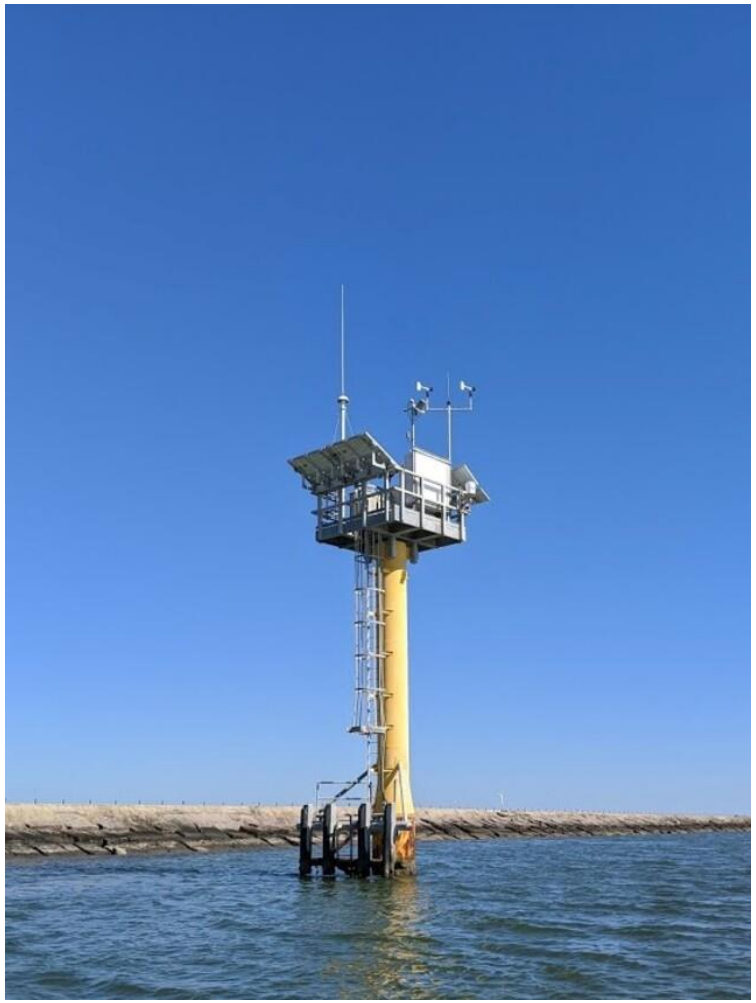
Implications of the National Tidal Datum Epoch Update

Fall 2025 WEDA East Coast Chapter Conference

October 16, 2025 | Mattew Perry, PE

Table of Contents

1. NTDE Update Introduction
2. NTDE Update Stakeholder Impact
3. NTDE Update & Revitalizing Harbors, Balancing Economy, Environment, and Community



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National Tidal Datum Epoch Update Introduction

