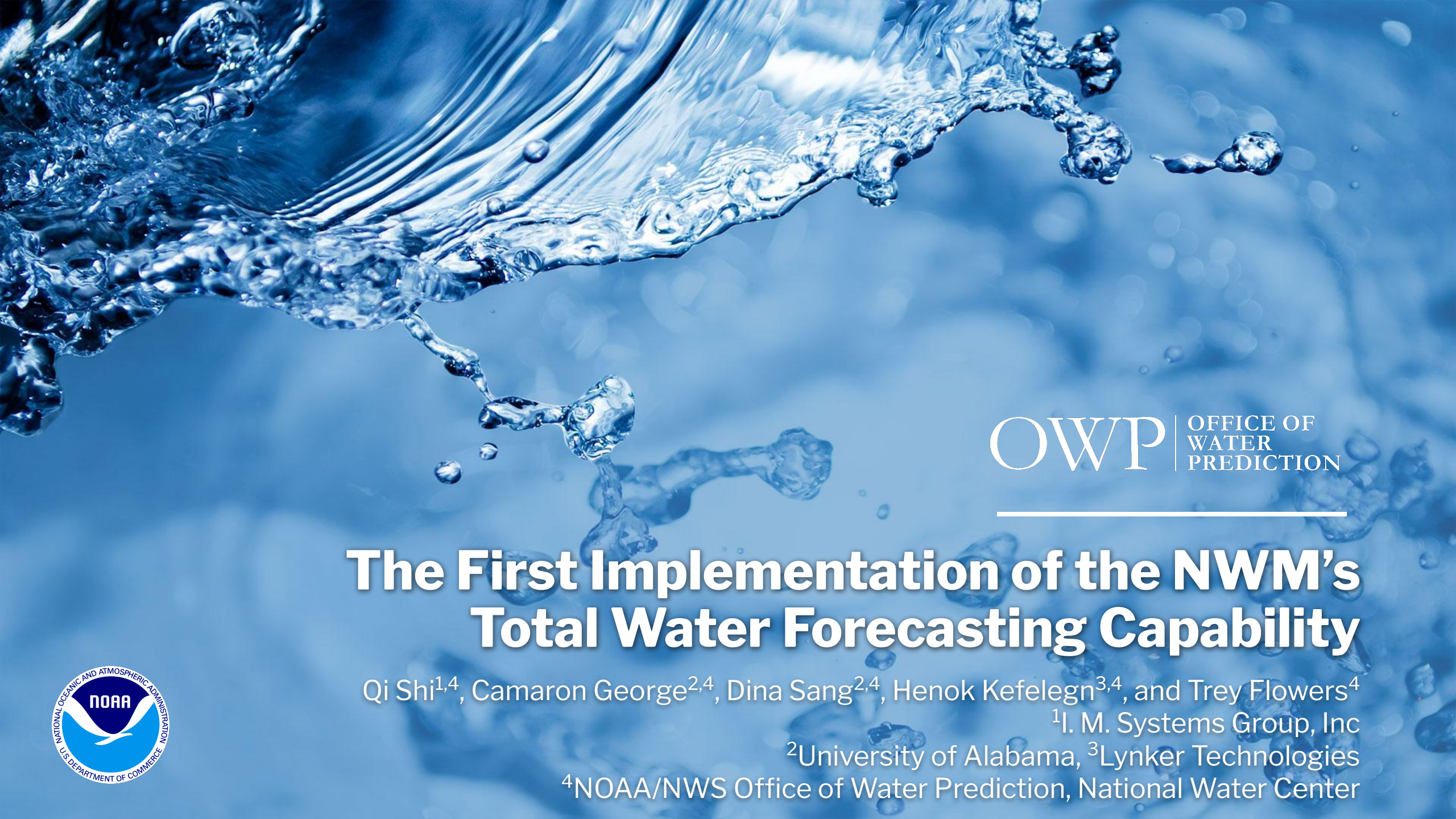


OWP | OFFICE OF WATER PREDICTION

The First Implementation of the NWM's Total Water Forecasting Capability

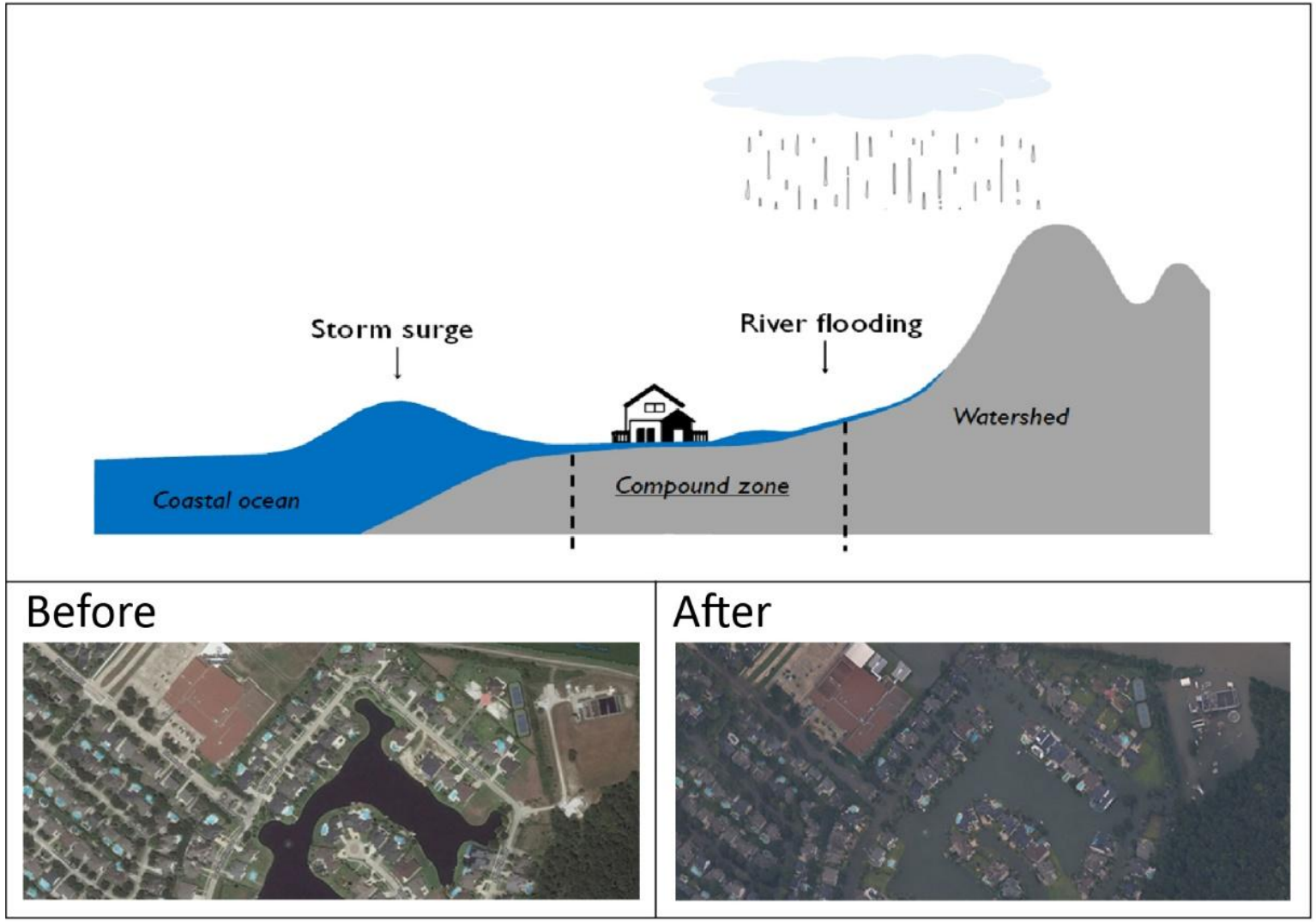
Qi Shi[1,4], Camaron George[2,4], Dina Sang[2,4], Henok Kefelegn[3,4], and Trey Flowers[4]
[1]I. M. Systems Group, Inc
[2]University of Alabama, [3]Lynker Technologies
[4]NOAA/NWS Office of Water Prediction, National Water Center

