Implementation
of the Texas Model Application

2006 ADCIRC Workshop

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J.C. Dietrich

J.J. Westerink
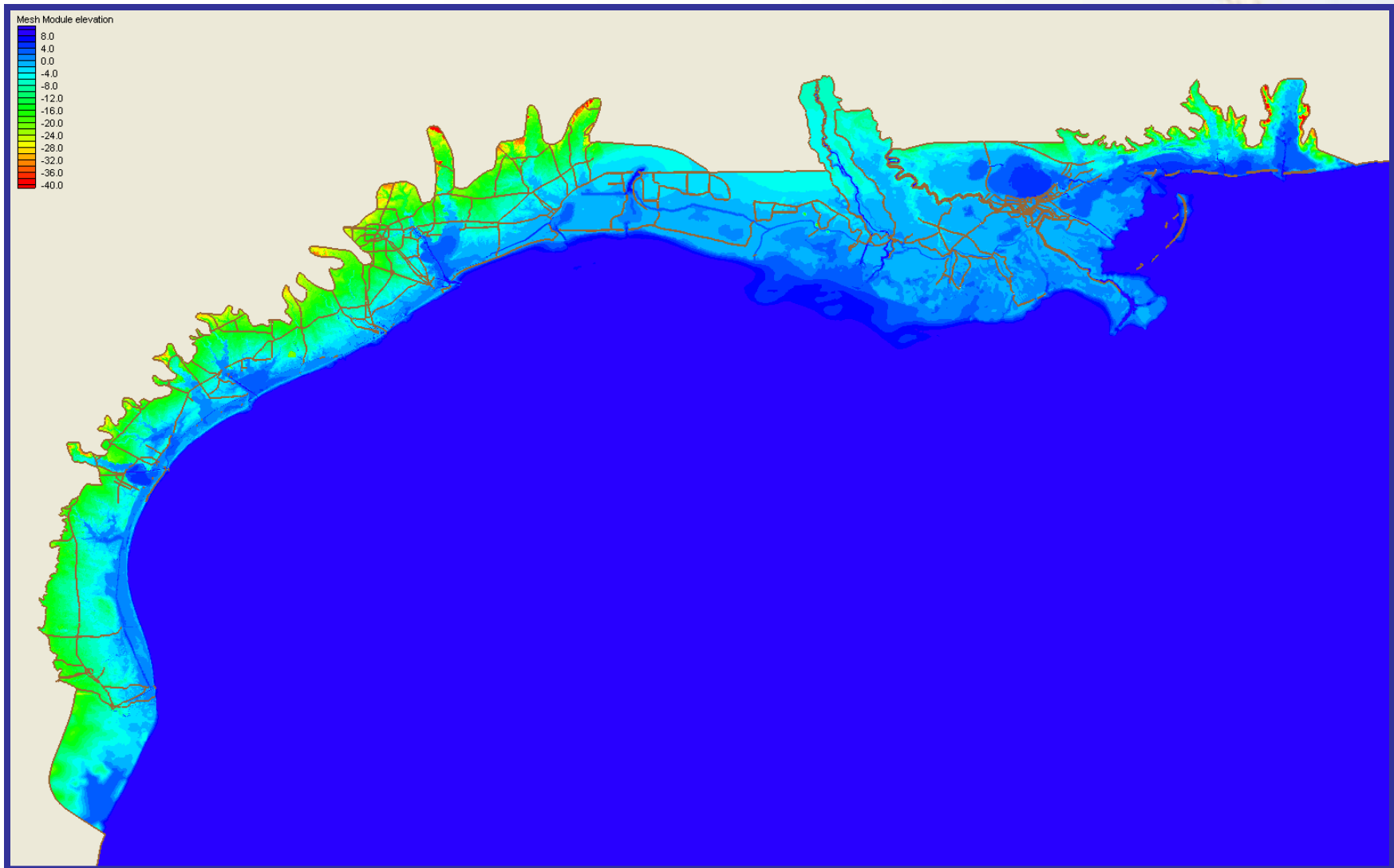
J.H. Atkinson

J. Westerink

Model Development

Quick Facts