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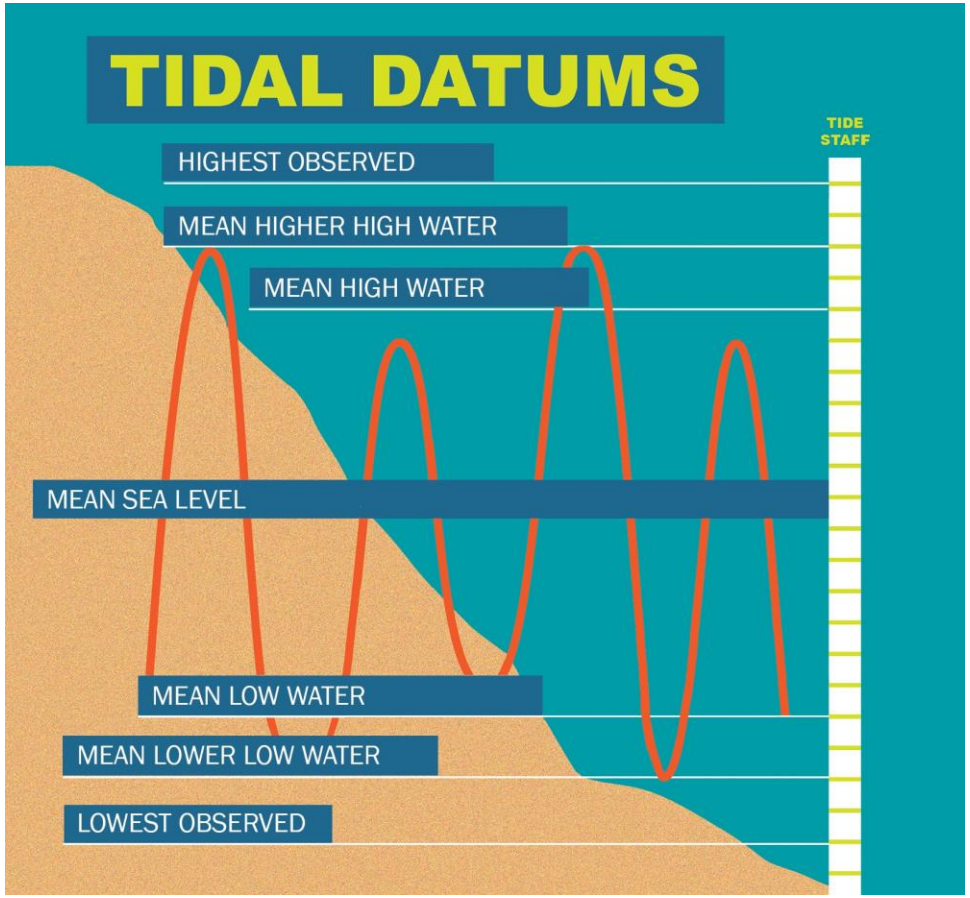
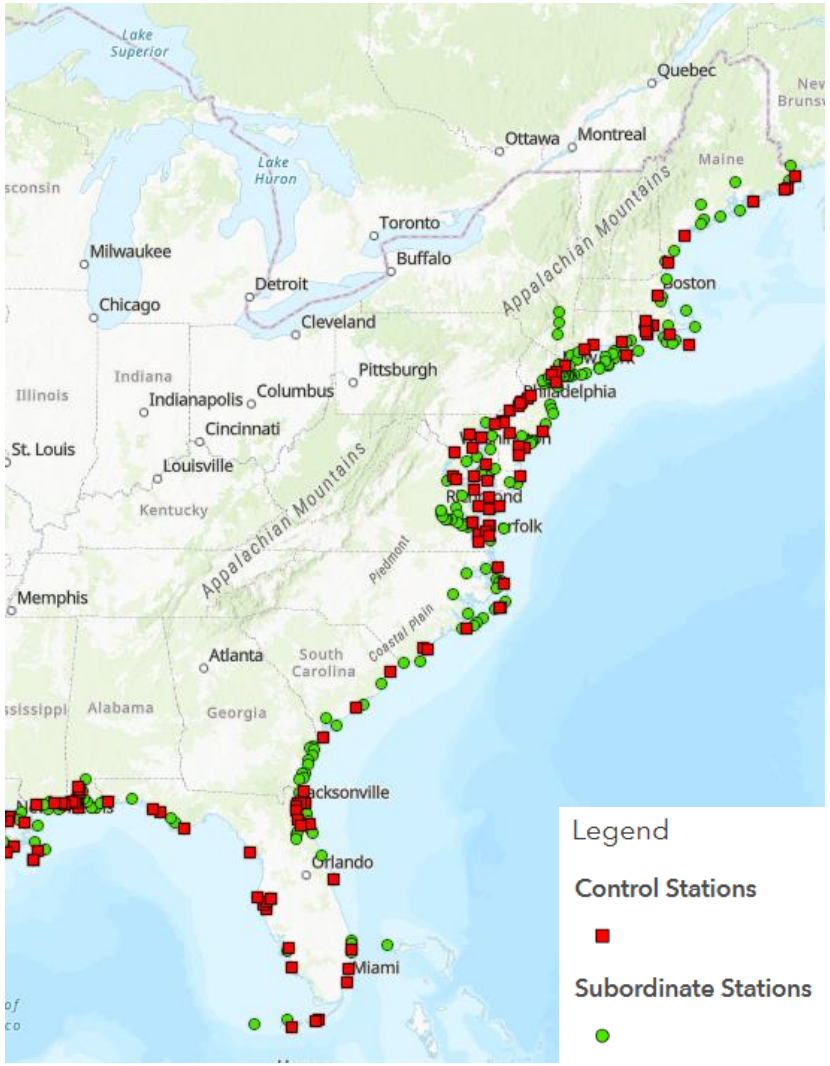
National Tidal Datum Epoch Introduction

- **Tidal Datum:** *"A tidal datum is a standard elevation defined by a certain phase of the tide."*
- **Tidal Datum Epoch:** *"a 19-year time period established by the National Ocean Service for collecting observations on water levels and calculating tidal datum values."*

