# Shelf sediment transport during hurricanes Katrina and Rita

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Case study

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## **Objective and Model Setup**

- To study seabed erosion and deposition during hurricanes
- Regional Ocean Modeling System(ROMS) and Community Sediment-Transport Modeling System (CSTMS)
- Based on Xu et al.(2011. CSR)
- Compare model with observation using radionuclide and xradiographic methods from Goni et al. (2007)
- Sensitivity tests of model to settling velocity, critical shear stress and erosions rate



## Wind Speeds



#### Wave Heights









## Conclusions

- Hurricane Katrina followed a shelf-perpendicular track before making landfall and its energy dissipated rapidly within about 48 h. In contrast, Hurricane Rita followed a more shelf-oblique track and disturbed the seabed extensively during its 84-h passage.
- Conditions to either side of Hurricane Rita's storm track differed substantially, with the region to the east having stronger winds, taller waves and thus deeper erosions.
- Major hurricanes can disturb the shelf at centimeter to meter levels. Each of these two hurricanes suspended seabed sediment mass that far exceeded the annual sediment inputs from the Mississippi and Atchafalaya Rivers.