The Coastal Coupling Community of Practice: An Interagency Collaboration Working Toward Continental-scale Modeling in the Coastal Transition Zone

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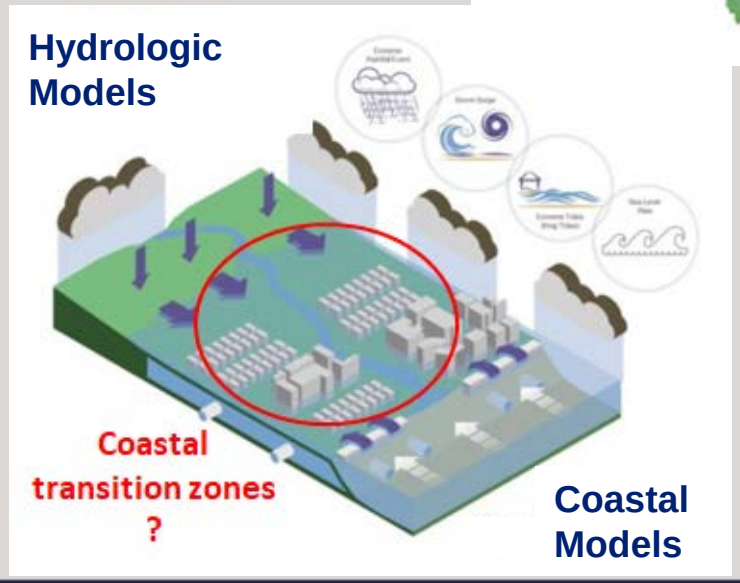
Communities of Practice

Coastal Coupling of Models

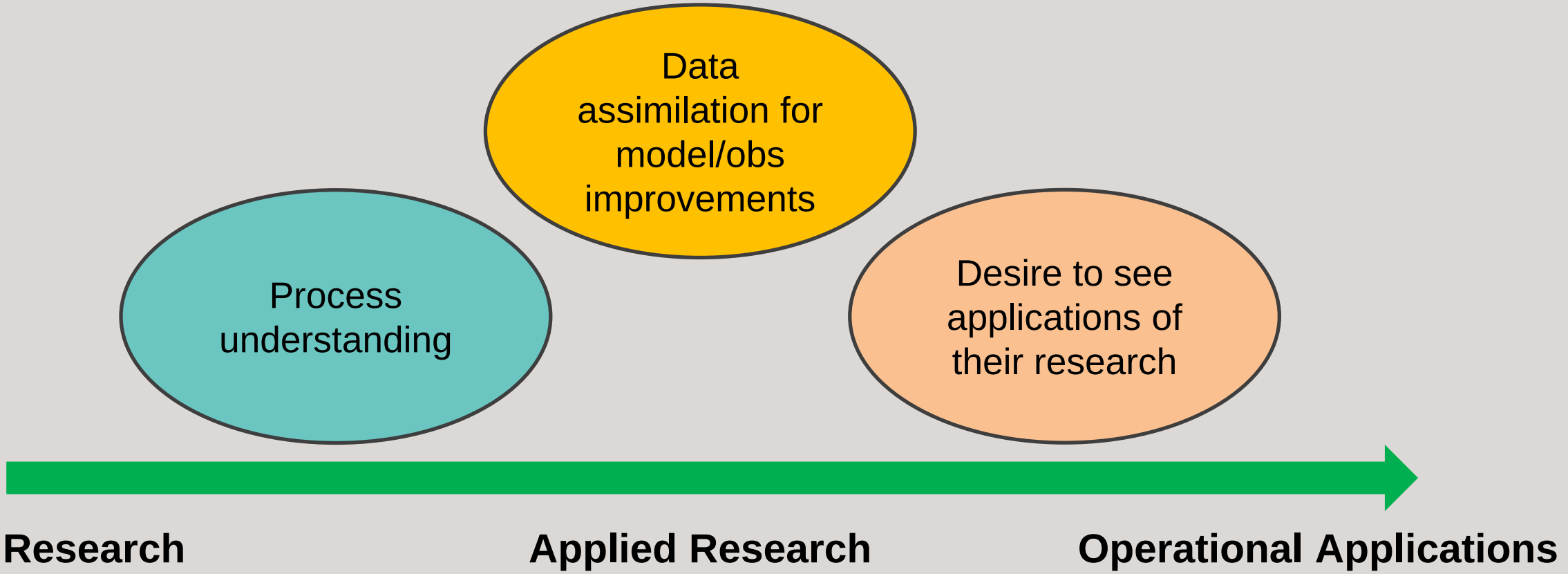
Over 100 million Americans who live near the coast aren't protected by total water forecasts that account for combined freshwater and saltwater flooding. The NOAA Water Team is collaborating to provide lifesaving environmental intelligence through **coastal coupling**.