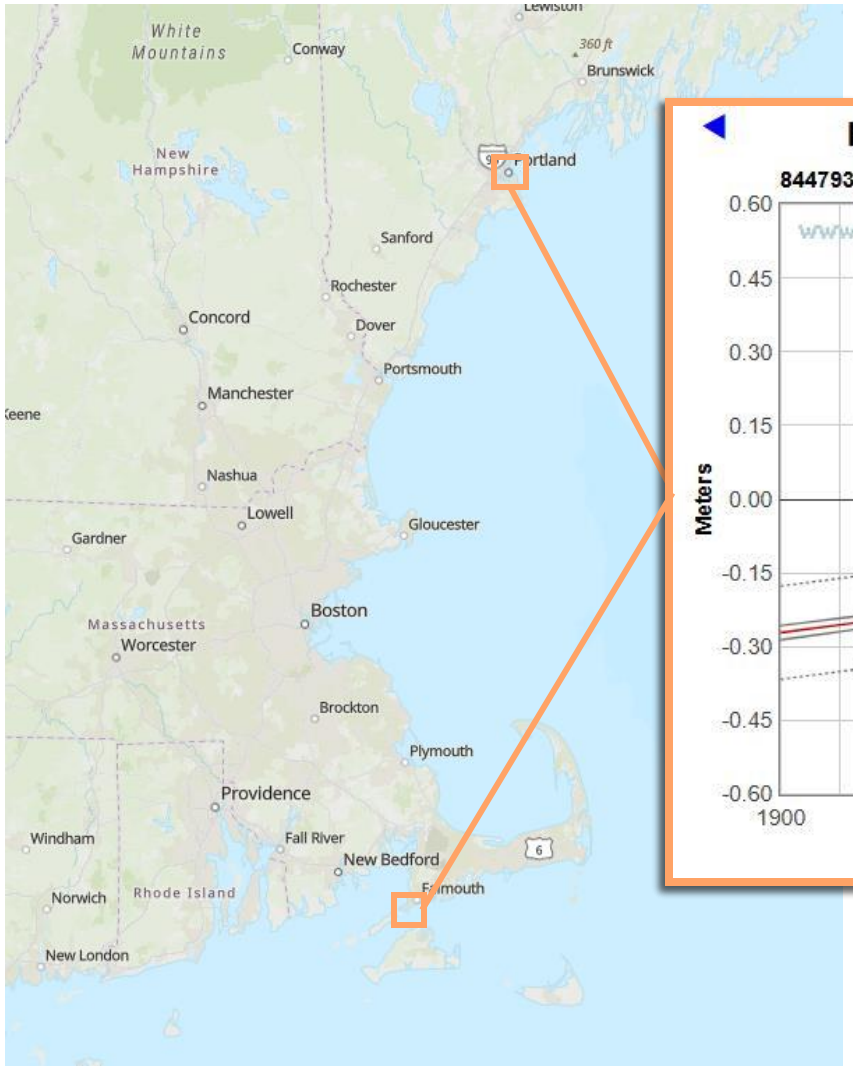


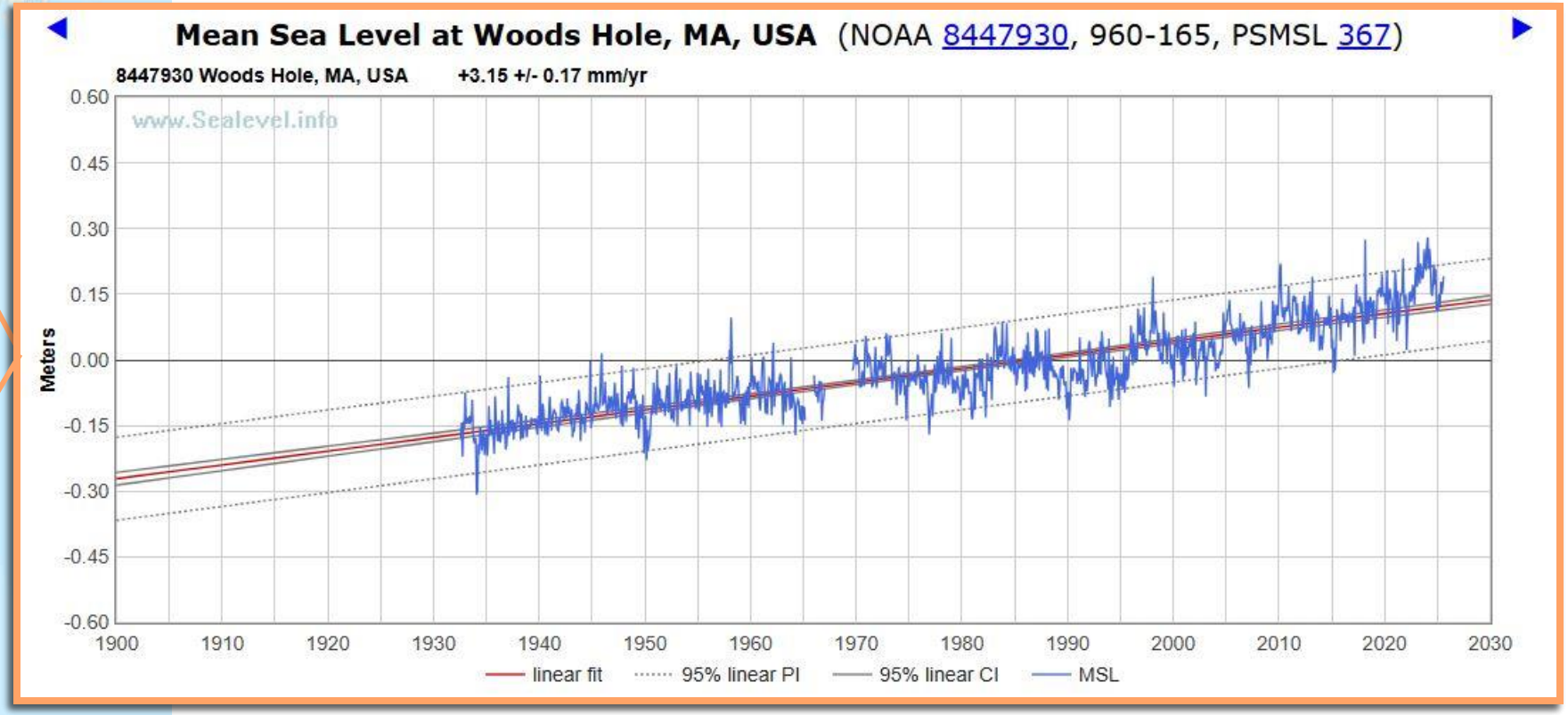
National Tidal Datum Epoch Introduction

- Control stations are long-term, continuously operating tide stations.
- From Florida to Maine, there are 105 NOAA Water Level Control Stations.
- Recorded data is used as the baseline for the full 19-year Period of the NTDE.
- The 19-year period represents a full Metonic cycle.



