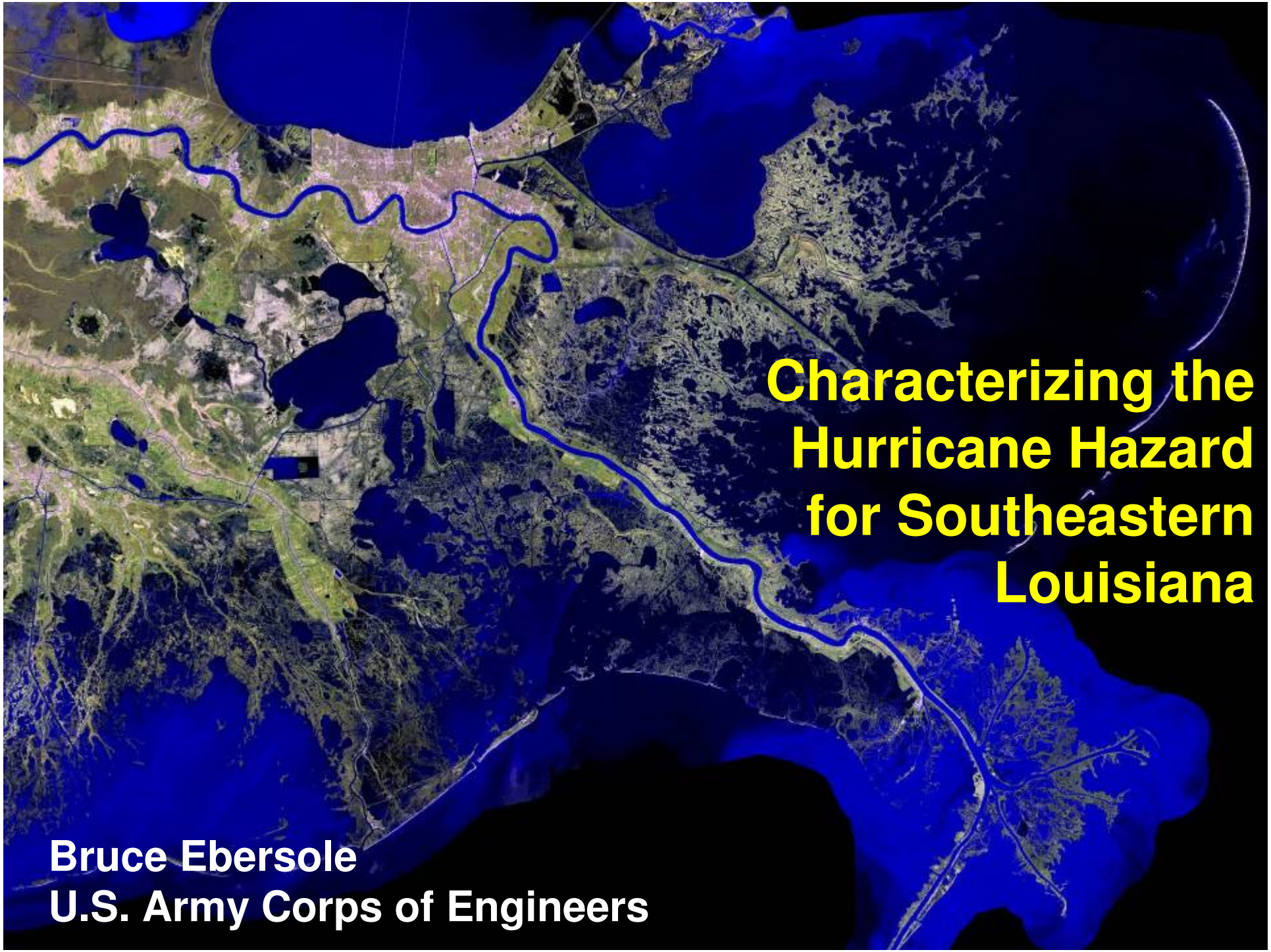

Characterizing the Hurricane Hazard for Southeastern Louisiana

Bruce Ebersole
U.S. Army Corps of Engineers

US Army Corps of Engineers

Steps

ERDC
US Army Engineer Research and Development Center

- Define what is possible – a set of hypothetical storms
- Estimate probabilities – storms and storm characteristics

  (central pressure – maximum wind speed, radius-to-maximum winds, track, forward speed, etc.)
- Apply wind, storm surge and wave models to compute responses
- Compute frequency of occurrence and uncertainty estimates

