

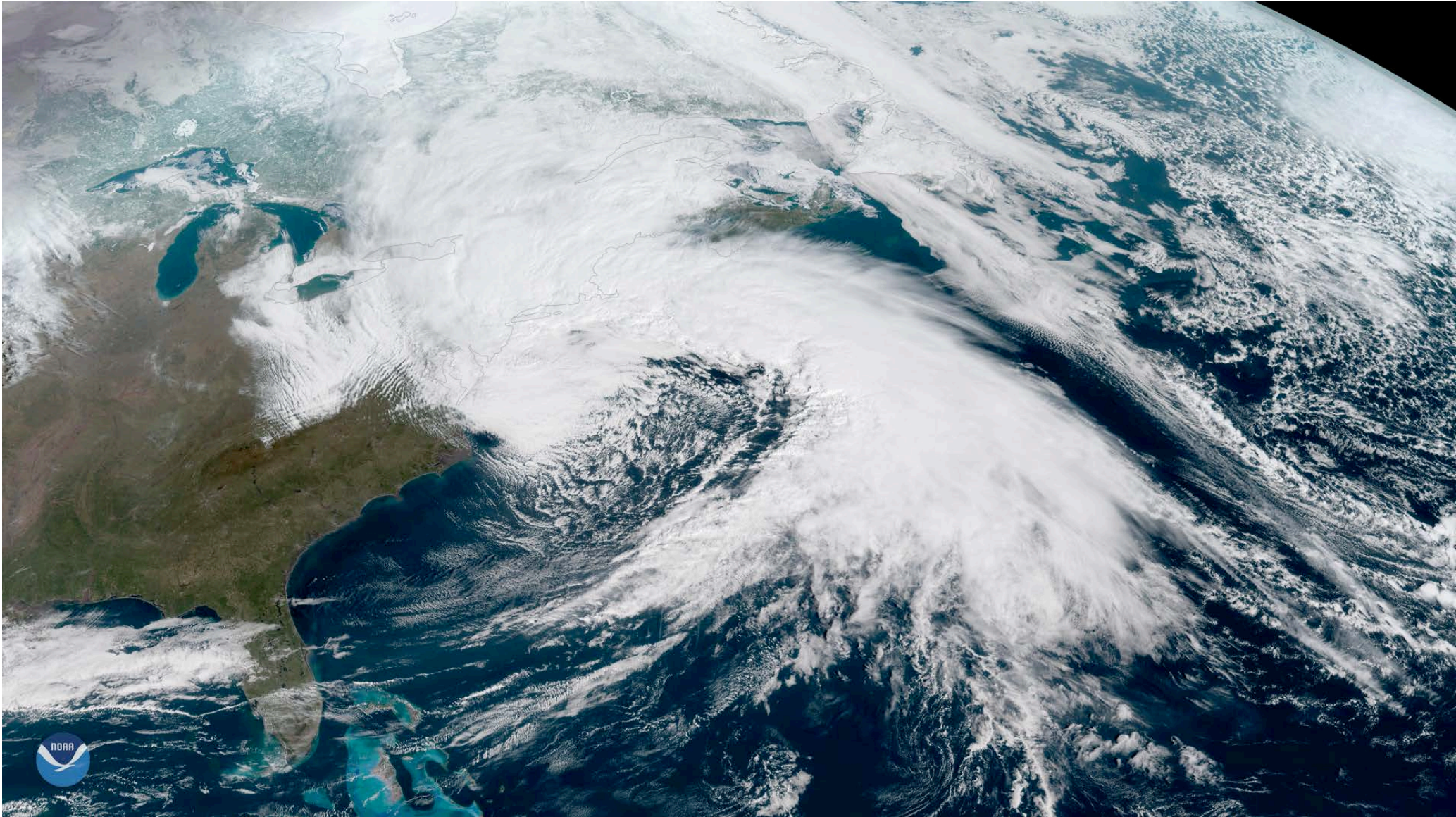
NorthEast Coastal Ocean Forecast System (NECOFS)

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Changsheng Chen, UMass Dartmouth

Robert Beardsley, WHOI





Coastal Hazards

- Areas of US northeast coastline are extremely vulnerable to storm generated inundation
- Projected sea level rise will exacerbate this serious coastal hazard