- Developed from the S08 model of southern Louisiana
- High-resolution extends:
  - From Brownsville, TX, to Mobile Bay, AL
  - To the 18m contour
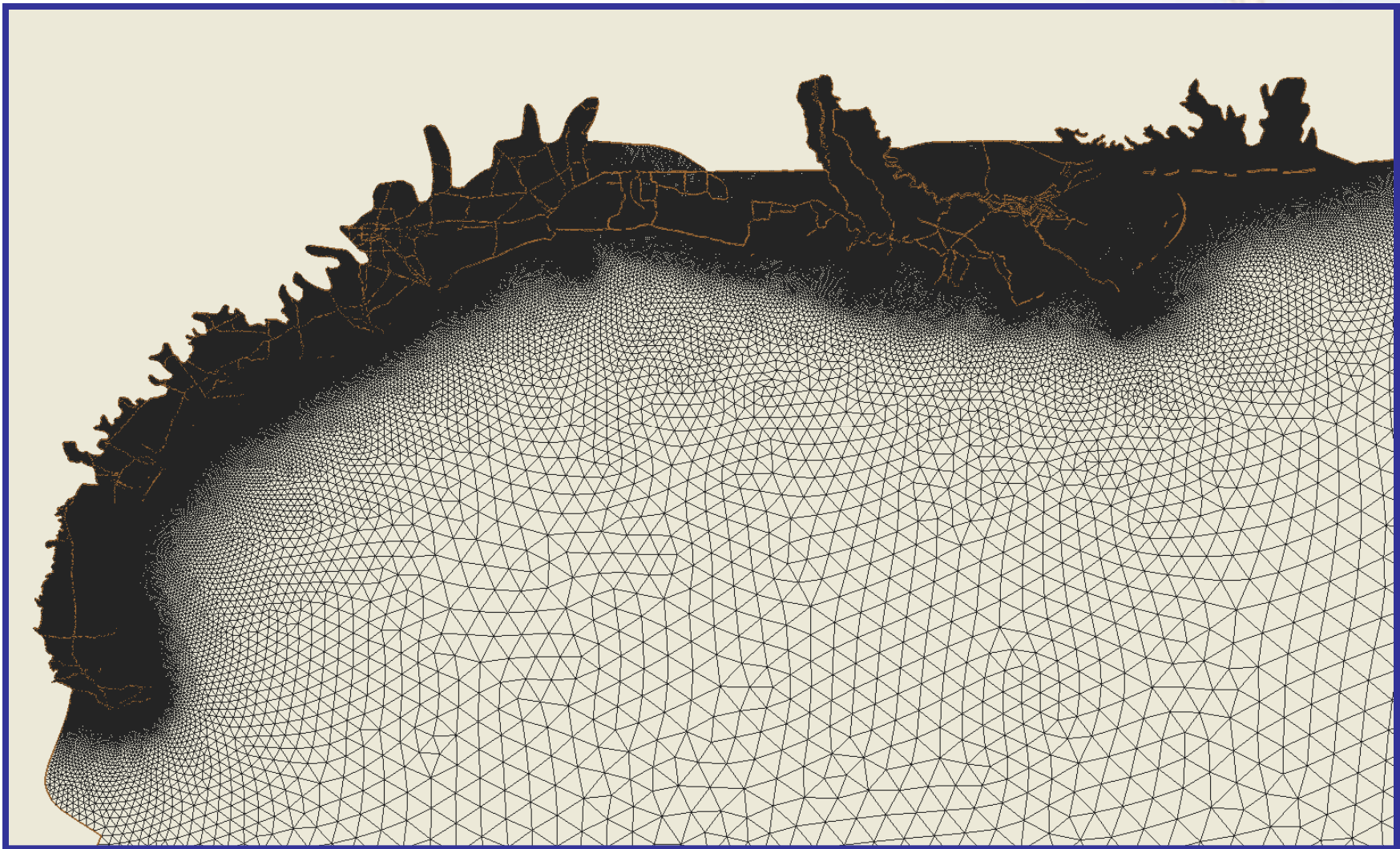- Minimum grid spacing is 60-100 meters
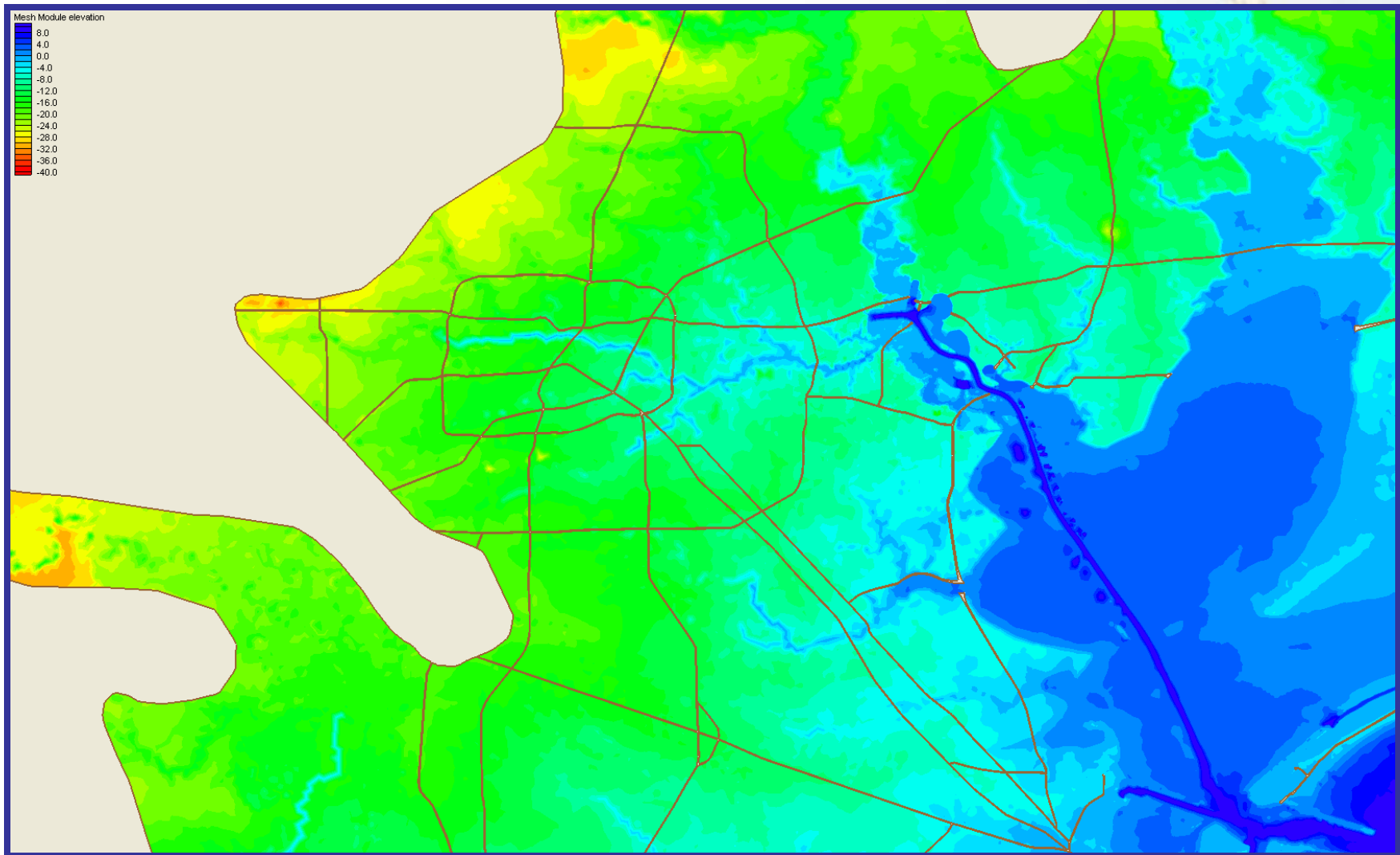- Total of 1.14 million nodes