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Severe Hurricane Tracks

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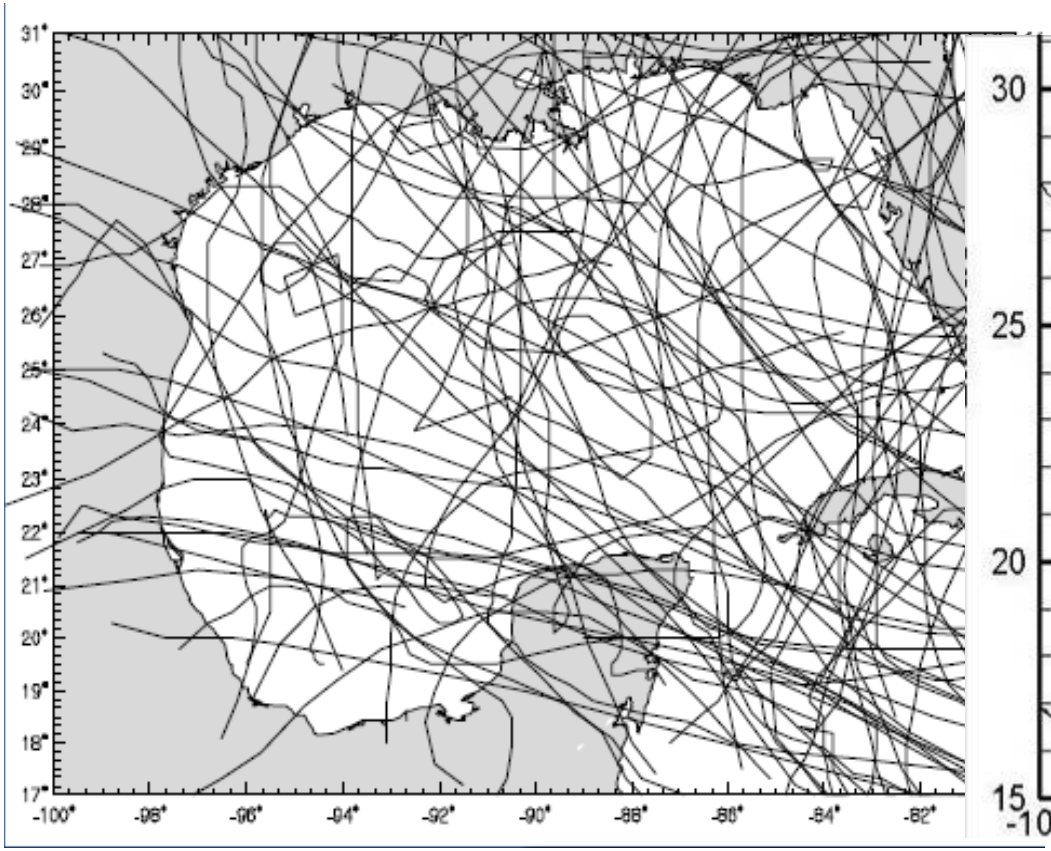
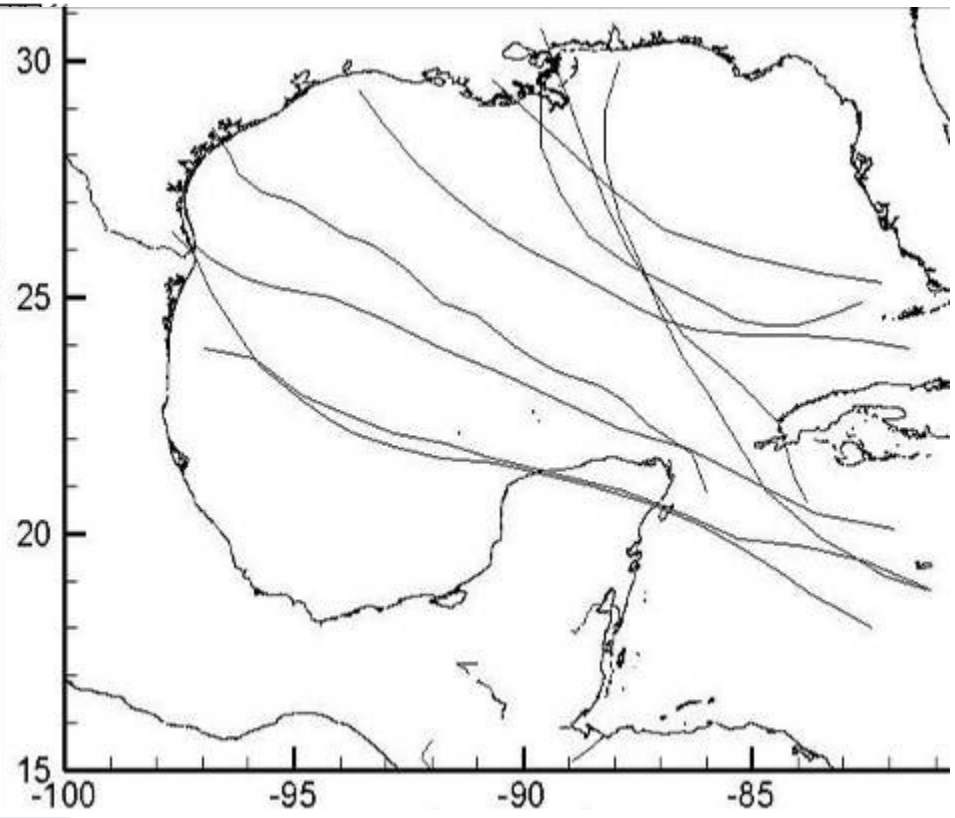
Cat 2 and greater intensity hurricanes