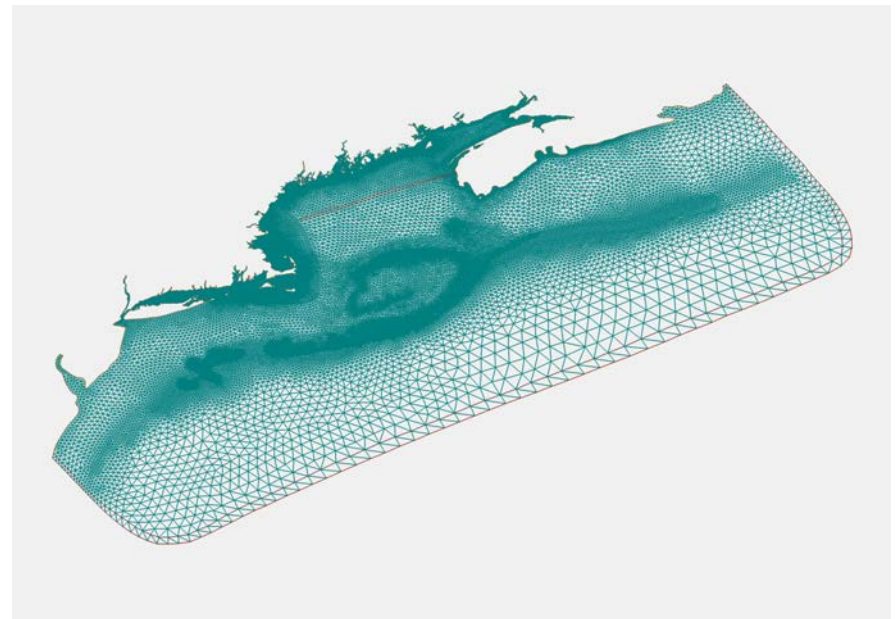
Stakeholders

- NWS Weather Forecast Office forecasters
- State coastal zone managers
- State and local emergency managers
- U.S. Coast Guard

