



# Coastal and Ocean Modeling Coastal Ocean Modeling in Support of Marine Navigation and the Blue Economy

## *Welcome*

Shachak Pe'eri  
Coast Survey Development Lab Chief (OCS)

Patrick Burke  
Chief, Oceanographic Division (CO-OPS)

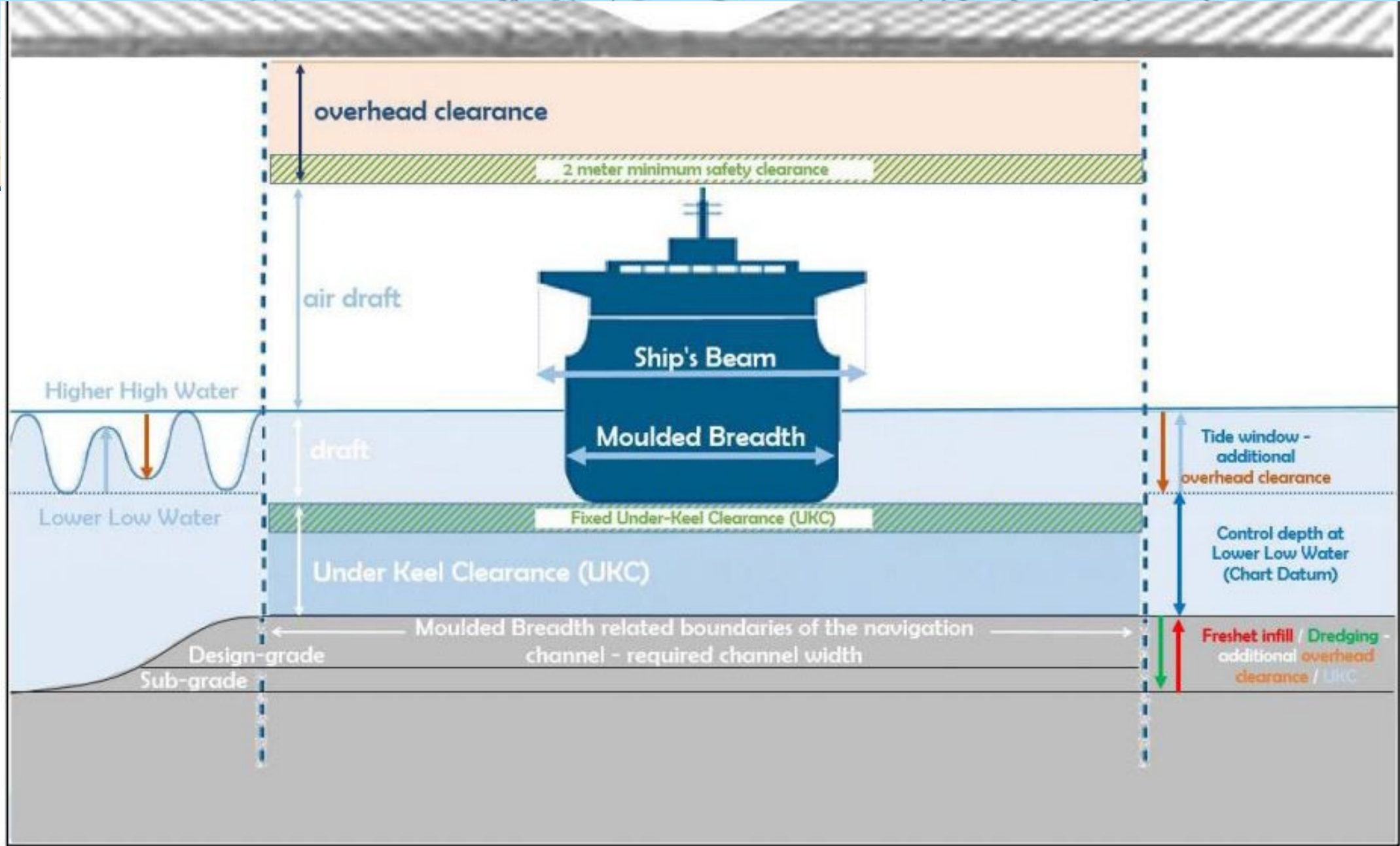
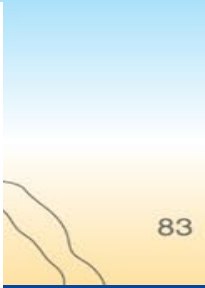
March 4, 2021