Upper Cat 4 and Cat 5 intensity hurricanes (125 knots and greater)



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Severe Hurricane Probability

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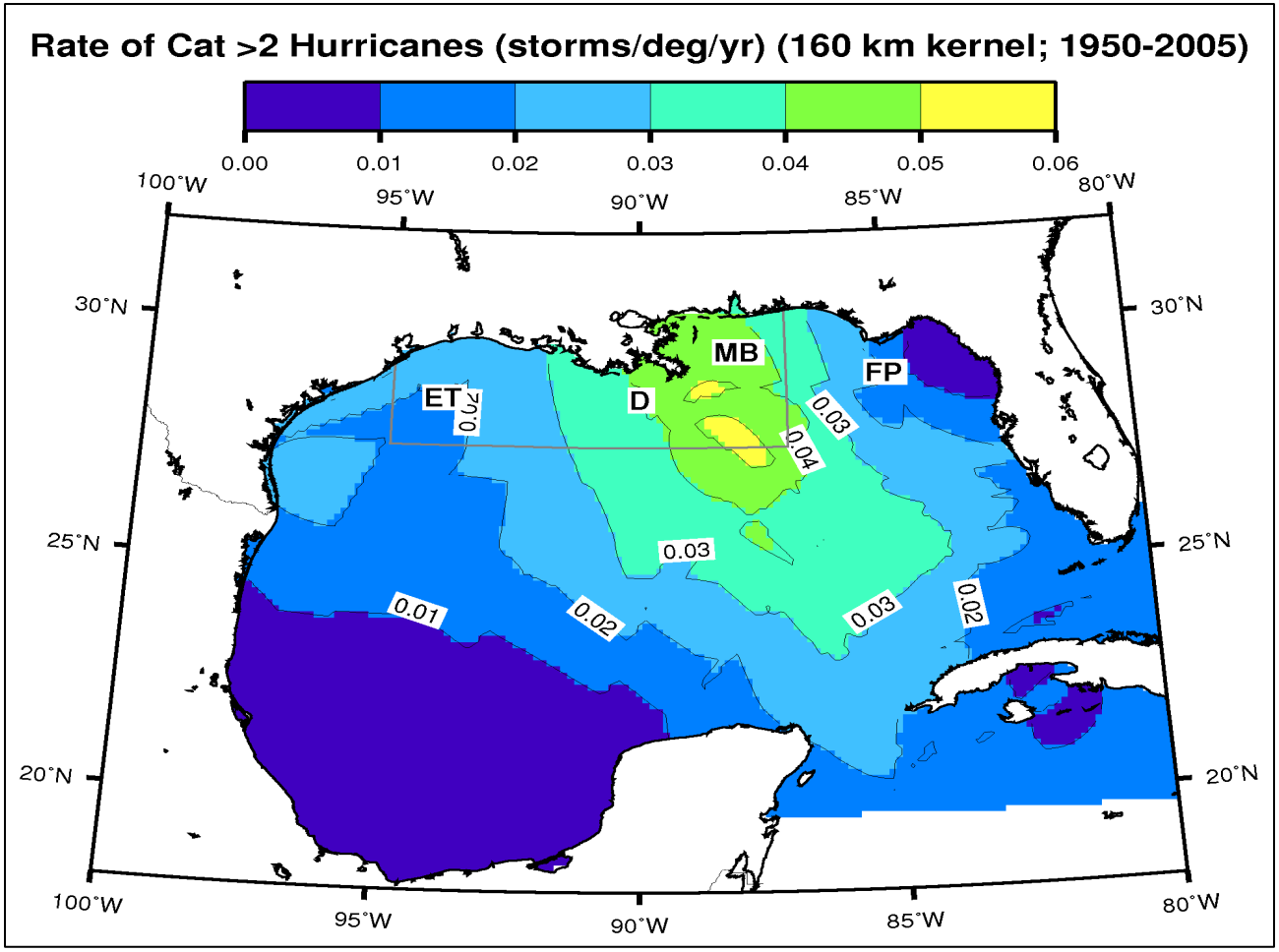

Major hurricane probabilities are not spatially homogeneous.