Introduction

- Coastal flooding posts increasing risk to the coastal community

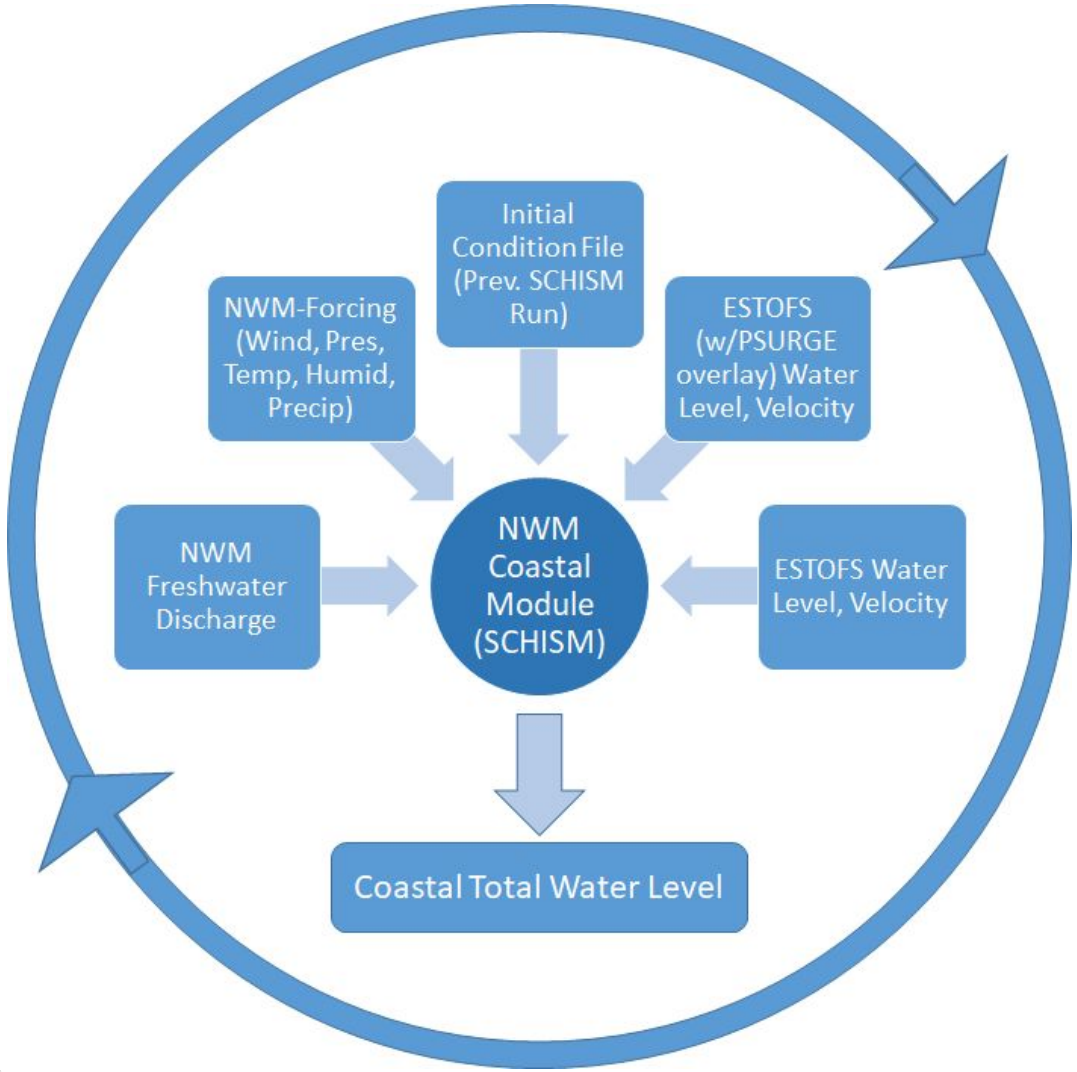
- Compound flooding
  -storm surge
  -heavy precipitation
  -river discharge