# Modeling History in NOS (Mid-1990's)

- Coastal and Estuarine Oceanography Branch (CEOB) was formed in the mid - 1990s and changed names to the Coastal Marine Modeling Branch (CMMB) in 2014.
- Its mission was and still is to develop **real-time-data-based nowcast-forecast models that could predict water levels and currents coastal United States** to support safe navigation in the wake of the Exxon Valdez disaster.
- The models became integrated into the **PORTS** system (managed by CO-OPS), which has one or more real-time water level gauges and current sensors in each bay. The forecast model provided real-time (nowcast) data everywhere throughout each bay, as well as 24-hour forecasts.
- In addition to the shipping industry, the nowcasts and forecasts were used by **recreational boaters, fishermen, the Coast Guard, HAZMAT agencies** for more efficiently cleaning up oil spills, and even for a variety of biological purposes such as Harmful Algal Bloom forecasts.
- One of the early models was the **East Coast Forecast System** (ECFS, now Coastal Ocean Forecast System COFS), a joint project between NOS, NCEP/EMC, and Princeton Univ. POM Team.







# Session agenda

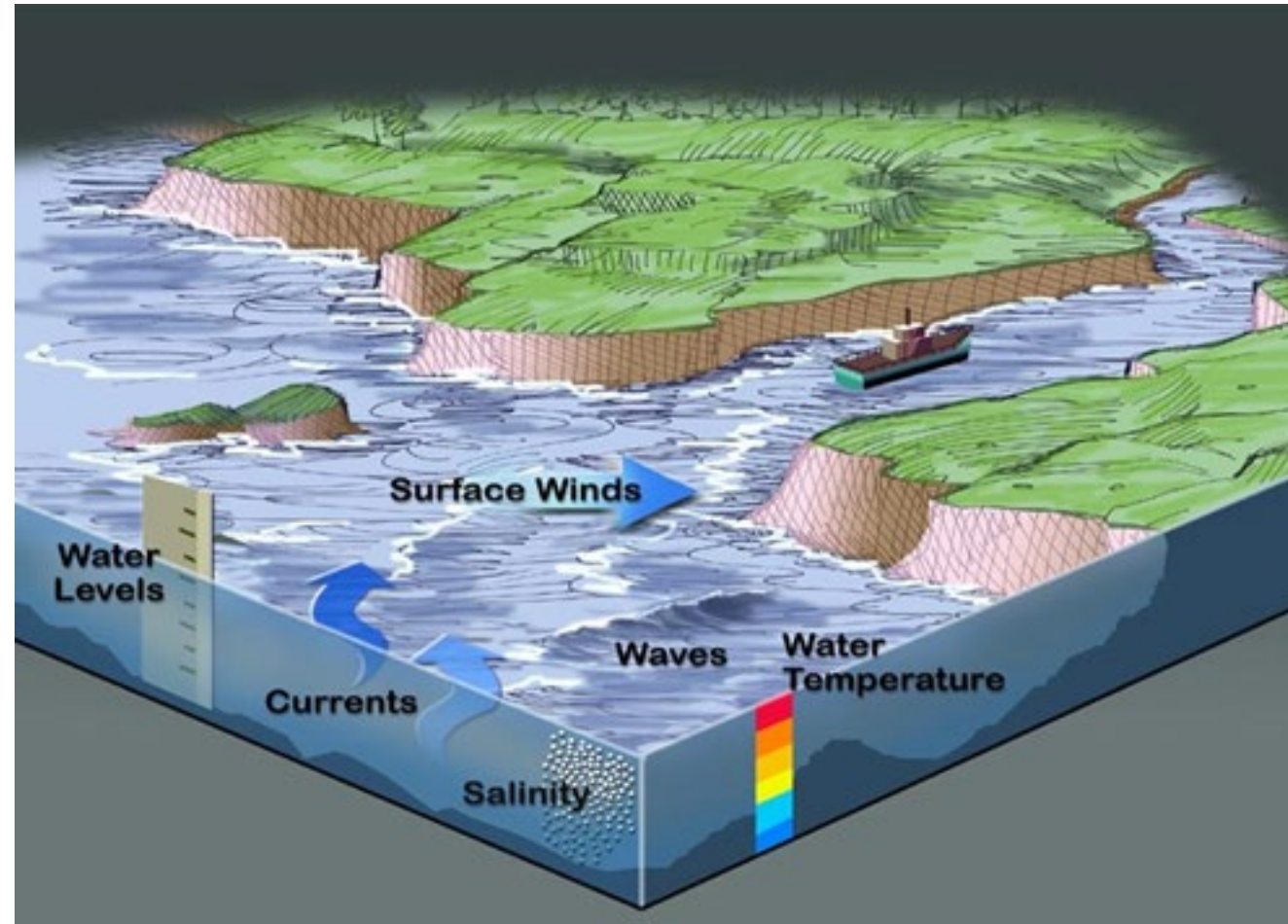
## (Times are US East Coast)