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Intensity Decay Near Landfall

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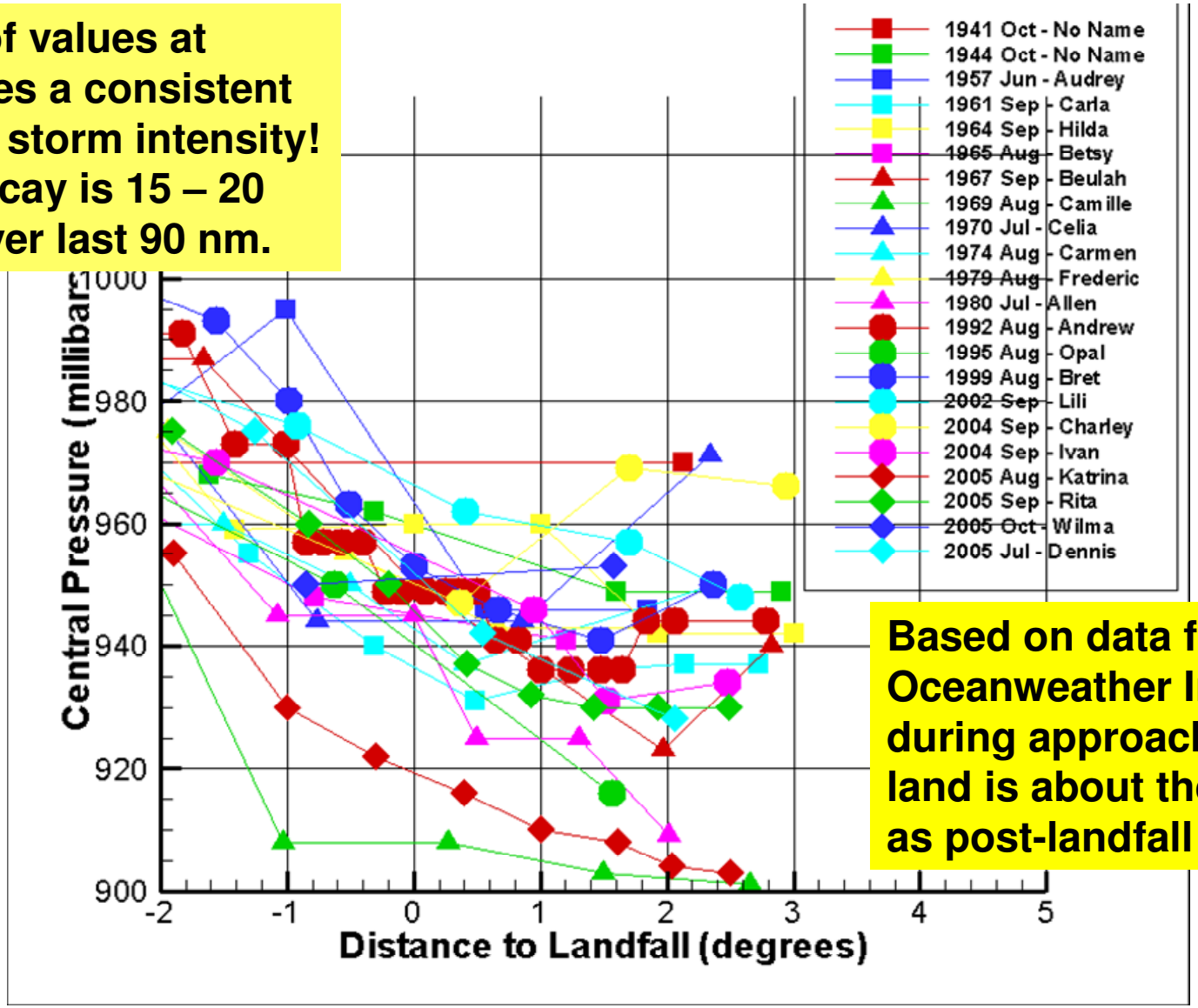
Definition of values at landfall gives a consistent measure of storm intensity! Average decay is 15 – 20 millibars over last 90 nm.



Based on data from Oceanweather Inc., decay during approach to land is about the same as post-landfall decay.

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Definition of Hypothetical Storms

