

STORM SURGE MODELING IN WATERSHED PLANNING

TWO CURRENT OPTIONS

- SLOSH

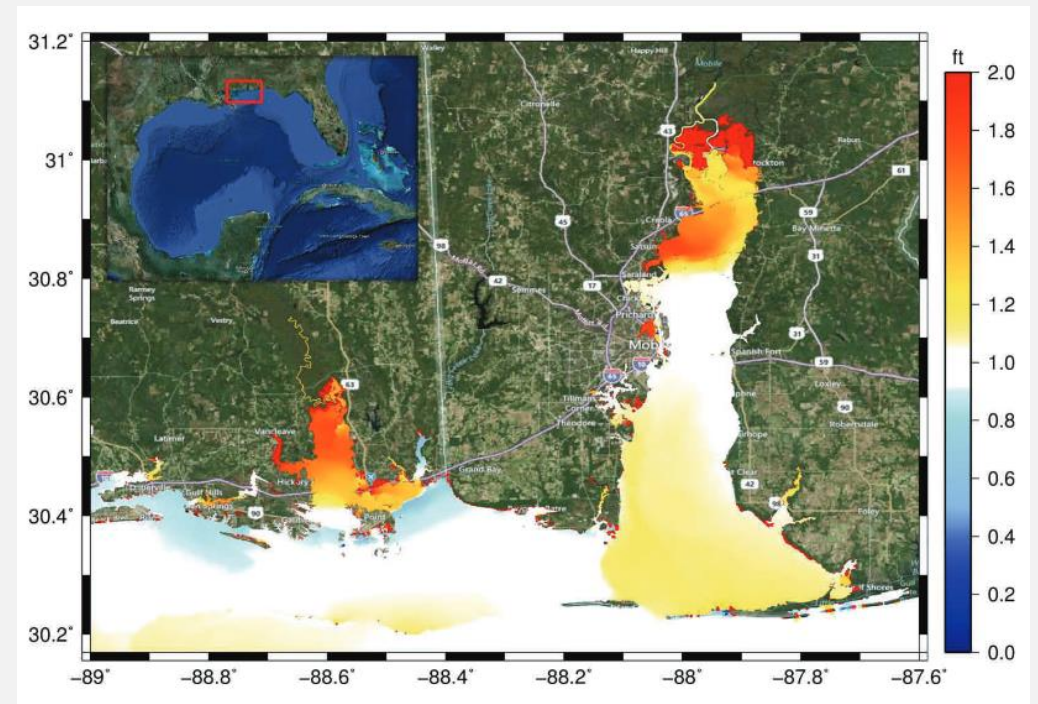
- Model has been tested extensively and used widely
- Model domain is limited
- Resolution is limited (0.5 -7km)
- Difficult to simulate convoluted shorelines
- Tide and wave set up not included
- Difficult to incorporate features that block or accelerate storm surge flooding
- Capacity to model overland flooding

- ADCIRC

- Model domain is extremely flexible
- Resolution can reach finer than 50×50 m
- Very good to simulate convoluted shorelines
- Model includes tide, but no wave setup yet
- Flexible to incorporate features like highways and canals
- Capacity to model overland flooding
- Requires expertise
- Requires high amount of computing power