- **1:50 pm till 2:00 pm** Dr. Shachak Pe'eri (NOAA/NOS/OCS) and Mr. Patrick Burke (NOAA/NOS/CO-OPS): “NOS Modeling Programs”.
- **2:00 pm till 2:15 pm** Dr. Daniel R. Roman (NOAA/NOS/NGS) "Reference Frames and Datums: Improvements Planned for the Pacific".
- **2:15 pm till 2:30 pm** Mr. Peter Stone (NOAA/NOS/CO-OPS): “International Hydrographic Organization's (IHO) S-104 (Water Levels) and S-111 (Currents) Product Specifications”.
- **2:30 pm till 2:45 pm** Dr. Greg Seroka (NOAA/NOS/OCS): “NOS' Operational Models for Navigation Services”.
- **2:45 pm till 3:00 pm** Charles Seaton, (CRITFC/Coastal Margin Observation and Prediction): "Surface Currents for Navigation and the Environment“
- **3:00 pm – 3:15 pm** Public comment period



# Coastal Modeling in the National Ocean Service

- Hindcast, nowcast and forecast guidance of **water levels, currents, salinity and water temperature**
- **Applications**
  - Navigation
  - Flooding and inundation
  - Coastal resilience and risk assessment
  - Ecology and water quality
  - Spill response/search and rescue
- **Active development**
  - Data assimilation
  - Ice forecasting
  - Waves
  - Riverine/coastal interactions



# Model development and operations is a collaborative effort across NOS

## Office of Coast Survey

- Development and Testing
- Operation, Maintenance and Routine Updates
- Product Development and Service Delivery

## Center for Operational Oceanographic Products and Services

- Operation, Maintenance and Routine Updates
- System monitoring and assessment
- Product Development and Service Delivery

Portfolio  
Manager

## Integrated Ocean Observing System

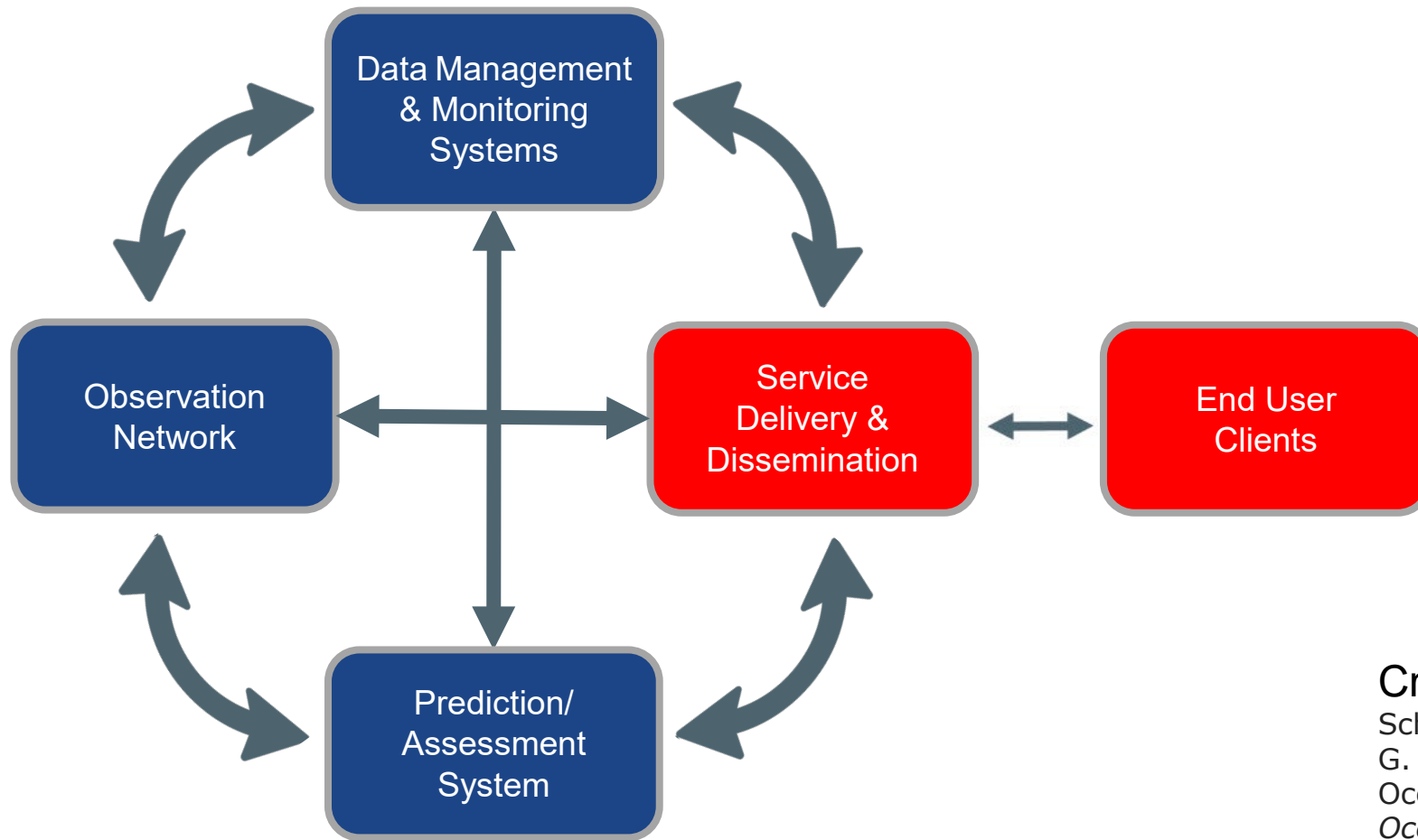
- Coastal Ocean Modeling Testbed
- Community development and support