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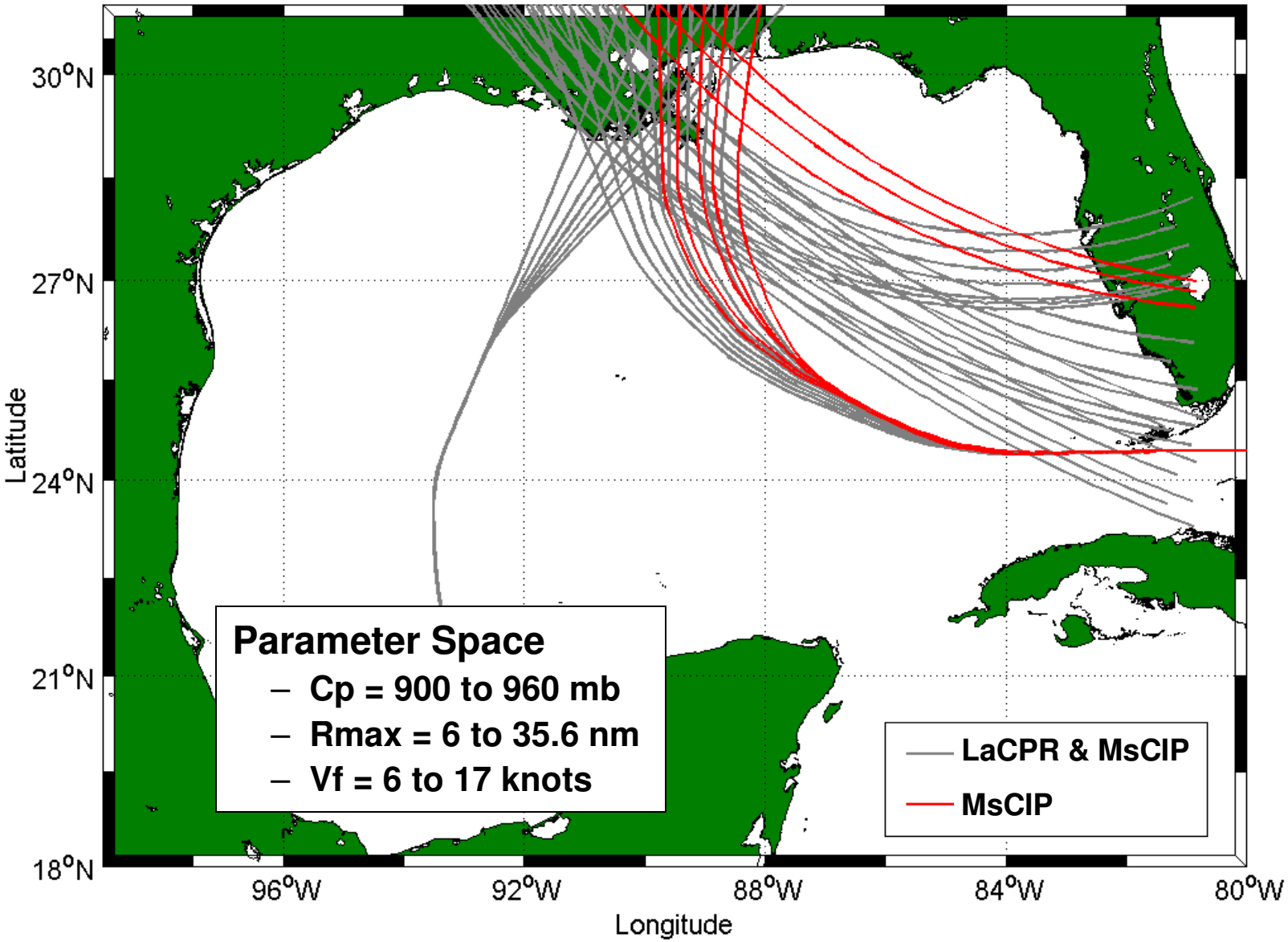
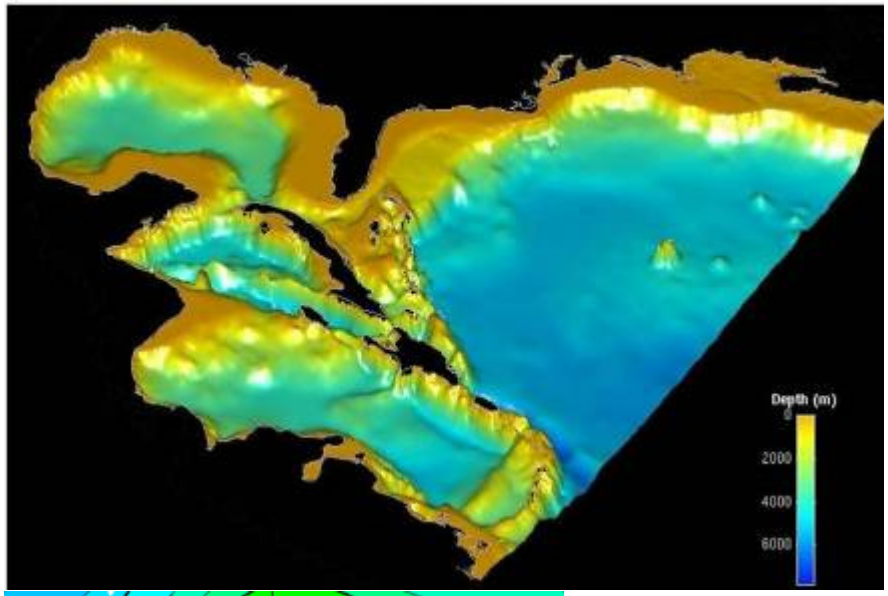
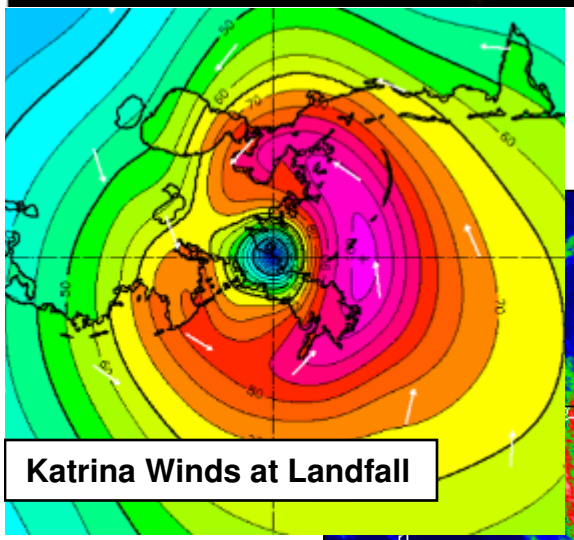
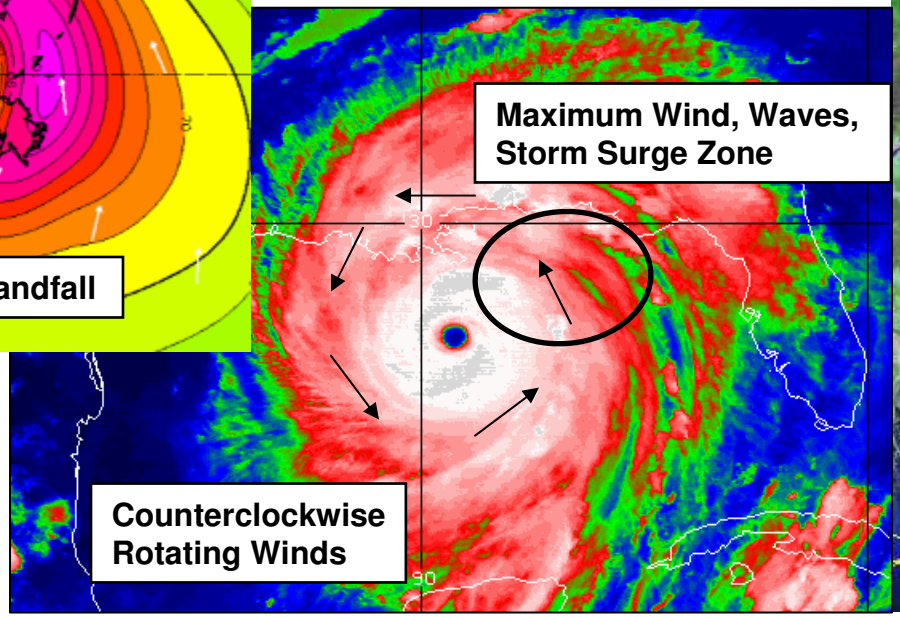