Our Community

Motivations

Practitioners are motivated differently. Communities of Practice organize around common motivations.



Our Domain

Challenge

Coastal coupling of models through collaborative community engagement for integrated coastal solutions employing research, model development and application, data provision, observations, analysis, and service delivery.

Mission

To enable

- Coupling of models across the coastal zone
- Actionable information provided to stakeholders in accessible and user-friendly formats
- Accelerated national coverage of integrated water prediction capabilities

Our Practice

Objectives

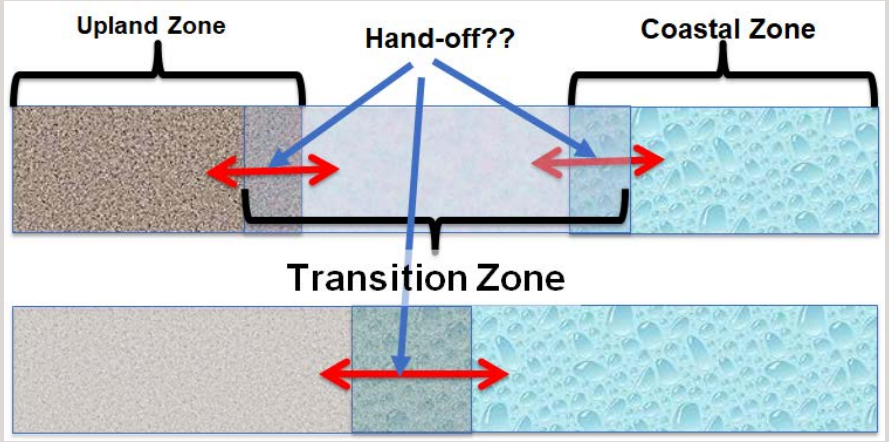
- Determine best strategies
  - Stakeholder requirements
  - Science and operational needs
- Establish an active, functioning, and sustainable community
  - Identify community members
  - Identify knowledge gaps
  - Identify the available models - strengths and weaknesses

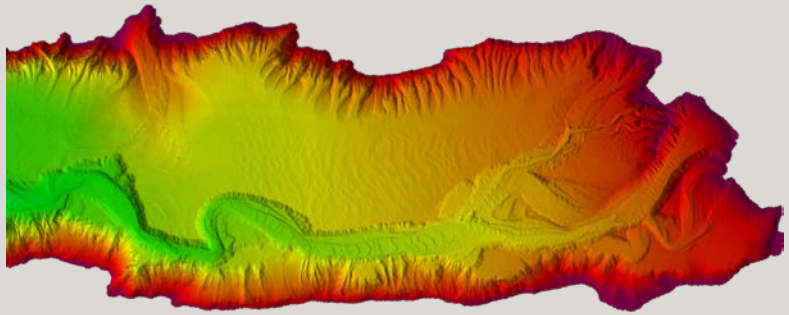
Activities

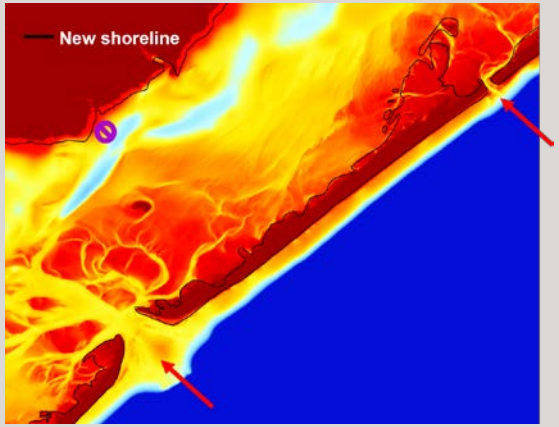
- Multi-institutional steering committee (NOAA, USGS, USACE, academia)
- Annual in person meetings
  - May 12-13, 2020, National Water Center, Tuscaloosa, AL
- Bimonthly webinar series
- Scientific sessions/townhalls at conferences
- Website

