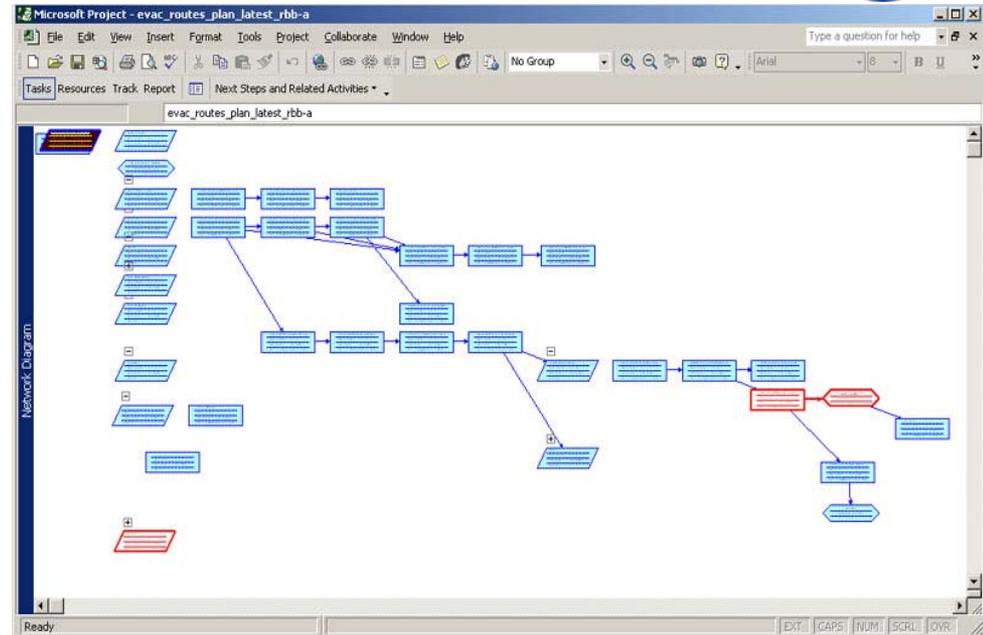
Gulf Coast Research Laboratory, USM Gulf Coast

# WorkPlan/Timeline



## Progress to Date

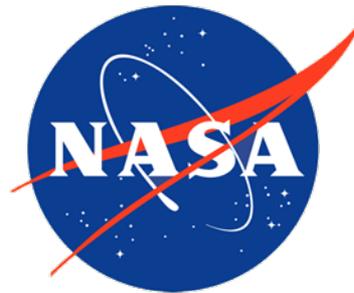
- Project kick-off meeting held at USM Gulf Park Campus in November
- Beginning cursory analysis/discussion of basemap data to identify AoI
- In process baseline and model data gathering and data gap fill plan assignments



## Milestones *(tracked in MS project)*

- **Basemap (generation in progress)** Fall 2009
- **Surge analysis (prep and setup of data and model)** Spring 2010
- **Wind Analysis (LIDAR data sources identified)**
- **Risk model** May/June 2010
- **Results integration (COAST/ICS)** May/July 2010
- **Final report/publication** Fall 2010

# Questions???



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