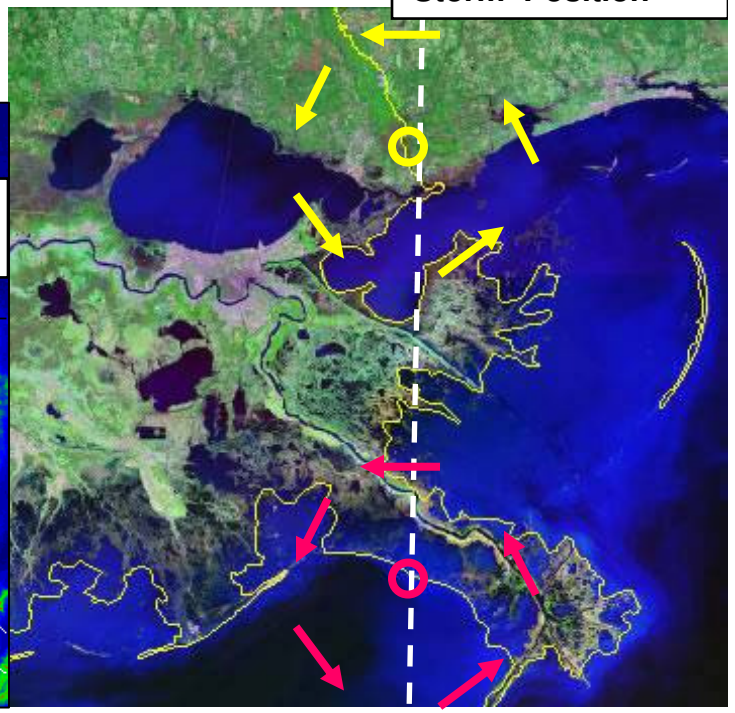
Key Contributors to Storm Surge



- Wind Speed/ Direction
- Topographic Controls
- Short Wave – Momentum Transfers
- Atmospheric Pressure