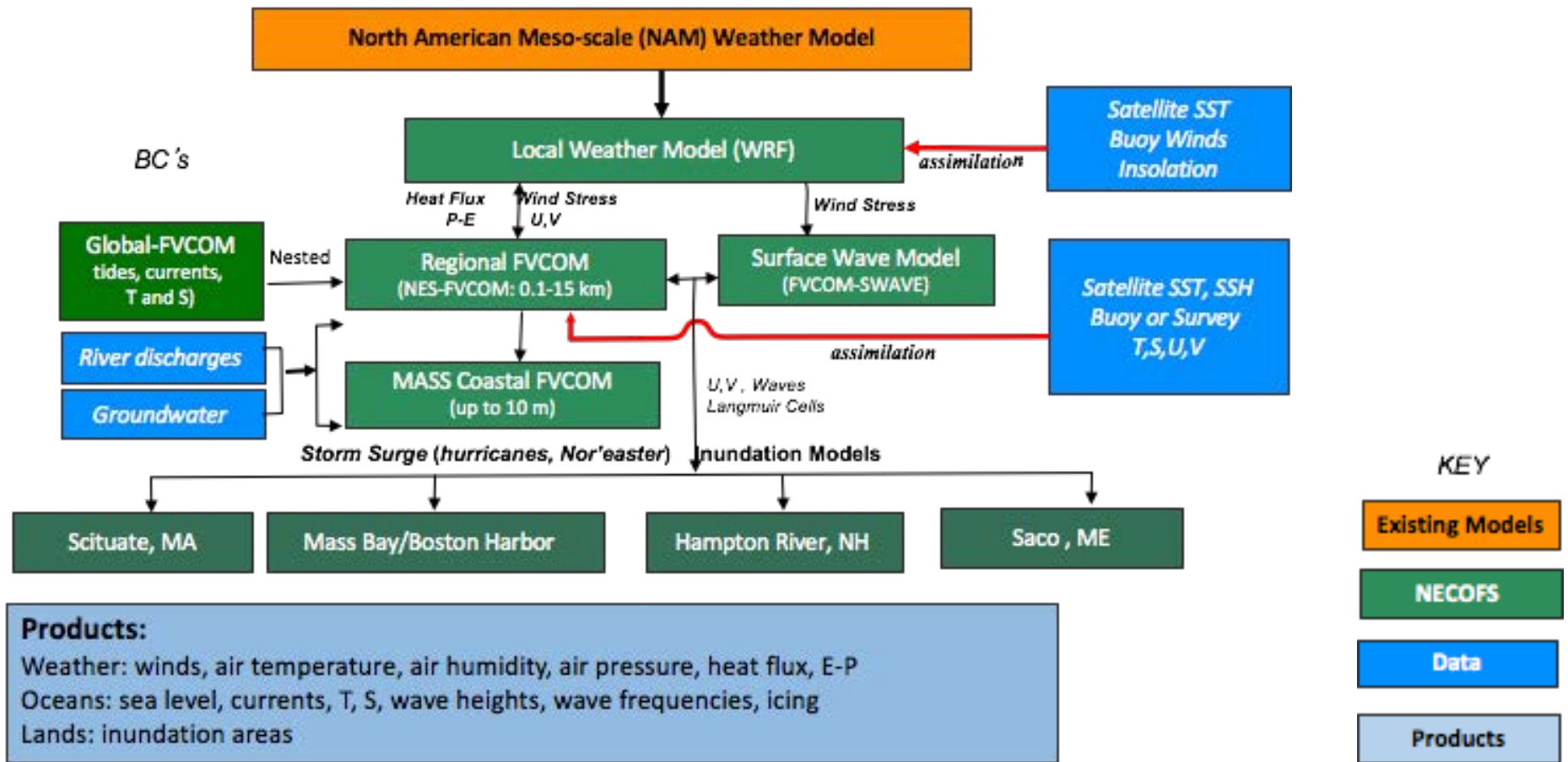


Northeast Coastal Ocean Forecast System (NECOFS)

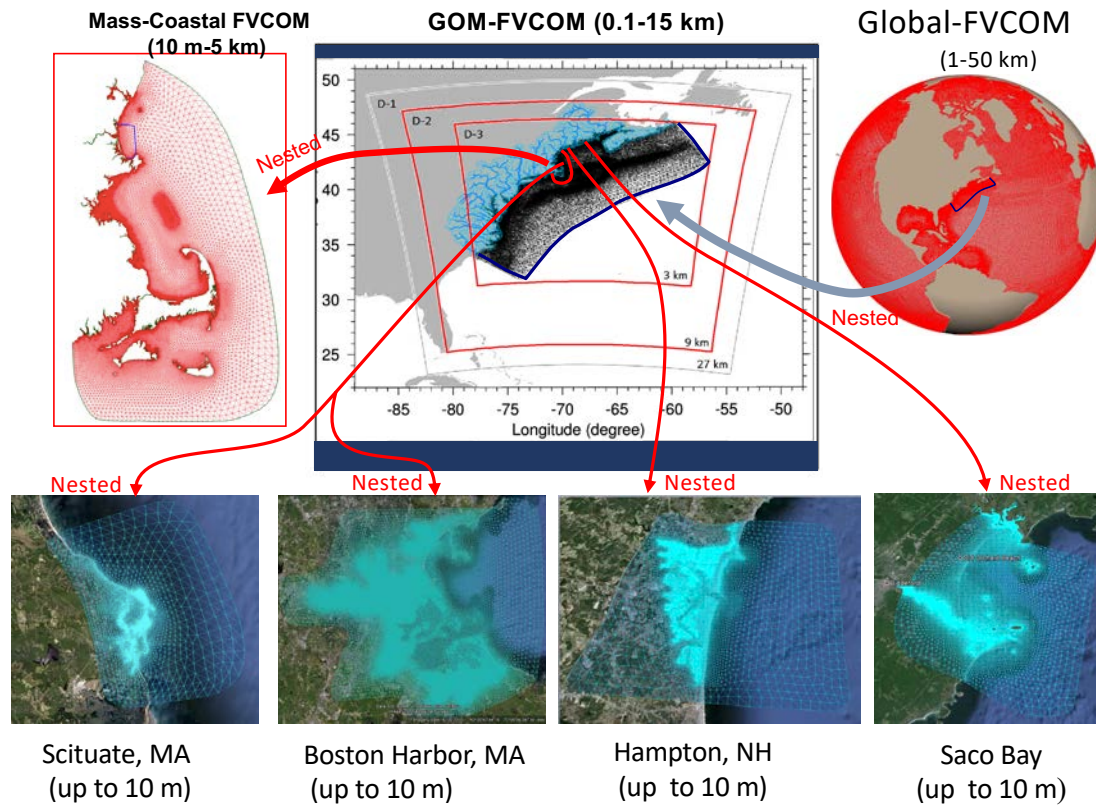
- Integrated ocean-atmosphere model system
- Includes multiple subdomains
- Daily 3-5 day forecast
- 30+ year climatology
- Adaptable regional modeling framework



Northeast Coastal Ocean Forecast System (NECOFS)