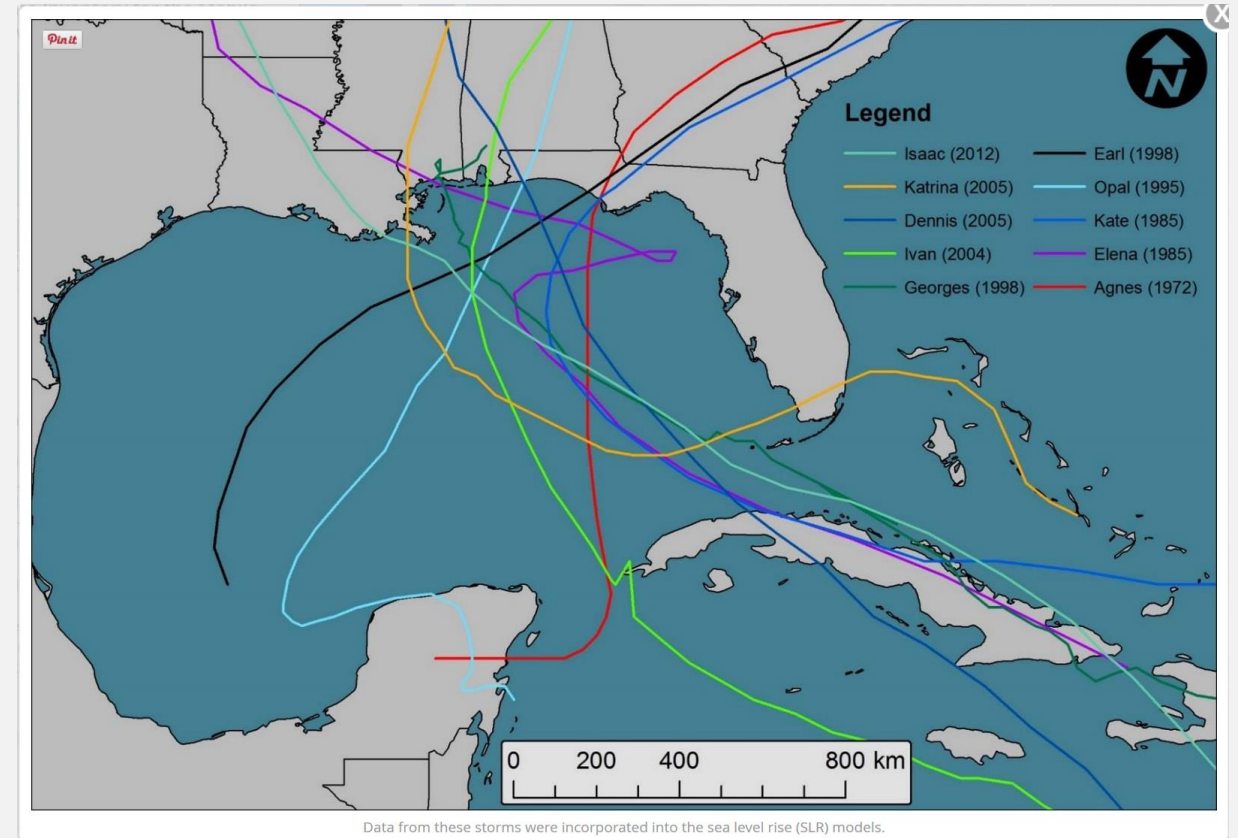
AVAILABLE OPTION: DYNAMIC MODELING

- Ecological Effects of Sea Level Rise (EESLR)
- Already run for entire Gulf Coast
- ADCIRC +
 - Population dynamics
 - Waves AND tides
 - Enhanced DEMs
 - Land use change
 - Dynamic SLR modeling
 - Dynamic habitat response



BIT MORE DETAIL

- 5 Scenarios
 - Present Day
 - Low (0.2 m by 2100)
 - Intermediate-low (0.5 m by 2100)
 - Intermediate-high (1.2 m by 2100)
 - High (2.0 m by 2100)
- MOM
- 10x10m grid cell
- <http://noaa.maps.arcgis.com/apps/MapJournal/index.html?appid=964181e11b4d4736ac85d7ecd33104ab>



THOUGHTS ON MOVING
FORWARD WITH EESLR MODEL?

ADDITIONAL LITERATURE

- <https://coastalscience.noaa.gov/projects/detail?key=162>
- Bilske et al 2016 *Earth's Future*
- Bilske et al 2015 *Advances in Water Resources*

A story map



EESLR NGOM Data Inventory for the Mobile Bay Watershed Management Plan

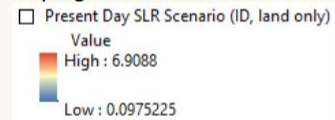
For each sea level rise scenario, data were aggregated across all 10 storms and for each 10 x 10m grid cell area the maximum storm surge value was selected.

Storm Surge Models: Present and High (+2m)

describe storm surge... present - high SLR scenarios

Shown at right are the compilation of maximum storm surge predictions for present day (left) and High (right) sea level rise scenarios.

Map legend (in meters):



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Try this:

Slide the bar to see the differences in each sea level rise scenario for Mobile Bay.

Click on the grey HUC12 areas to identify which hydrological unit the data fall within.

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Percent Storm Surge Inundation

To quantify the extent of storm surge, the storm surge maximums in the previous section were aggregated by HUC12 units. The percent of each HUC12 covered with storm surge data were calculated. Percent storm surge