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Modeling Methodology

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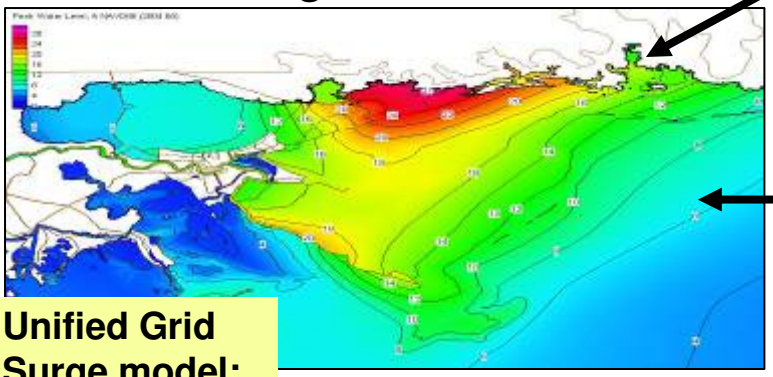
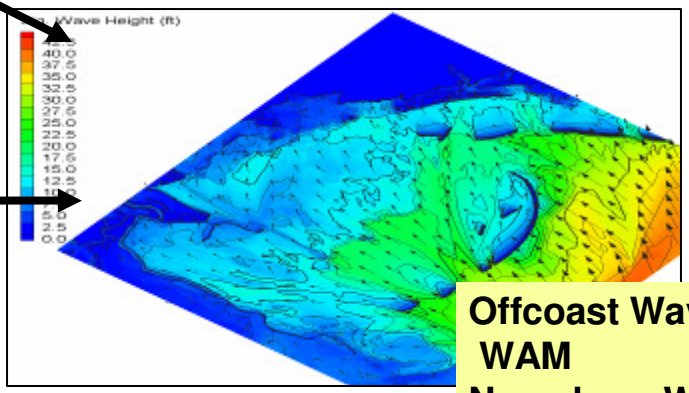
Surge Model



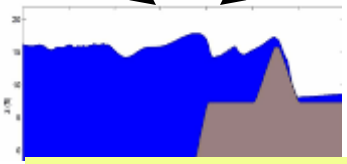
Unified Grid Surge model: ADCIRC

Coupling

Wave Models



Offcoast Waves: WAM
Nearshore Waves: STWAVE



Local Scale Waves: Boussinesq - Parametric

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Water Levels – 1% Chance Exceedance
LaCPR Planning Unit 1

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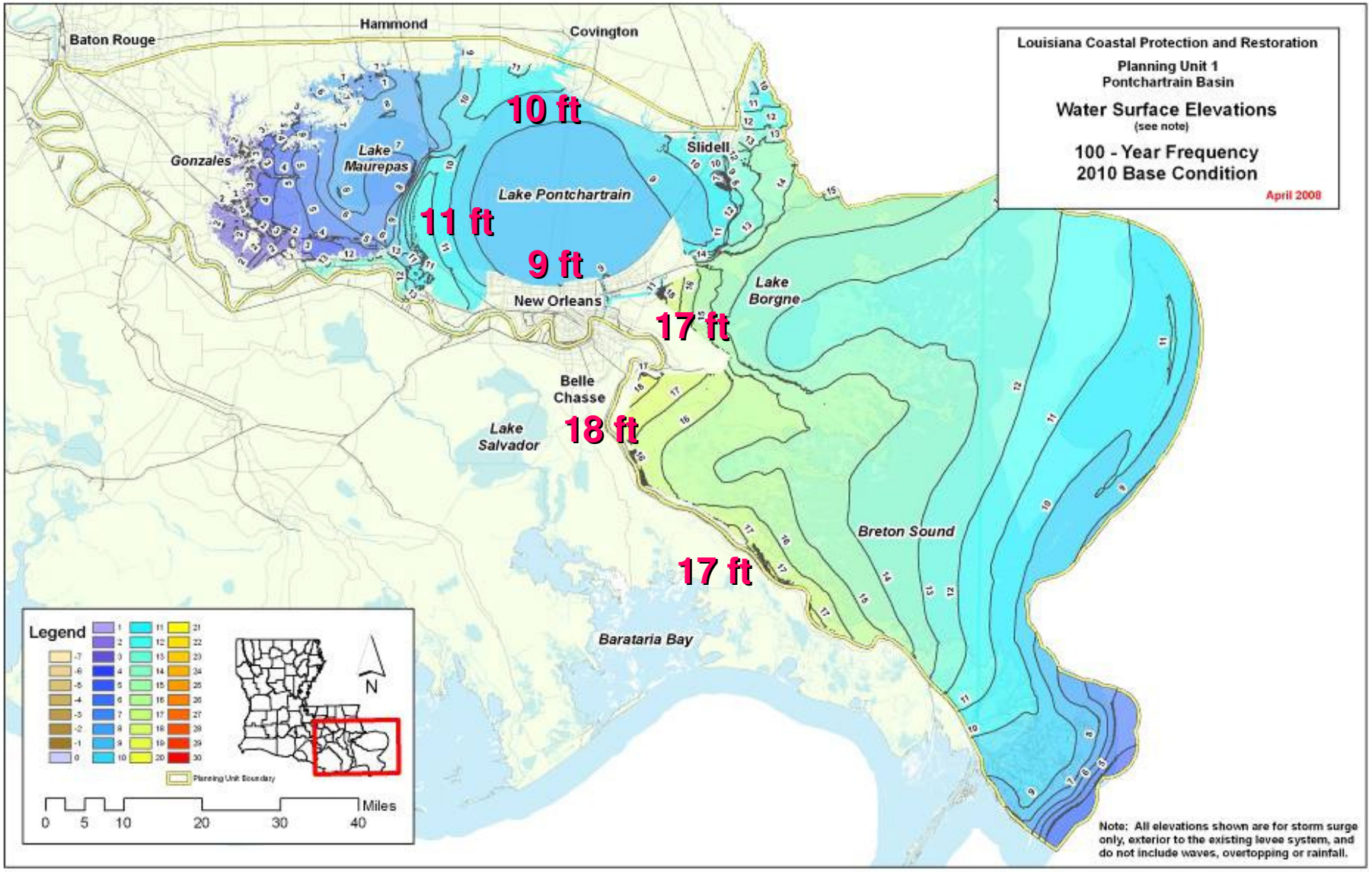