- Goal: Produce a coupled modeling strategy that will provide total water level prediction for the Nation Water Model (NWM)



Credit: NOAA Remote Sensing Division

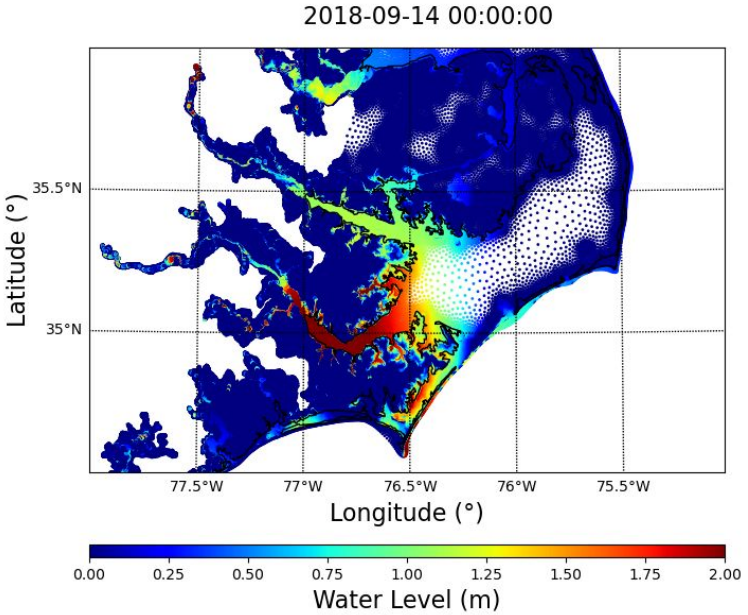
Coupling Framework