NECOFS Inundation Forecasting



Access to Model Predictions - THREDDS



Catalog <http://www.smast.umassd.edu:8080/thredds/forecasts.html>

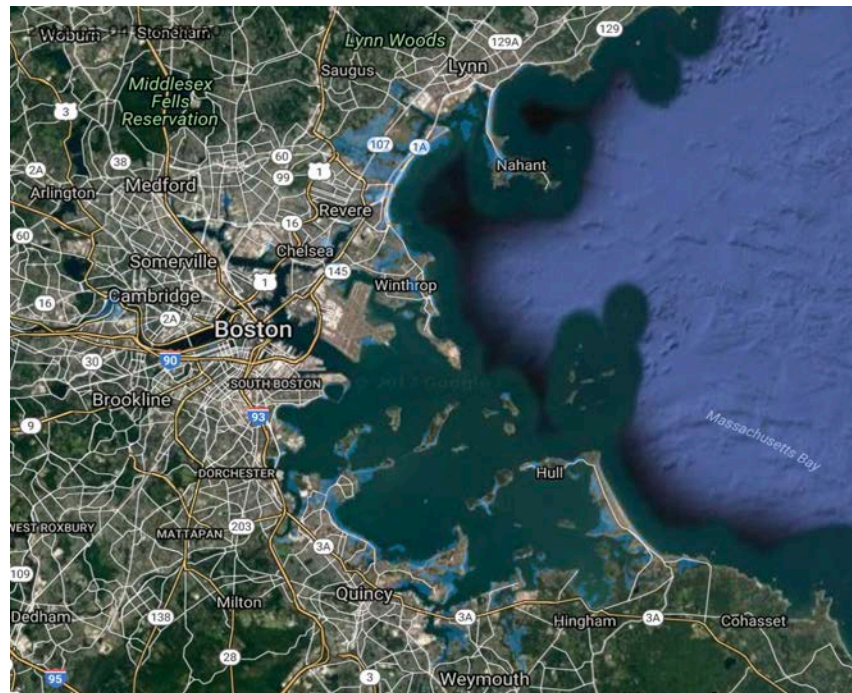
Dataset	Size	Last Modified
NECOFS_GOM3_Forecast		--
NECOFS_MET_Forecast		--
NECOFS_GOM3_Wave_Forecast		--
NECOFS_MASSBAY_Forecast		--
NECOFS_Boston_Forecast		--
NECOFS_Hampton_Forecast		--
NECOFS_Scituate_Forecast		--
NECOFS_Global_Forecast		--

SMAST / MEDM TDS at Marine Ecosystems Dynamic Modeling [see Info](#)
THREDDS Data Server [Version 4.3.18 - 20130801.1600] [Documentation](#)