One Team: Relevant, Ready, Responsive, Reliable

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Water Levels – 1% Chance Exceedance
LaCPR Planning Unit 2

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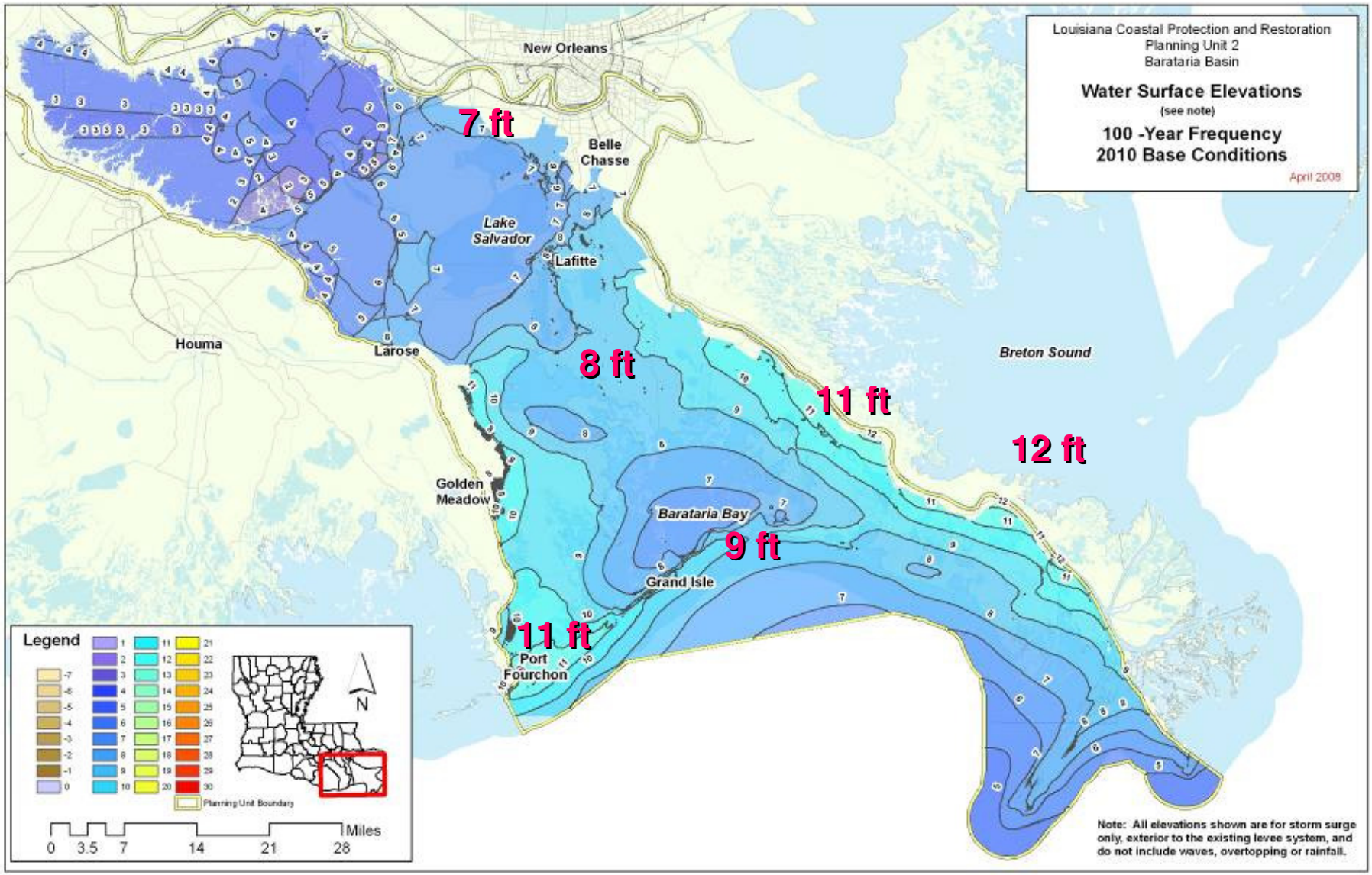

One Team: Relevant, Ready, Responsive, Reliable


Questions?