NOAA Tide Station Control Points MSL Change





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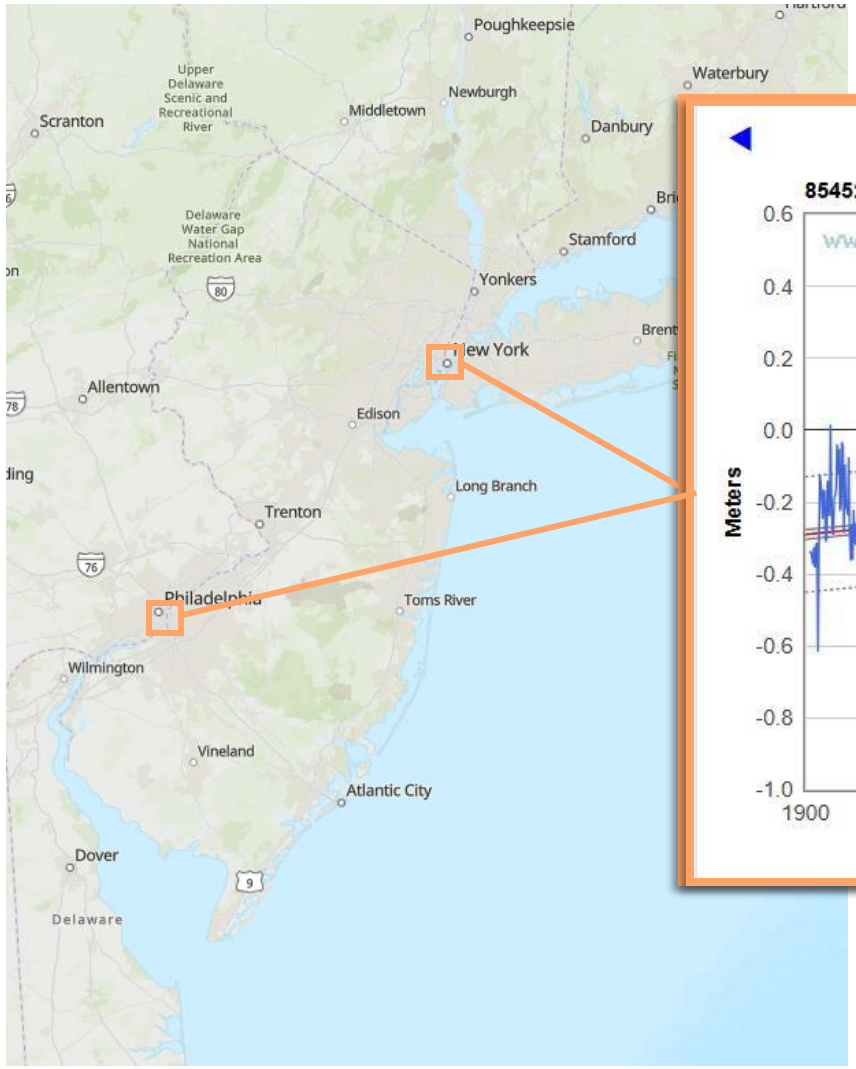