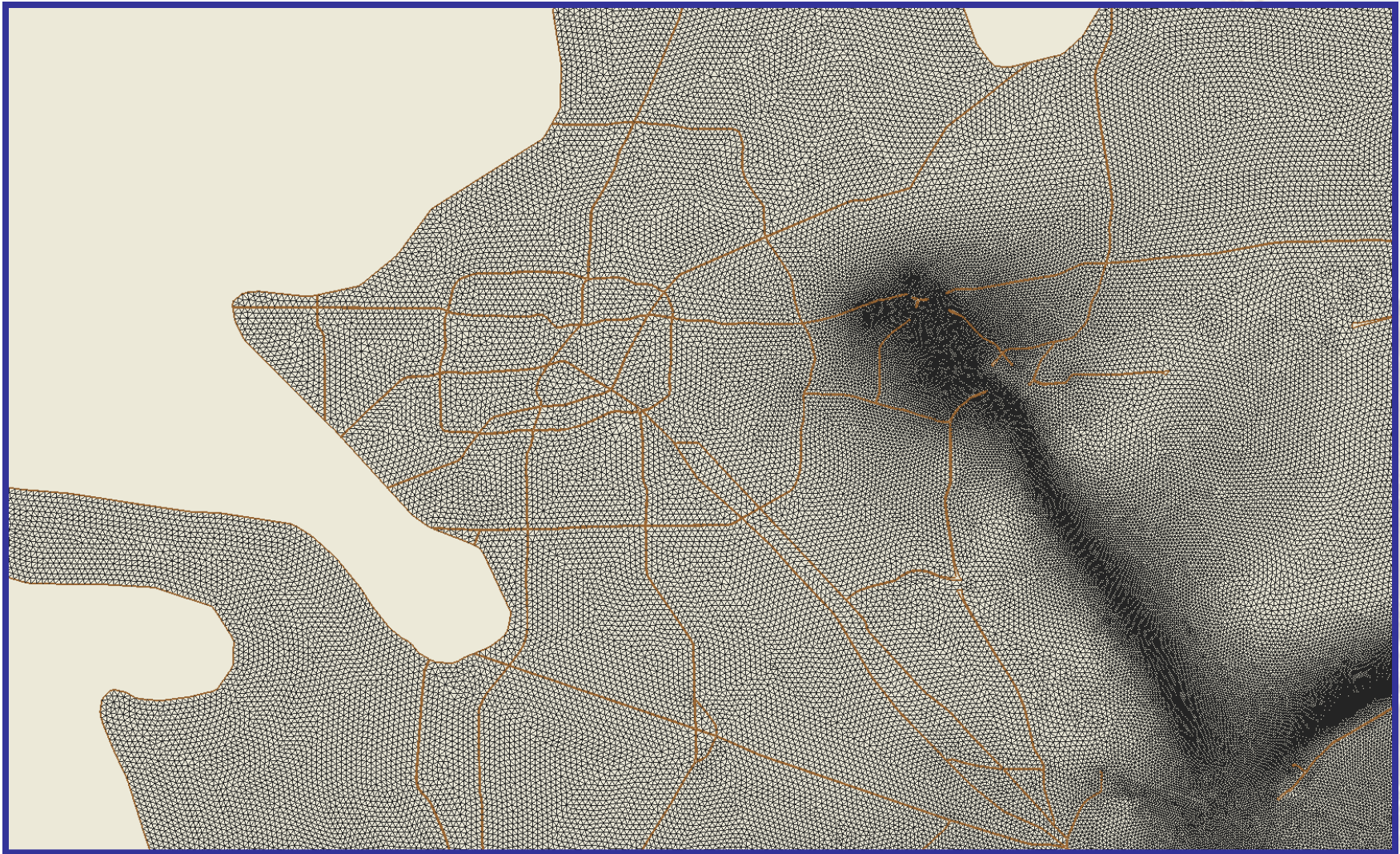# Model Development

TF02 Bathymetry

Model Development

TF02 Grid

Model Development
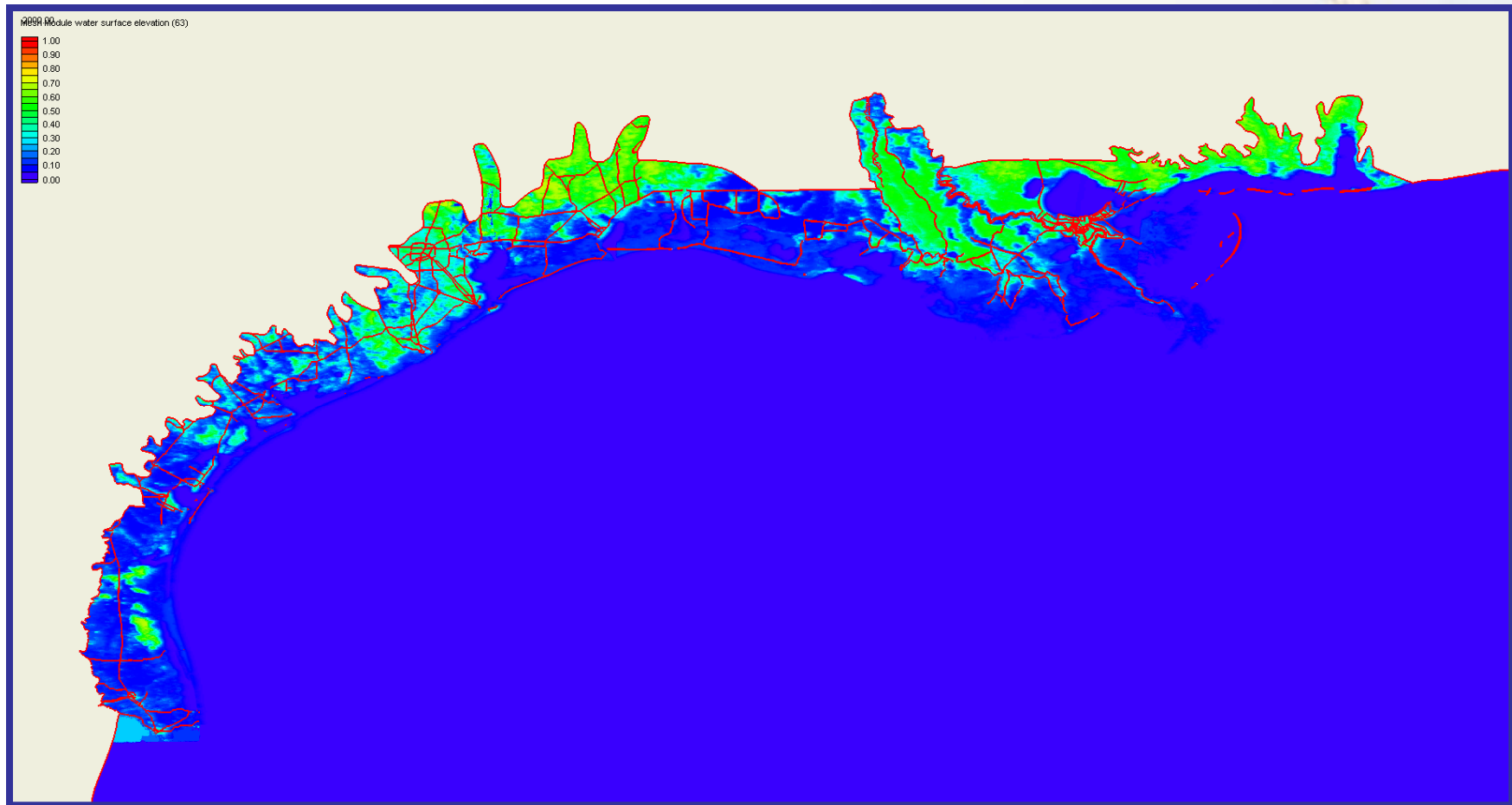
TF02 Bathymetry Close-Up

