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# Savannah Harbor Expansion Project

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# Update on Hurricane Surge Modeling



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## Background

- Hurricane surge dataset developed by ATM
- Based on data from USGS gage, Charleston, SC
- Hurricane Hugo, Sep 1989, Cat 4 storm
- Surge component separated from harmonic tide
- Max surge component = 7.69 feet
- Dataset ratioed to create synthetic peaks of 5, 10, and 15 feet.



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# Background

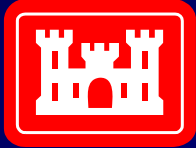
- Aug 18 – 23, 1997 selected as tidal boundary condition at Savannah
  - 1997 closely represents historic ave flow condition
  - August is close to peak hurricane season
  - Spring tide occurred on August 19



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# Model Limitations

- EFDC model grid not formed with emphasis on storm surge calculations
- Does not include full land area inundated during hurricane
- Offshore topography of Charleston and Savannah is not similar
- No attempt to account for variables such as atmospheric pressure, wind, storm speed, direction



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# Findings

- Existing depth compared to 48 ft deepening (worst case)
- Max predicted increase in surge height is 0.9 ft, occurring near I-95 bridge



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## Other methodologies

- SLOSH (Sea, Lake, and Overland Surges during Hurricanes)
  - Used by CEMA to predict hurricane inundation limits
  - Better represents hurricane surge flooding because it incorporates overland flooding
  - SLOSH model grid is too coarse to enable representation of a deepened navigation channel



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## Other methodologies

- Chatham County LIDAR data
  - It was suggested that surge predicted thru other models could be more accurately mapped.
  - The max surge increase predicted by EFDC, 0.9 ft, is less than the accuracy of the LIDAR data, 1.0 foot, therefore results would not be reliable

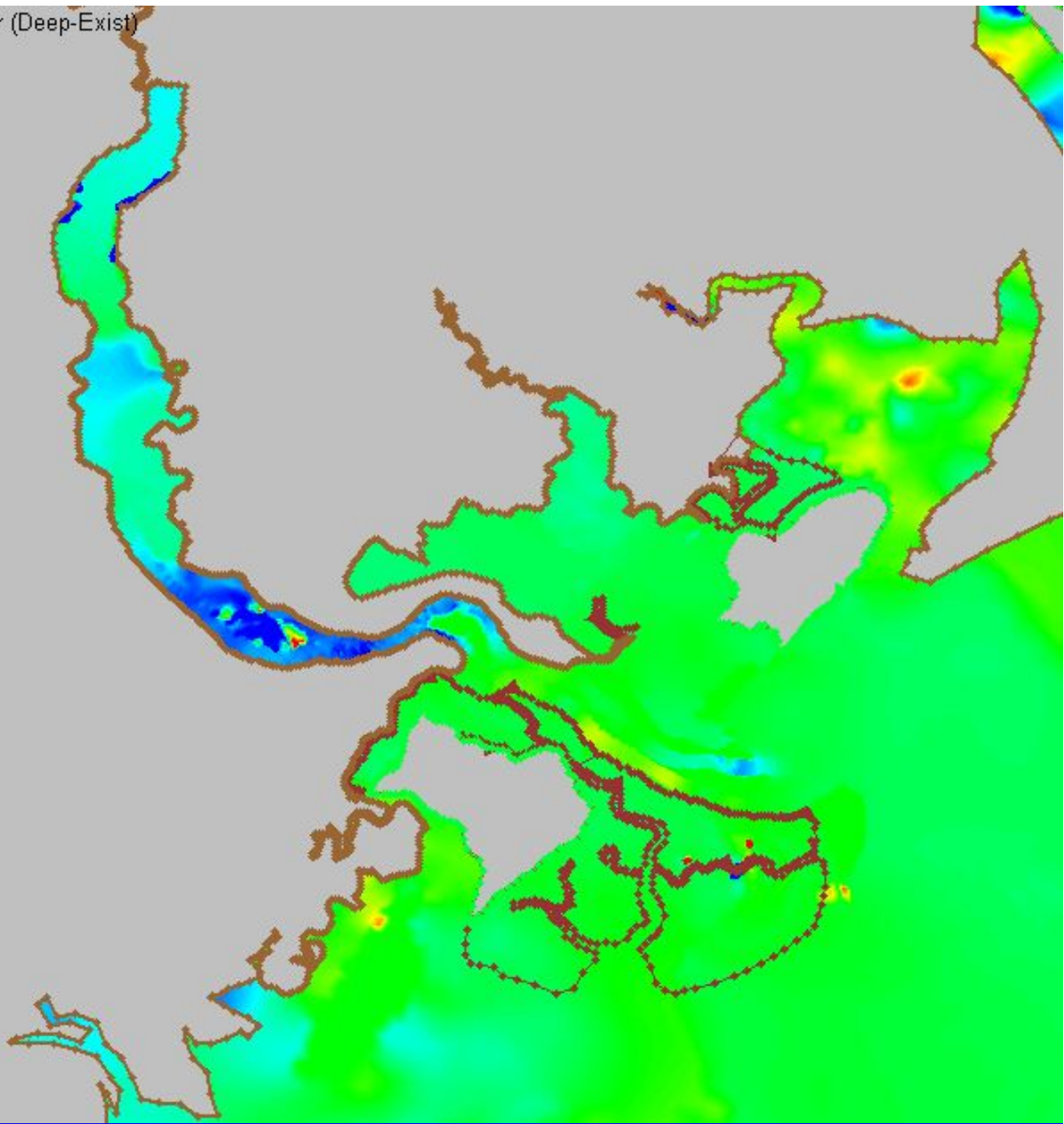
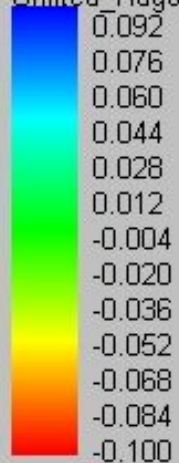


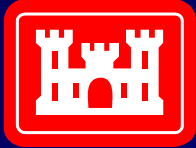
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## Other methodologies

- ADCIRC model
  - Developed to assist with sedimentation and sand movement study
  - Used extensively in hurricane storm surge predictions
  - ADCIRC predicts less impact than EFDC
    - 0.33 ft vs 0.9 ft
    - As expected, due to storage provided by land areas

Shifted\_Hugo\_Difference in WSE in Meters for (Deep-Exist)





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## Conclusion

- Due to the relatively minor impact on hurricane surge elevations, it is not expected that hurricane surge will be a factor in selecting a mitigation plan