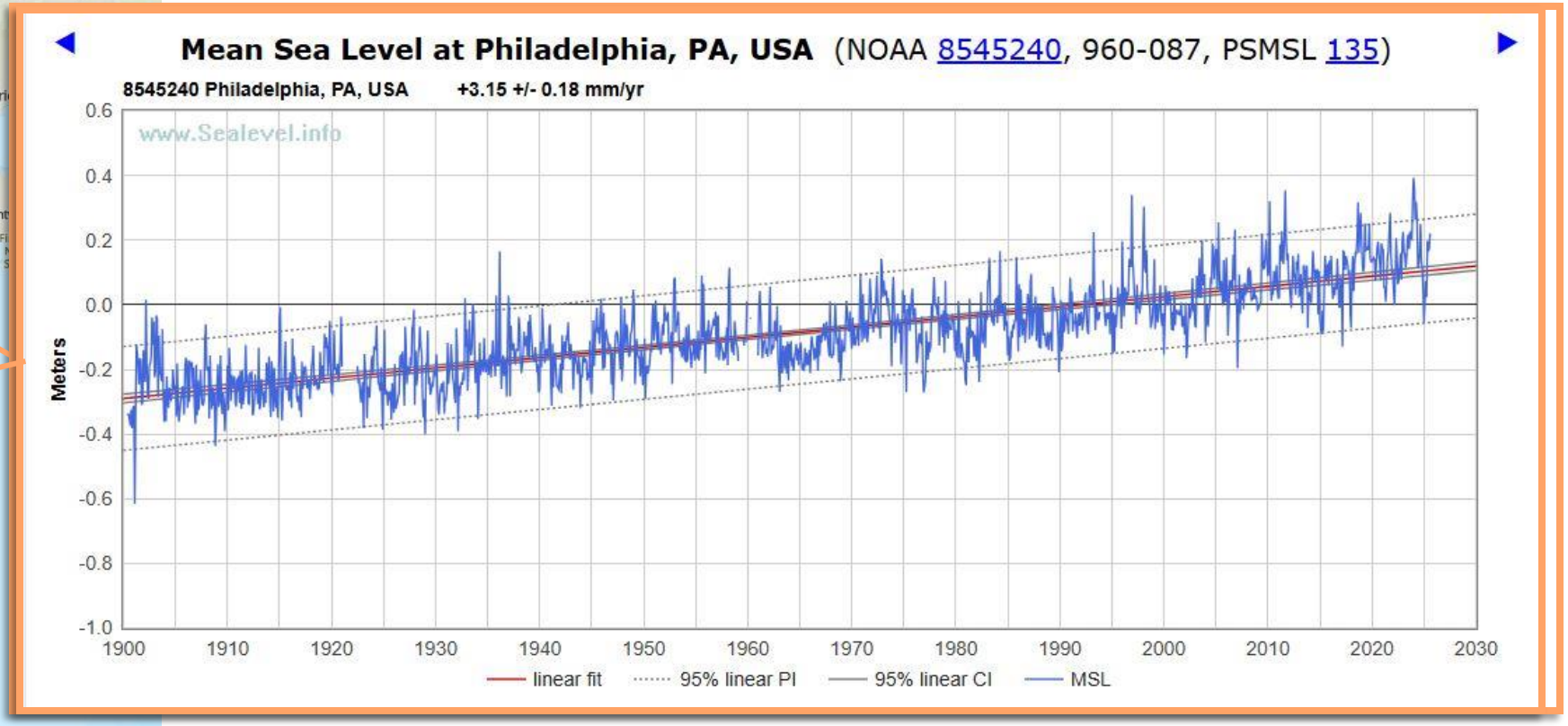

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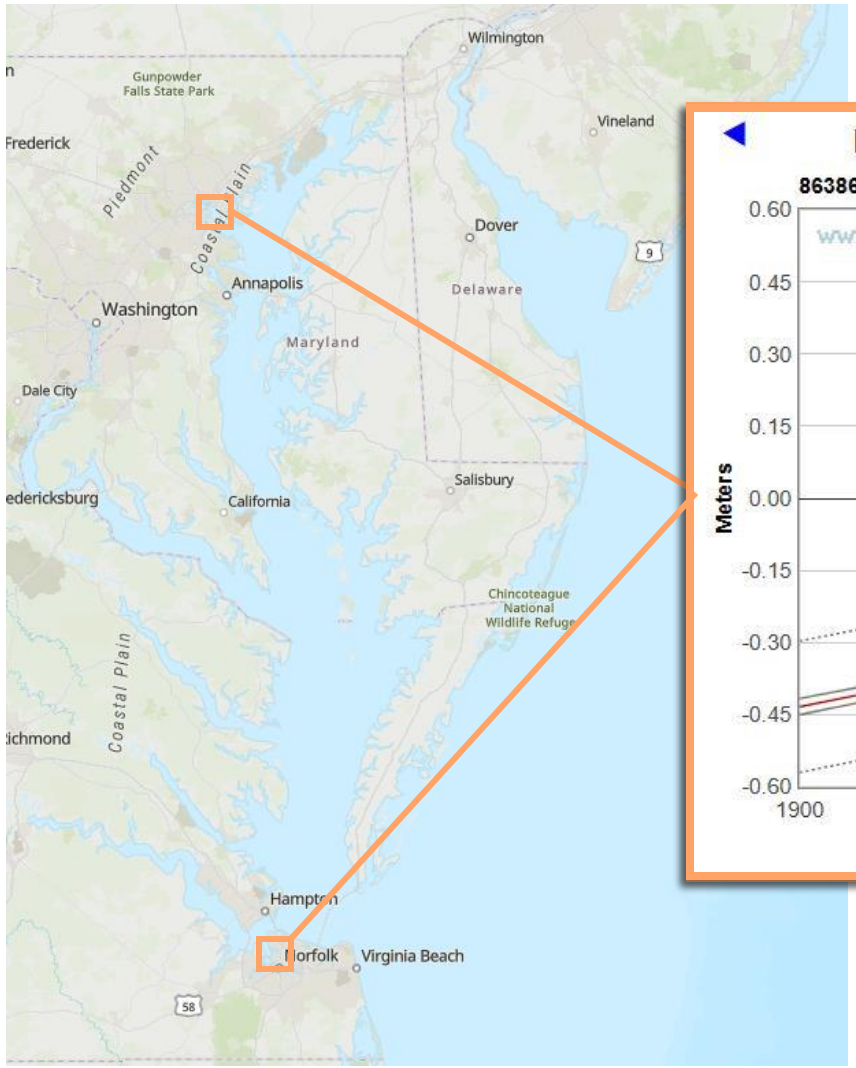