Model Development

TF02 Grid Close-Up

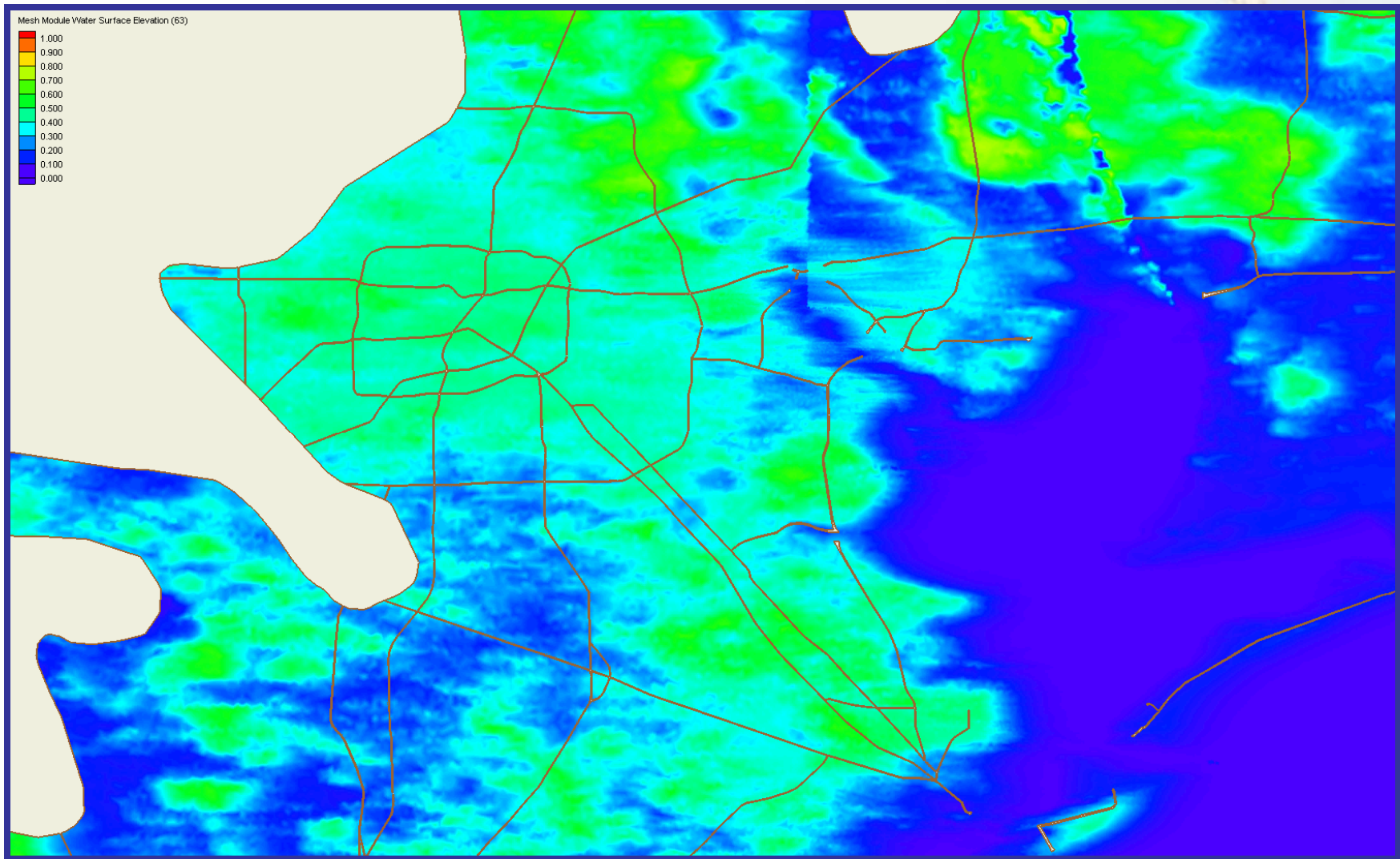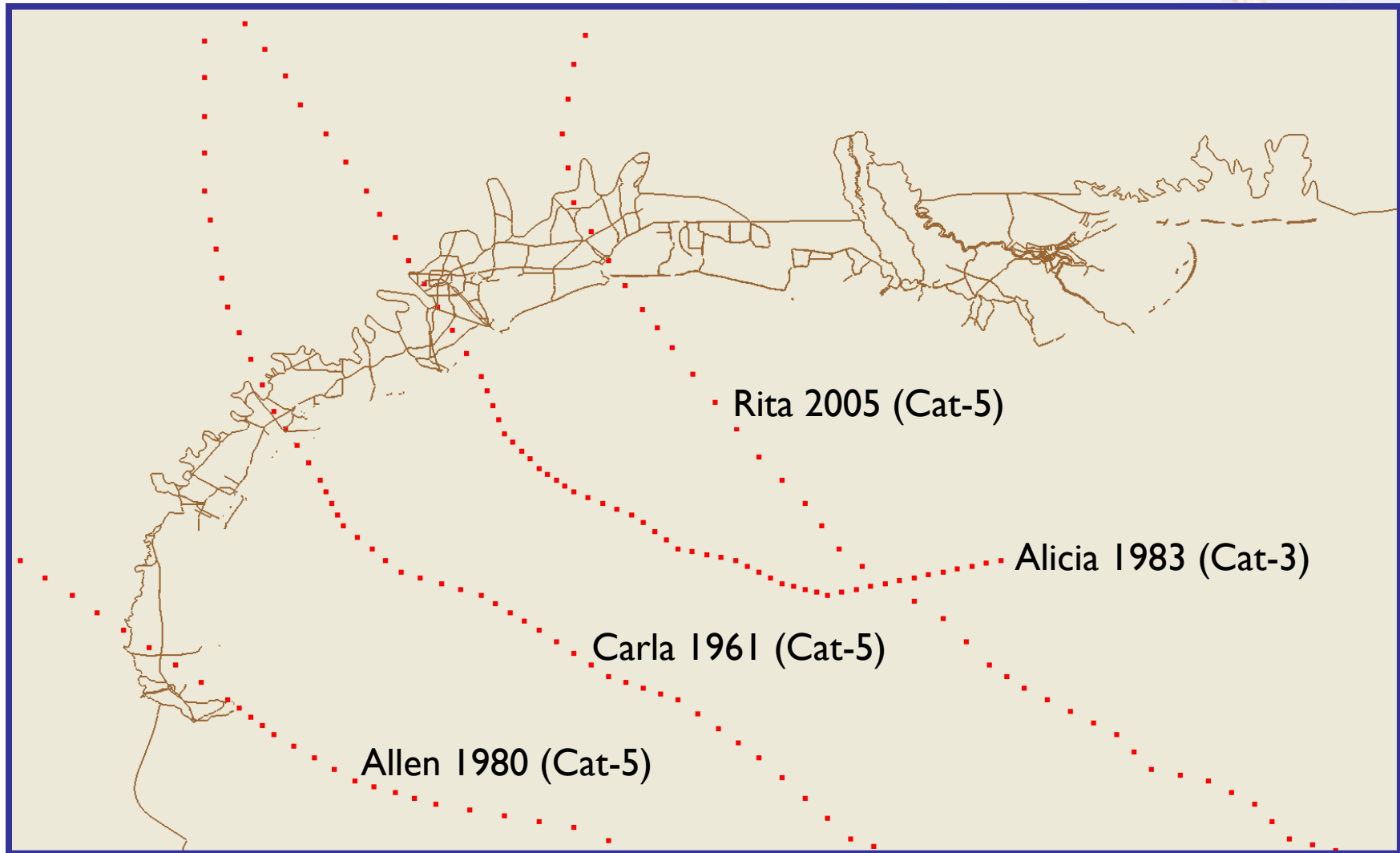# Model Development

Wind Reduction Factors

Model Development

Wind Reduction Factors Close-Up

Model Validation

Hurricane Tracks

Rita 2005 (Cat-5)

Alicia 1983 (Cat-3)

Carla 1961 (Cat-5)

Allen 1980 (Cat-5)

Hurricane Rita

Quick Facts (http://en.wikipedia.org/wiki/Hurricane_Rita)