Key Questions

- Coastal transition zone is dynamic
- Stakeholder needs
- Common terminology
- Topobathy/shoreline
- Data and mapping services
- Transition of models



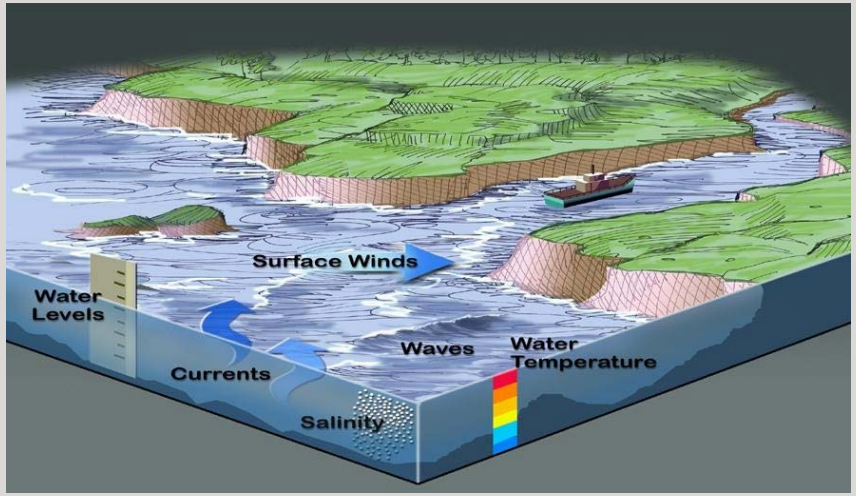




NOAA Coastal Models

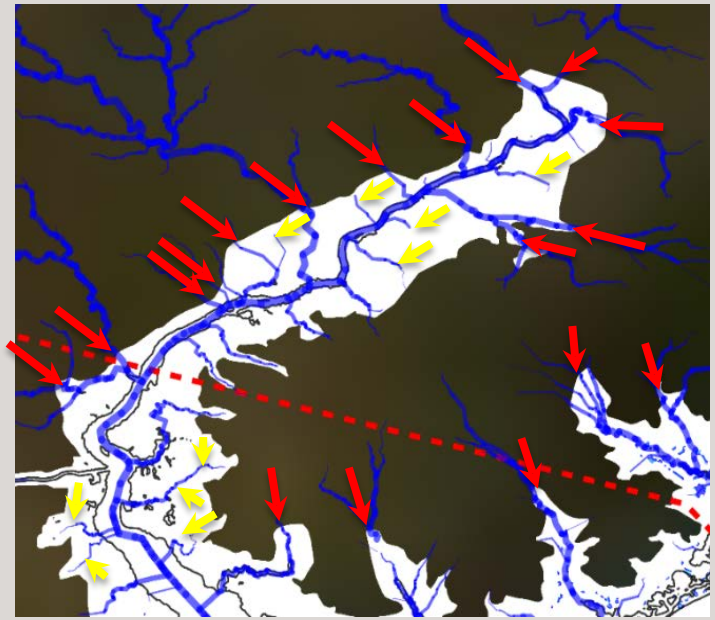
Network of operational hydrodynamic models (Operational Forecast System) providing nowcasts and short-term forecasts of:

- Water levels
- Currents
- Salinity
- Temperature



Coupling efforts

- Hindcast coupling of 2D ADCIRC storm surge model with NWM for COASTAL Act



Future developments:

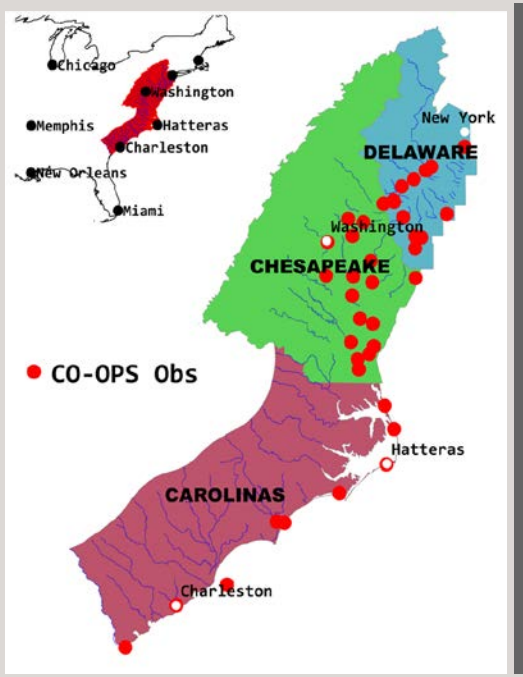
- Inland Hydrology
- Waves
- Ice coverage
- Data assimilation

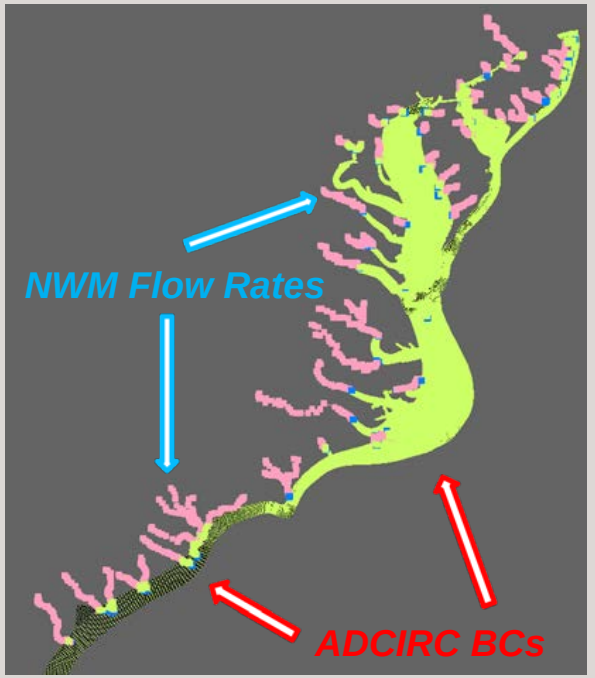
Moghimi et al., OM33B-01 Wednesday 14:00

NOAA National Water Model

Coastal Hydraulics and Coupling

- Currently working on regional hindcast simulations for Named Storm Events
- V3.0 will feature freshwater-estuary-ocean model coupling in the forecast mode
- Will allow for simulation of compound flooding involving freshwater, storm surge and tides





Water Initiative Models

NOAA Water Initiative (TWL-projects, NOS/CSDL)

- University of Oklahoma: “Steps Towards Automating River Connections and Addressing Precipitation in ADCIRC”
- Notre Dame University: “Grid Development and Automated Grid Generation for River Connections”
- Virginia Institute of Marine Sciences: “Implementing SCHISM Model to Improve Integrated Water Modeling Projects”

IOOS Coastal Ocean Modeling Testbed (COMT)

- University of North Carolina: “Coupling the National Water Model to the Coastal Ocean for Predicting Water Hazards”
- University of Massachusetts-Dartmouth: “Coupling the Northeast Coastal Ocean Forecast System (NECOFS) to NWM and the Water Balance Model”
- North Carolina Statue University: “Multi-Level River-Ocean Coupling using the Coupled Northwest Atlantic Prediction System”

Joint Technology Transfer Initiative (JTTI)

- Notre Dame University: “Advancing ADCIRC U.S. Atlantic and Gulf Coast Grids and Capabilities to Facilitate Coupling to the National Water Model in ESTOFS Operational Forecasting”

Conclusion

Our membership has grown to over 120 members in less than a year

Continuing to build relationships and make connections to reduce the duplication of efforts

For technical details on modeling work, session tomorrow

- Oral session - OM33B – Wednesday 2:00 – 4:00 pm
- Poster session - OM34B – Wednesday 4:00 – 6:00 pm

For more information or to join the CC CoP please contact me

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Thank you

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