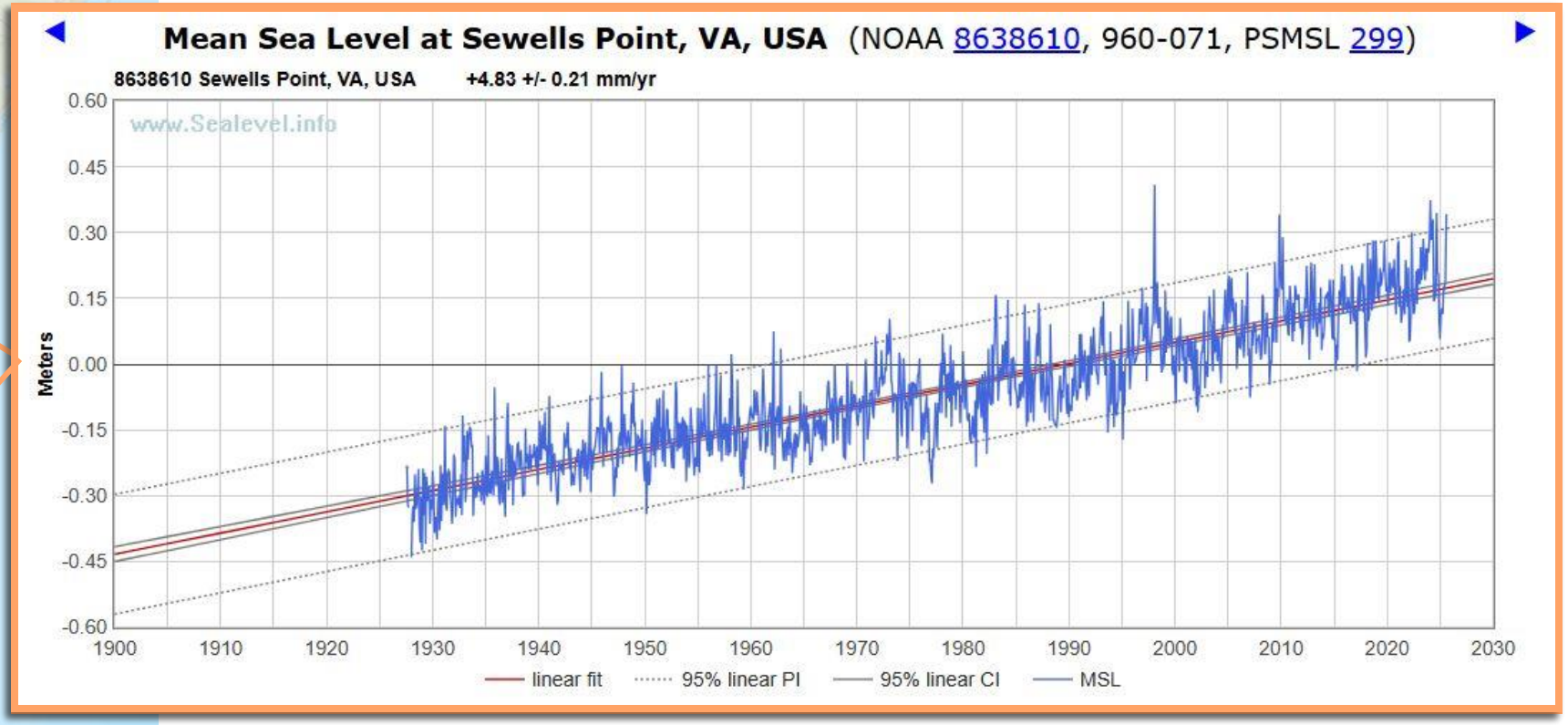

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