- Maximum winds: 175 mph
- Fourth-most intense Atlantic hurricane (897 mbar)
  - Most intense: Wilma 2005 (882 mbar)
  - Sixth-most intense: Katrina 2005 (902 mbar)
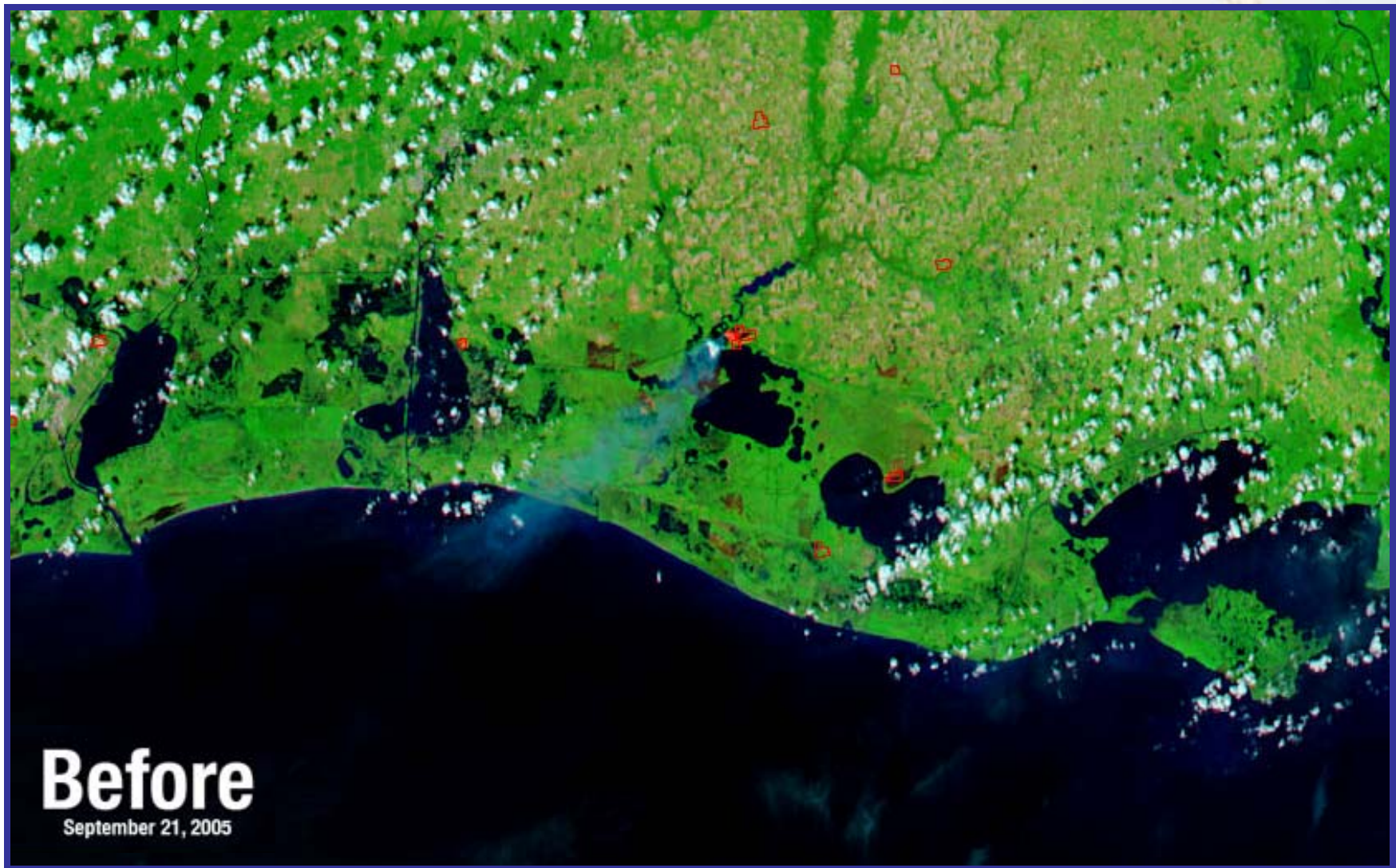- Landfall: September 24, 2006
  - Earliest 17th named storm
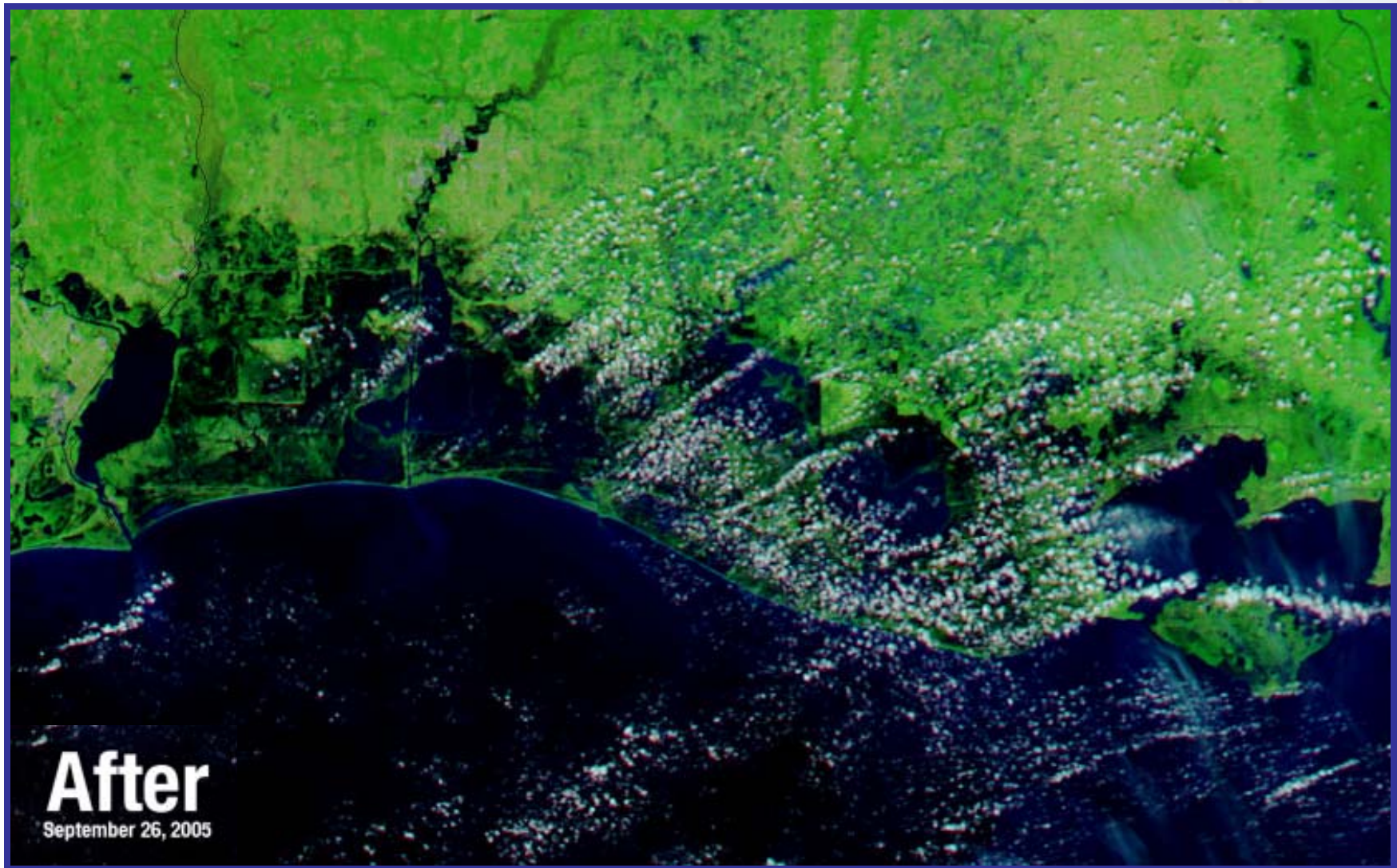
Hurricane Rita

