# Nearshore Waves During Hurricane Gustav

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# Motivation

- Intensive wave and surge modeling following Hurricane Katrina, but limited validation
- Post Katrina
  - Validation at NDBC buoys
  - Validation (?) in Lake Pontchartrain
  - Validation west of the storm (LSU gauges)
- No Validation in wetlands
  - Placed gauges in 2006, but no storm
  - Prior to Hurricane Gustav 2008
    - Notre Dame gauges
    - ERDC gauges



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# Summary

- Finally...some wave measurements in wetlands
- Measurements:
  - Reduction of wave height in wetlands
  - Very short periods ~ local generation
- Modeling:
  - No calibration
  - Preliminary winds
  - Phasing and amplitude errors in surge
  - H<sub>mo</sub> comparisons
    - 15-20 percent positive bias at peak at outer gauges
    - 0-45 percent negative bias in H<sub>mo</sub> at inner gauges
    - Phasing errors at inner gauges due to surge
  - T<sub>p</sub> comparisons:
    - 1-2 sec positive bias at outer gauges
    - 1-4 sec positive bias at inner gauges
  - Waves in marshes are very sensitive to correct bathymetry, marsh degradation and surge



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### **New Orleans & SE Louisiana**

**Mississippi Sound** 

#### Lake Pontchartrain

East Orleans Lake Borgne

New Orleans St. Bernard

Plaquemines

Caernarvon Marsh Biloxi Marsh

> Breton Sound

> > Chandeluer Islands





rps rs



orps ers







## ERDC and Notre Dame Deployment Sites

NOIT

AD14 AD13 AD13

0 ~ 12

ND17

6

ND12

EHL10514

G

NDE

5

AND 9

 $\bigcirc$ 

AND 1









#### Wave Height (m)



ps

S

## **ERDC** and Notre Dame **Deployment Sites**

ND17



AND 1

#### Caernarvon Marsh Outer

Inner



#### Biloxi Marsh Outer

Inner



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