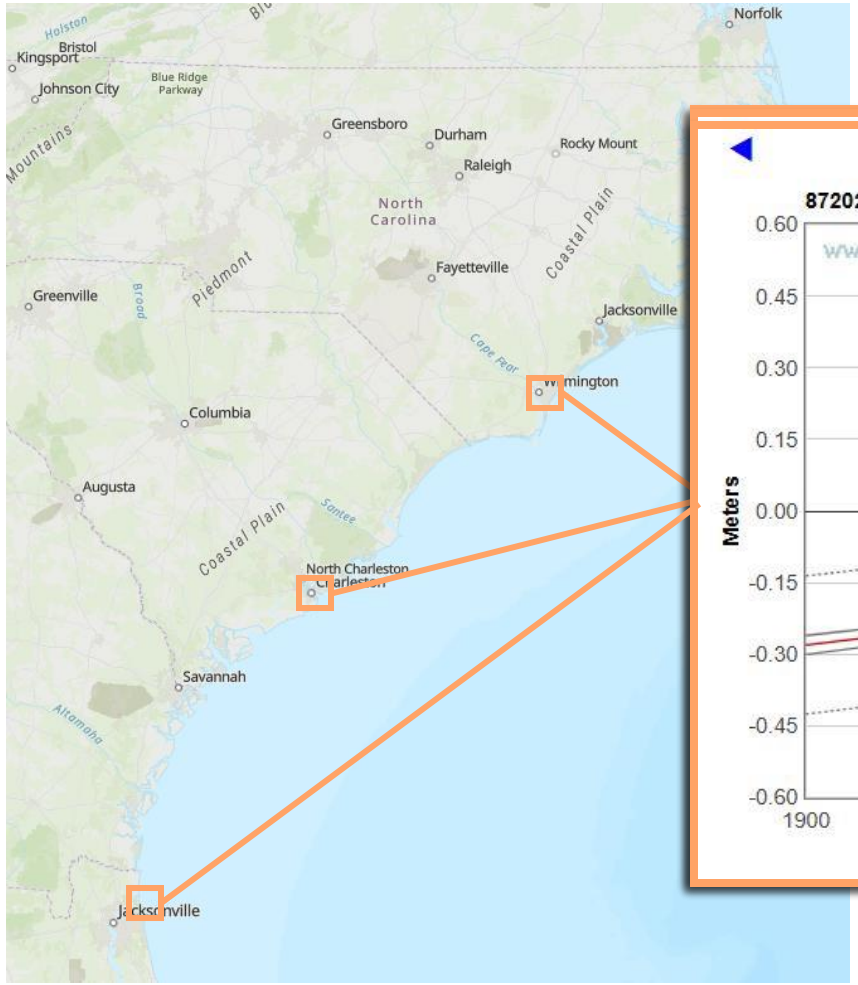
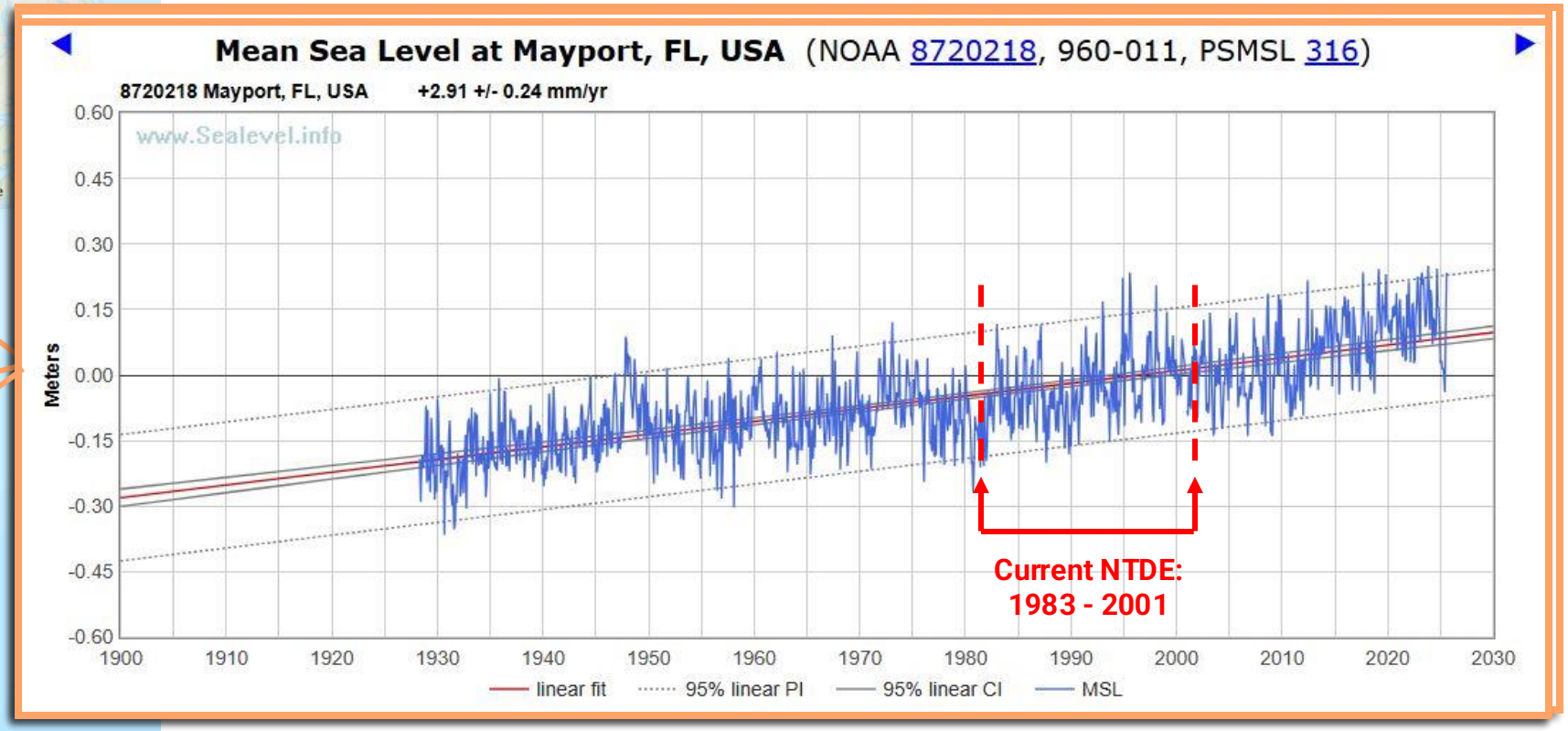
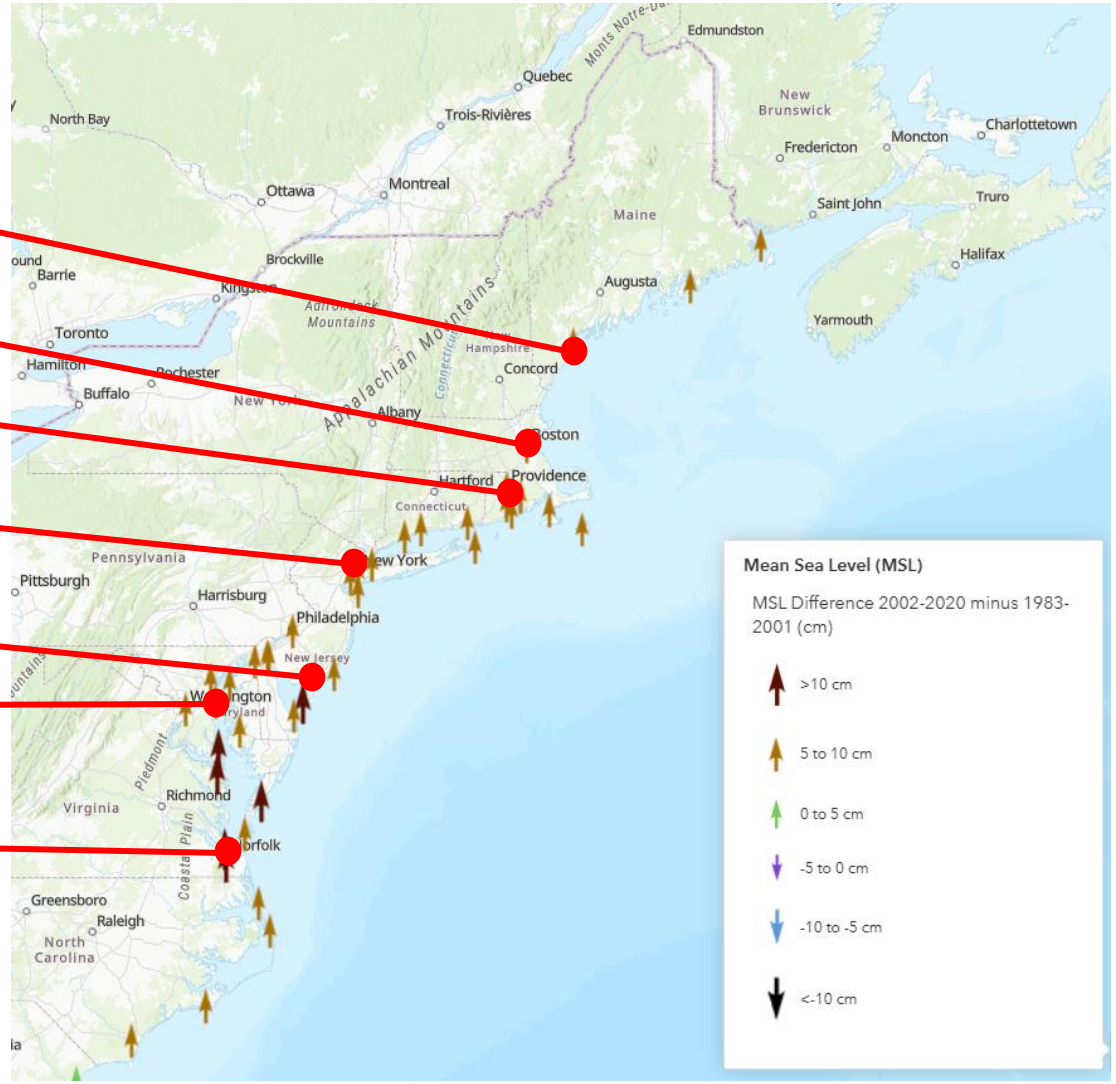