NASA Satellite Movie (http://svs.gsfc.nasa.gov/vis/a000000/a003200/a003265/index.html)

Hurricane Rita

NASA Satellite Image (http://www.nasa.gov/vision/earth/lookingatearth/h2005_rita.html)

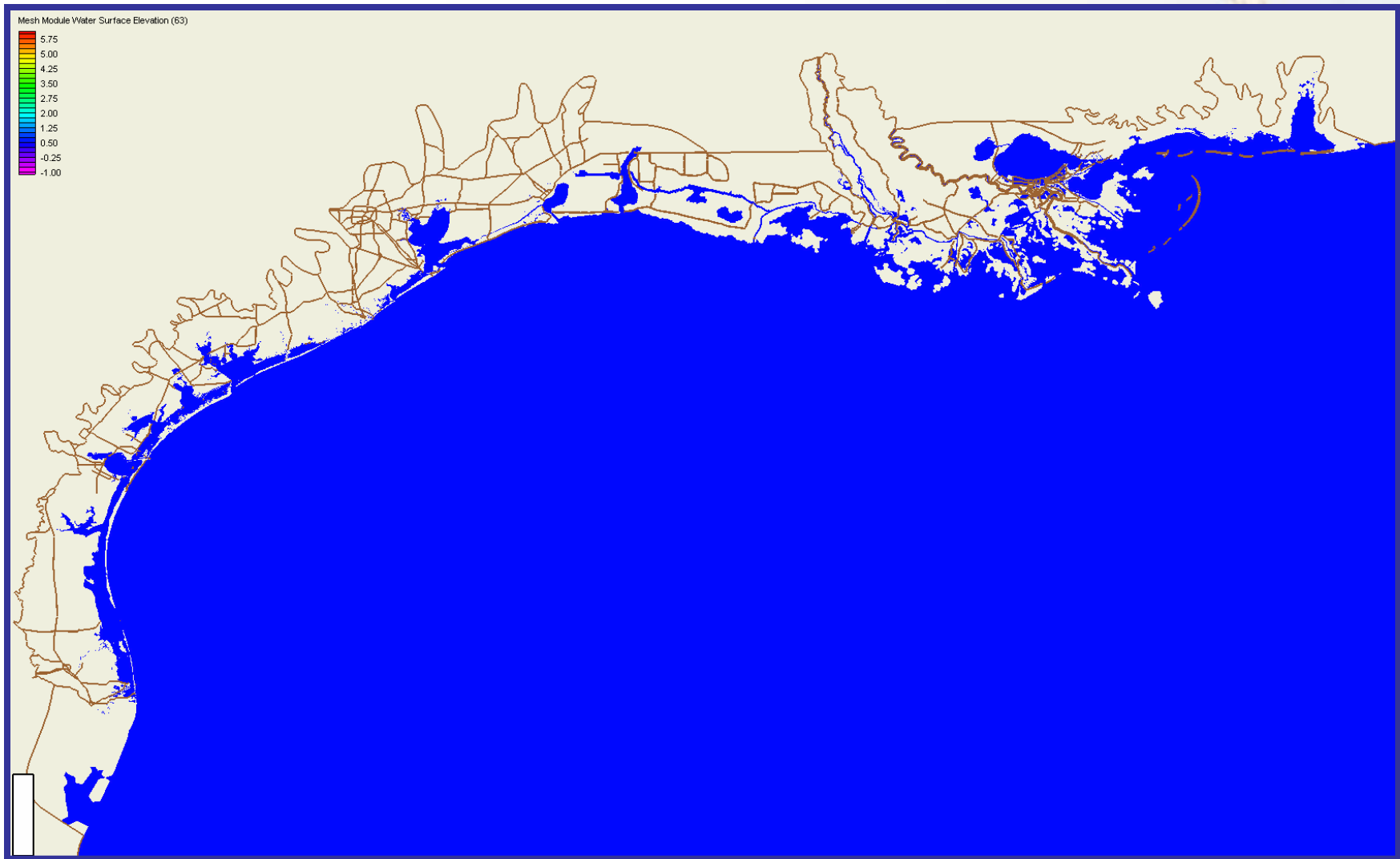