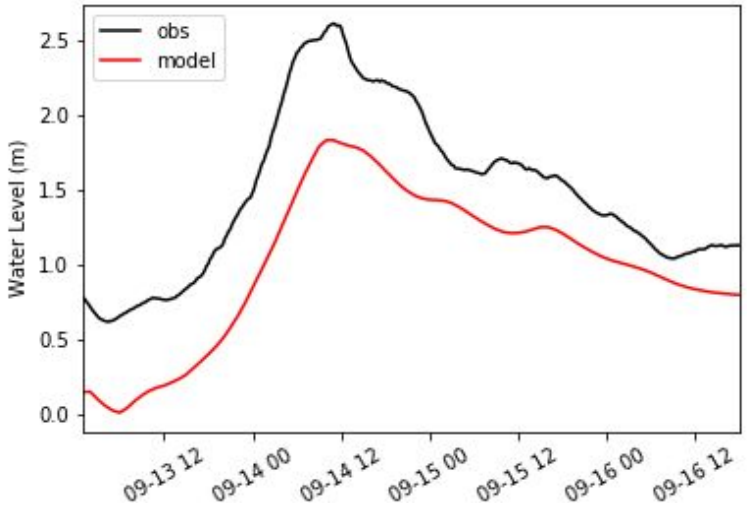


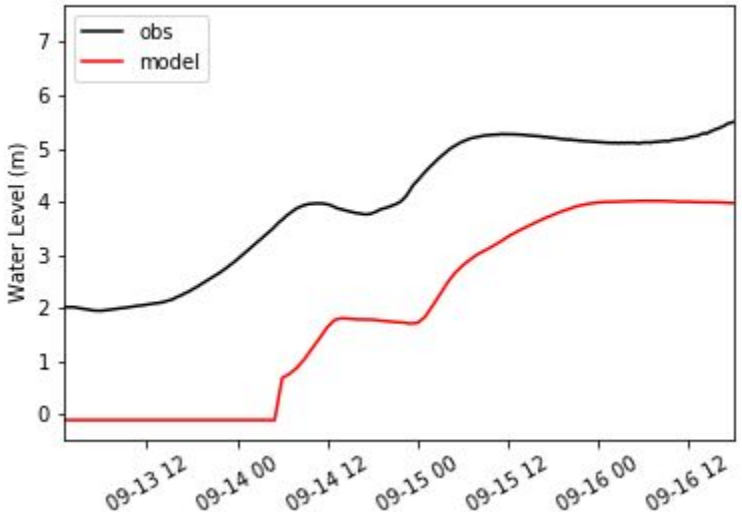
Coastal Model Domain for CONUS

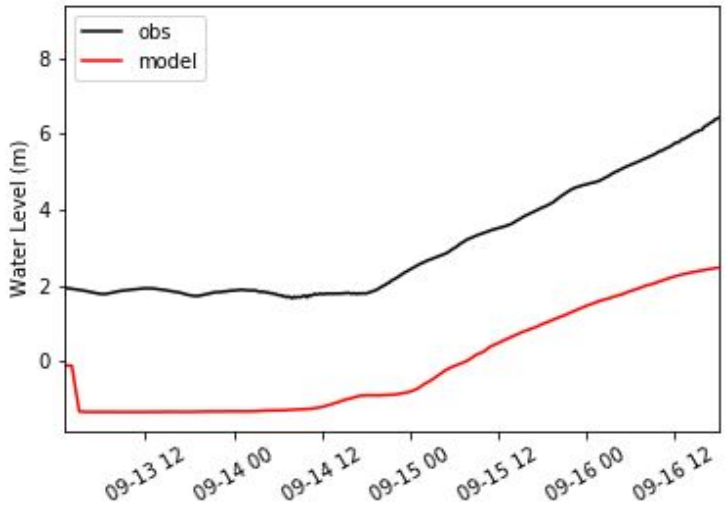
Unstructured mesh generated using a sizing function (poster: H45N-1332)

Hurricane Florence (2018)