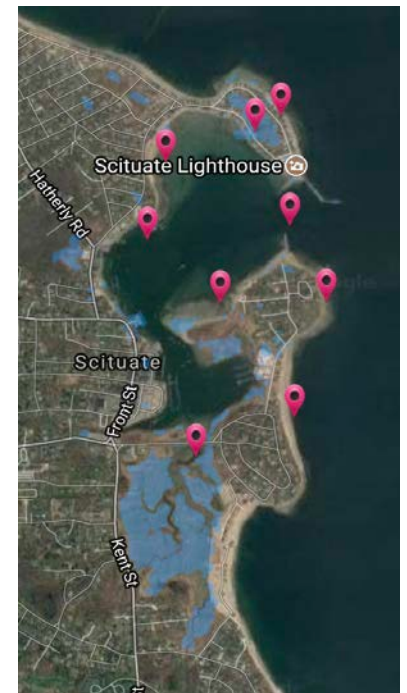
Model Visualization



Hampton-Seabrook, NH

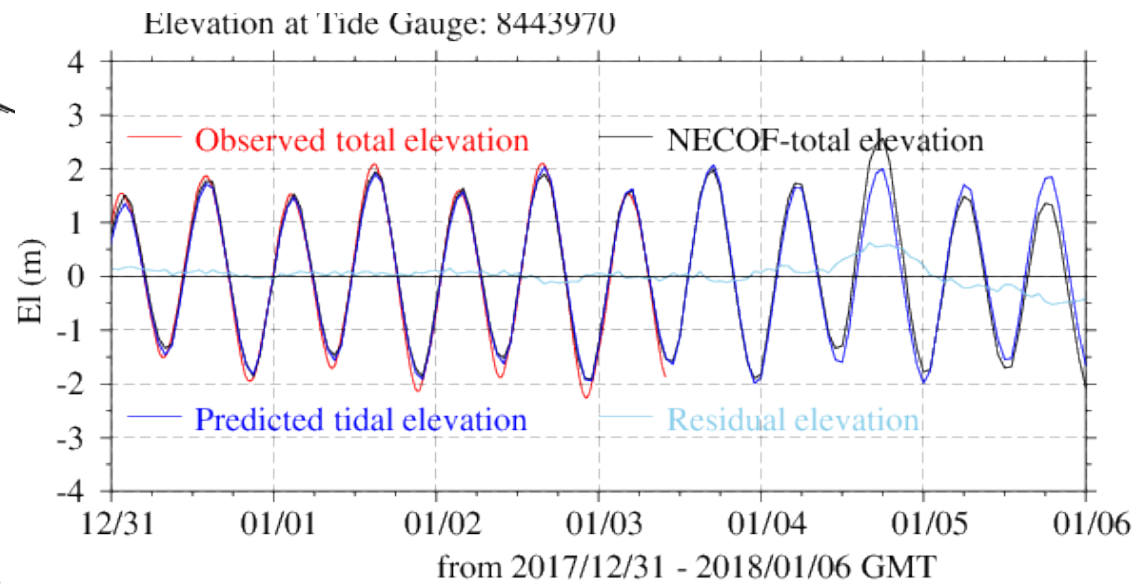
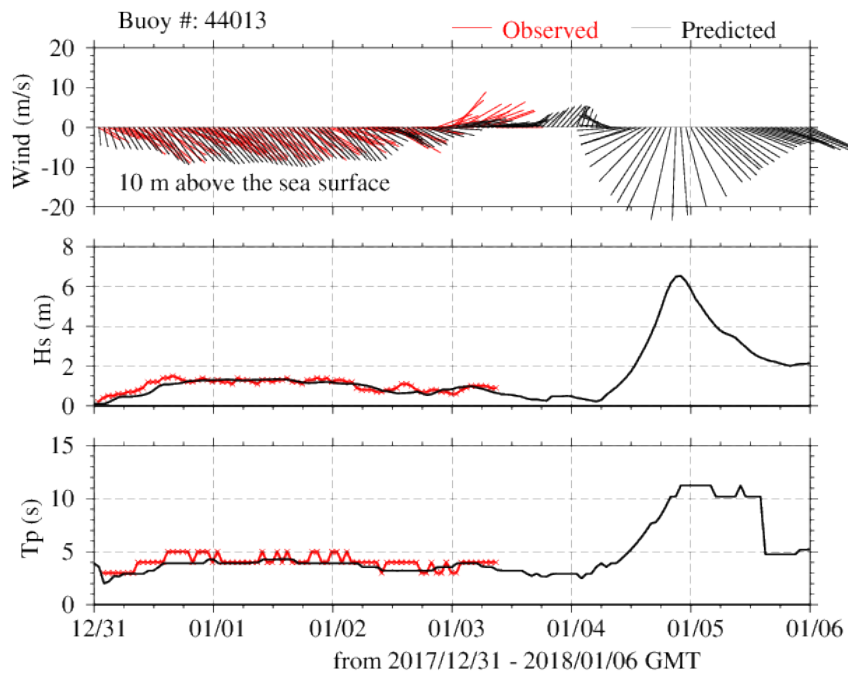