Before
September 21, 2005

Hurricane Rita

NASA Satellite Image (http://www.nasa.gov/vision/earth/lookingatearth/h2005_rita.html)
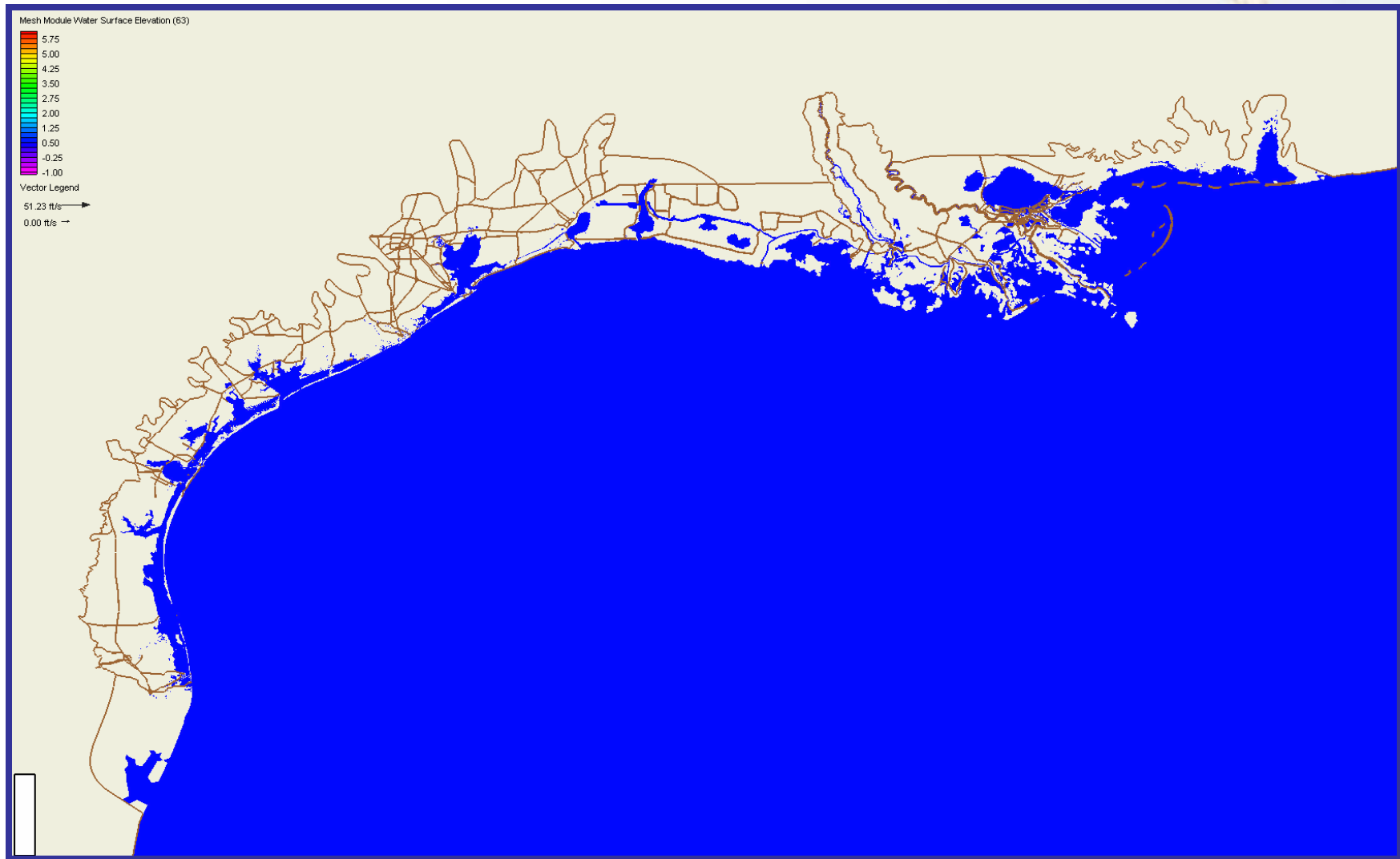
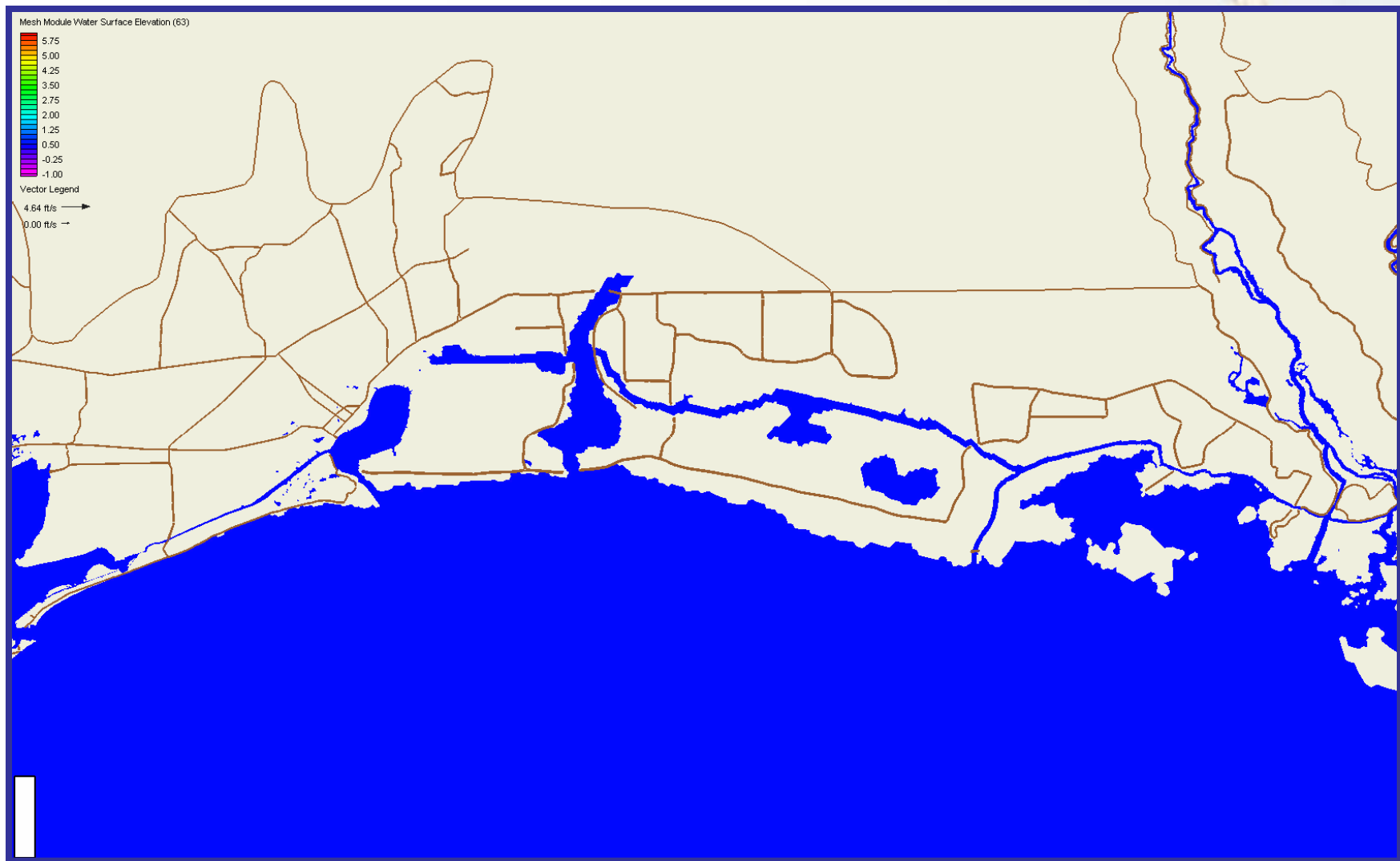# Hurricane Rita