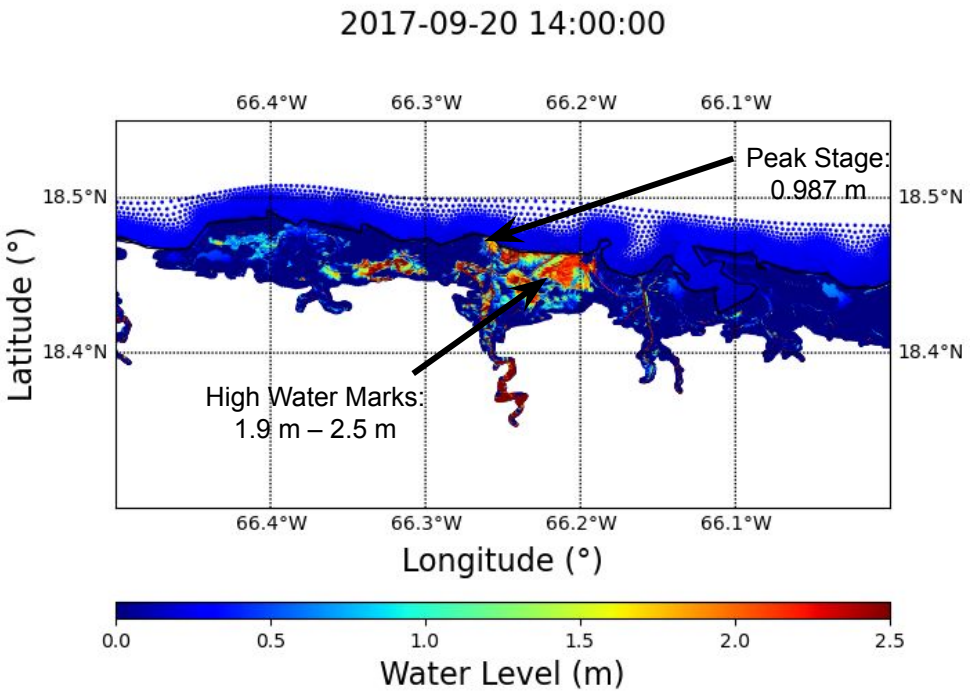




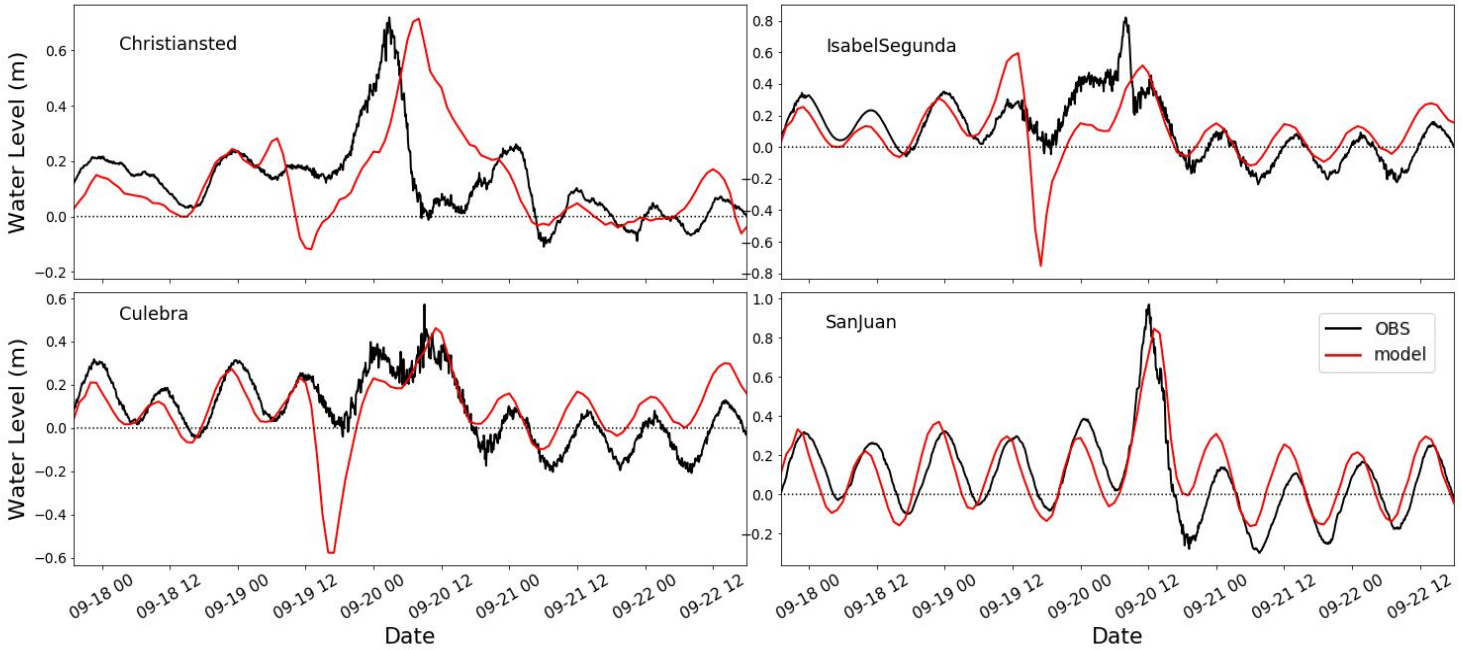


Model vs. USGS Gage Obs.