## National Geodetic Survey

- VDatum
- Geodetic reference frame



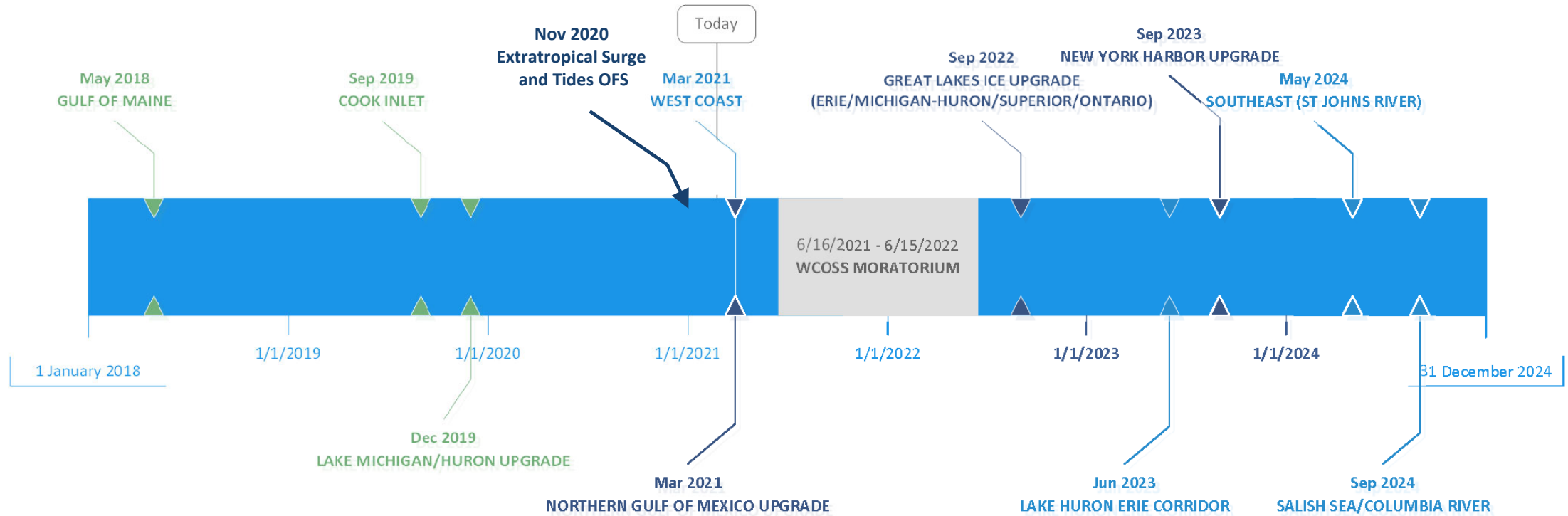
# Elements of an Operational Forecast System



Credit: Schiller et al. (2018)  
Schiller, A., Mourre, B., Drillet, Y., & Brassington, G. (2018). An Overview of Operational Oceanography. *New Frontiers In Operational Oceanography*.



# NOS Model Release Plan



## Model Visualizations and Data Access:

- [https://tidesandcurrents.noaa.gov/forecast\\_info.html](https://tidesandcurrents.noaa.gov/forecast_info.html)
- <https://nowcoast.noaa.gov/>
- <https://eds.ioos.us/>