ADCIRC Elevations

Hurricane Rita
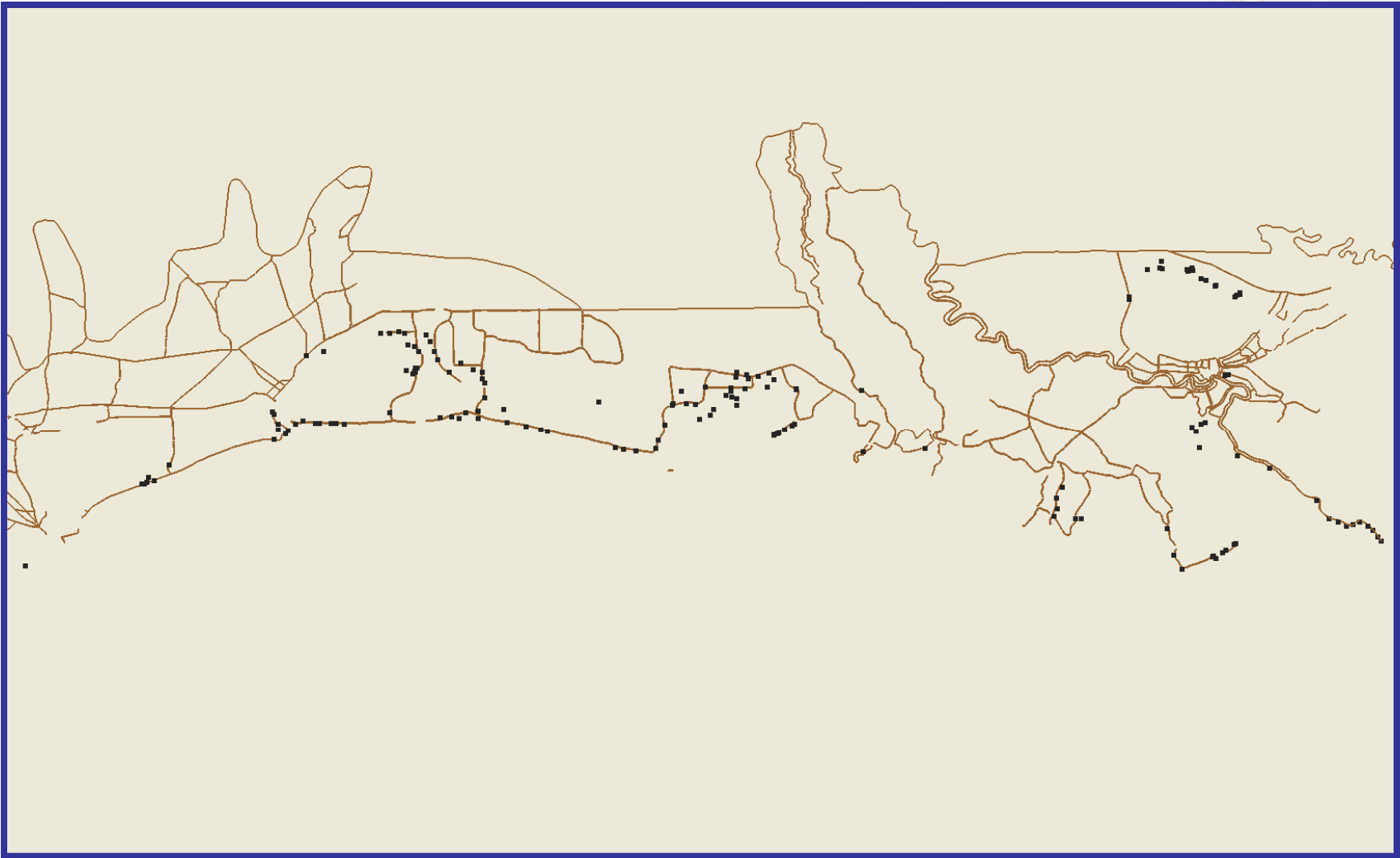
ADCIRC Elevations and Winds

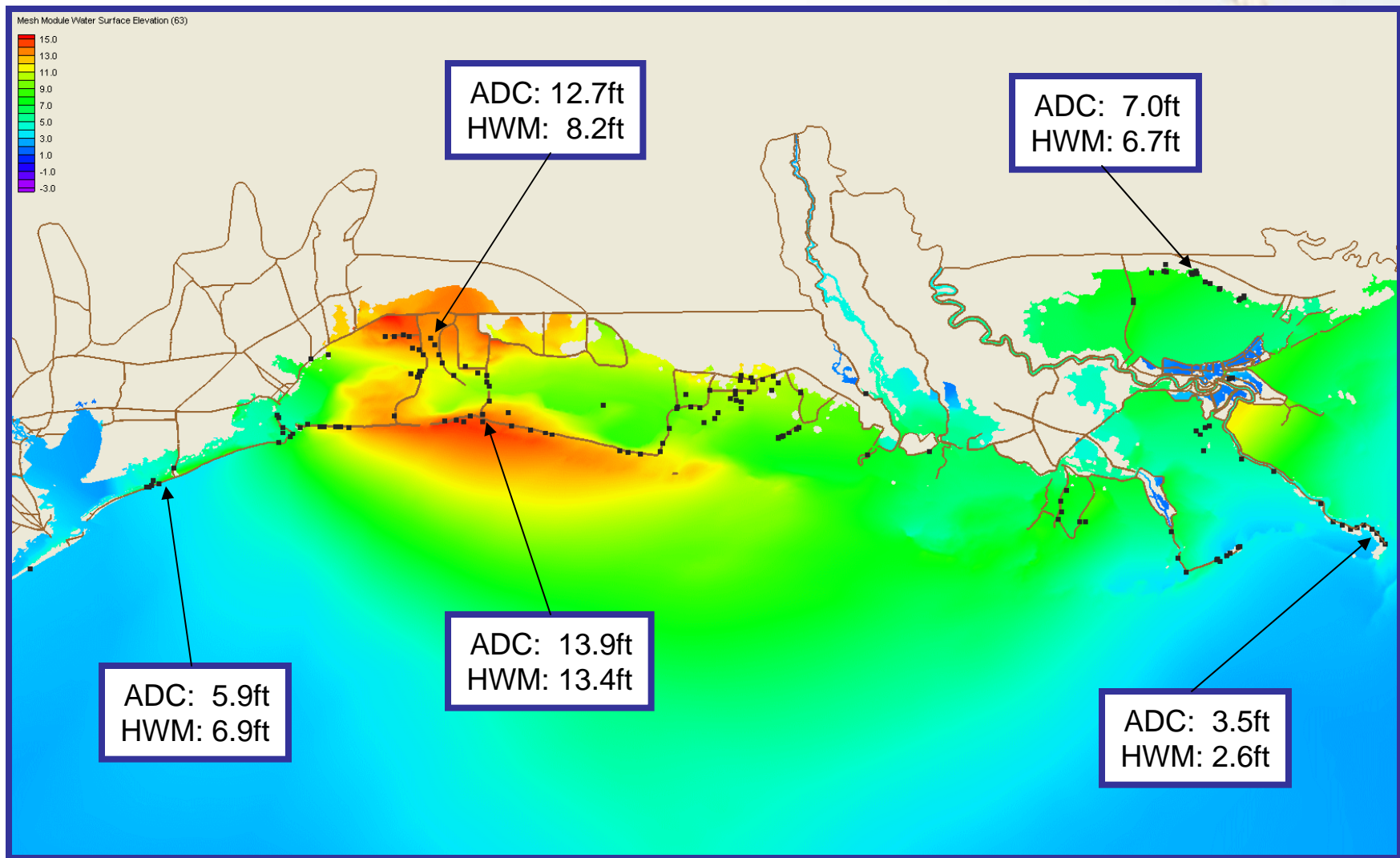# Hurricane Rita

ADCIRC Elevations and Velocities

Hurricane Rita

FEMA Station Data

Hurricane Rita

FEMA Station Data

To Be Continued…

Conclusions

- ADCIRC simulation of Rita 2005 is realistic
  - ☑ Need better wind reduction factors
  - ☑ Need better resolution near the TX-LA border

Future Work

- Model hurricanes Alicia 1983, Allen 1980, and Carla 1961
  - Is qualitative behavior realistic?
  - Does ADCIRC match the historical record?
- Share model with FEMA

Questions?