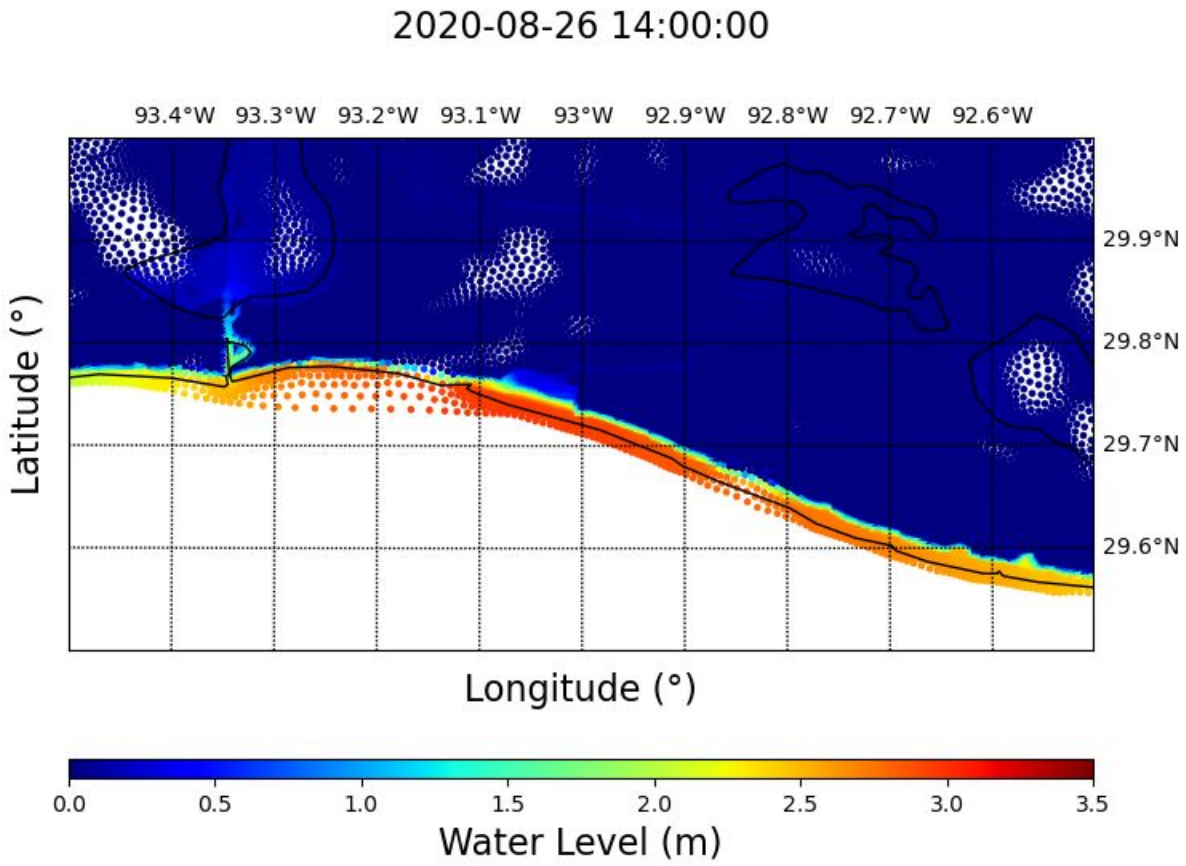
Hurricane Maria (2017)



Model vs. NOAA water level Obs.



Hurricane Laura (2020)



Storm Surge 3.6 - 5.4 m early on the 27th along the coast east of Cameron, LA

Before (Aug 13, 2020)

After (Aug 29, 2020)

Credit: NASA earth observatory, Joshua Stevens

Conclusion

- Prototyped the total water forecast capability for NWM V3.0
- Generated SCHISM grid for CONUS, PR-VI, and Hawaii
- The initial results show that our model performance well in coastal compound flooding forecast

Thank You!

Qi Shi

qi.shi@noaa.gov

https://water.noaa.gov

OWP | OFFICE OF WATER PREDICTION