Boston, MA

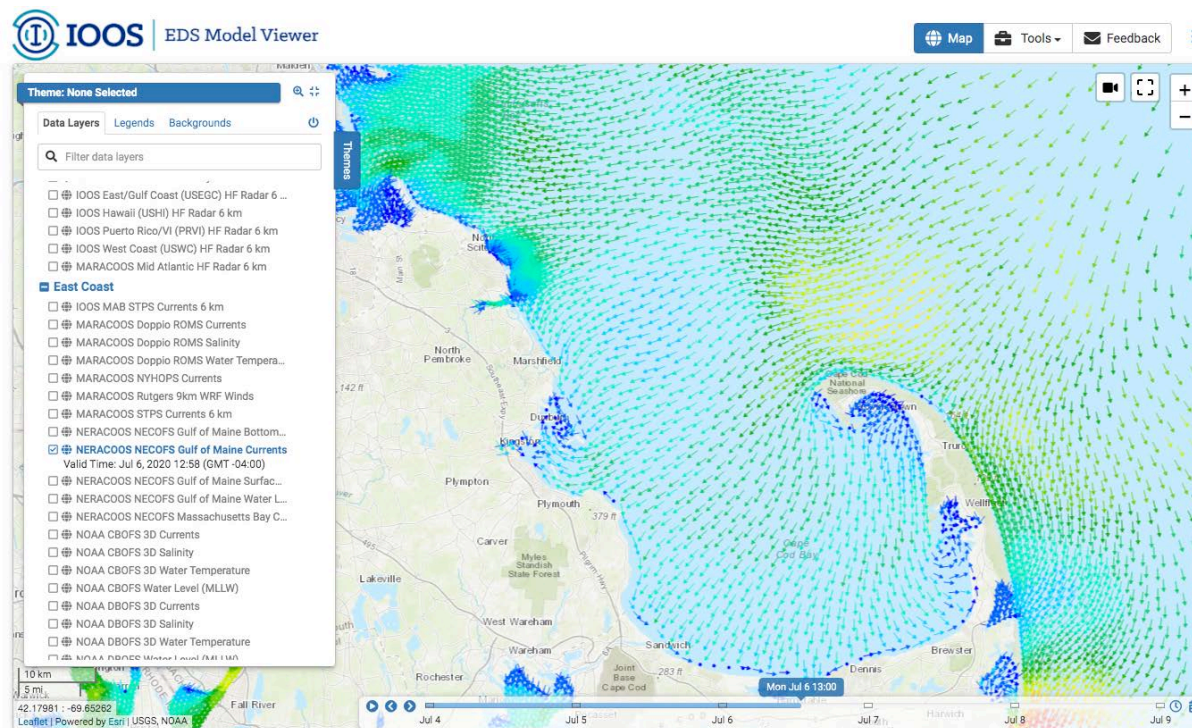


Scituate, MA

Model Viewer – Model/Obs Comparison



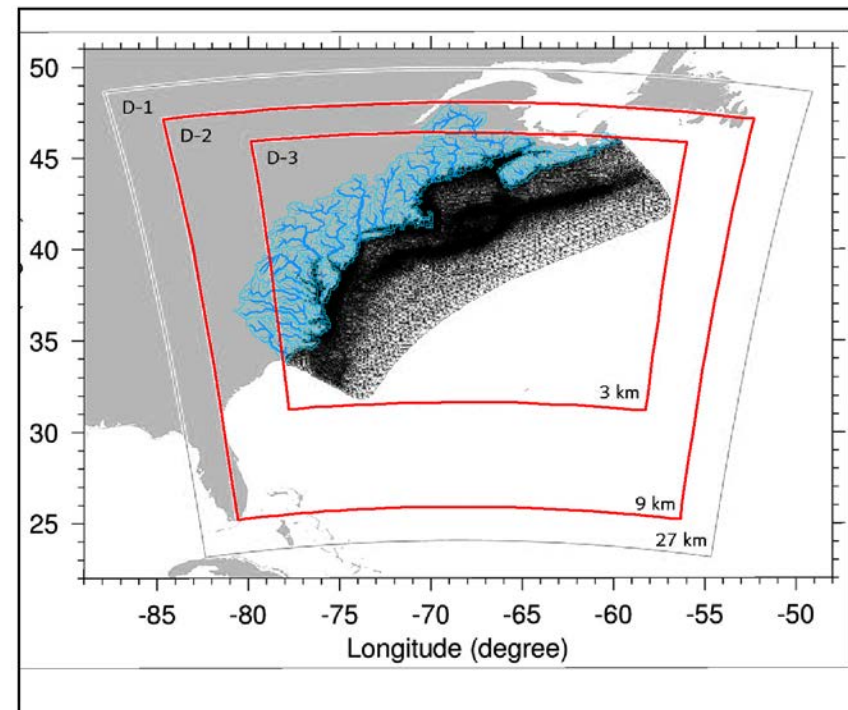
Model Visualization - IOOS



<https://eds.ioos.us/>

Coastal Modeling Coupling

- Improve inundation predictions
- Hydrologic model coupling
 - NOAA's National Water Model
 - UNH Water Balance Model
- Supported by IOOS Coastal and Ocean Modeling Testbed (COMT) and NOAA's Water Initiative
- Coastal Coupling Community of Practice
<https://www.weather.gov/watercommunity/>



Climate Change Scenarios

SLR=1.0 ft



SLR=5.0 ft



SLR=7.0 ft



Challenges

- Observations - sustain and expand
- Data standard adoption
- Transitioning models from research to operations
- Understanding stakeholder's decision-making process and needs
- Improving the delivery of products and services for stakeholders

Key Takeaways

- Start with stakeholders
- Data standards
- Sharing information



Thank You

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