National Tidal Datum Epoch Proposed MSL Change

- *Portland, ME:* ***+0.17'***
- *Boston, MA:* ***+0.27'***
- *Providence, RI:* ***+0.22'***
- *New York City:* ***+0.24'***
- *Cape May, NJ:* ***+0.33'***
- *Baltimore, MD:* ***+0.25'***
- *Norfolk, VA:* ***+0.36'***



National Tidal Datum Epoch MSL Change

Duck, NC: ***+0.28'***

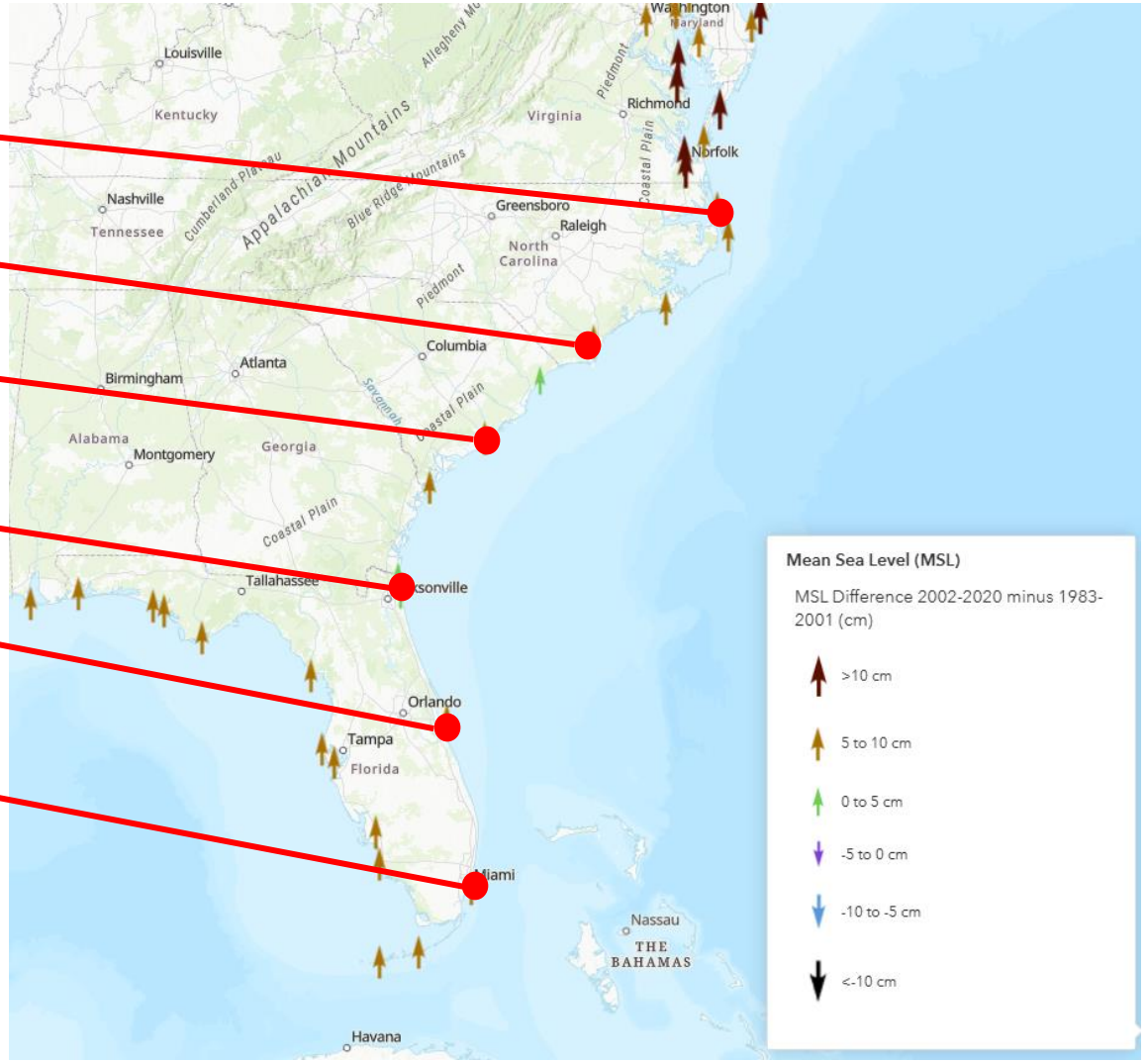
Wilmington, NC: ***+0.20'***

Charleston, SC: ***+0.24'***

Mayport, FL: ***+0.15'***

Port Canaveral, FL: ***+0.17'***

Miami, FL: ***+0.23'***



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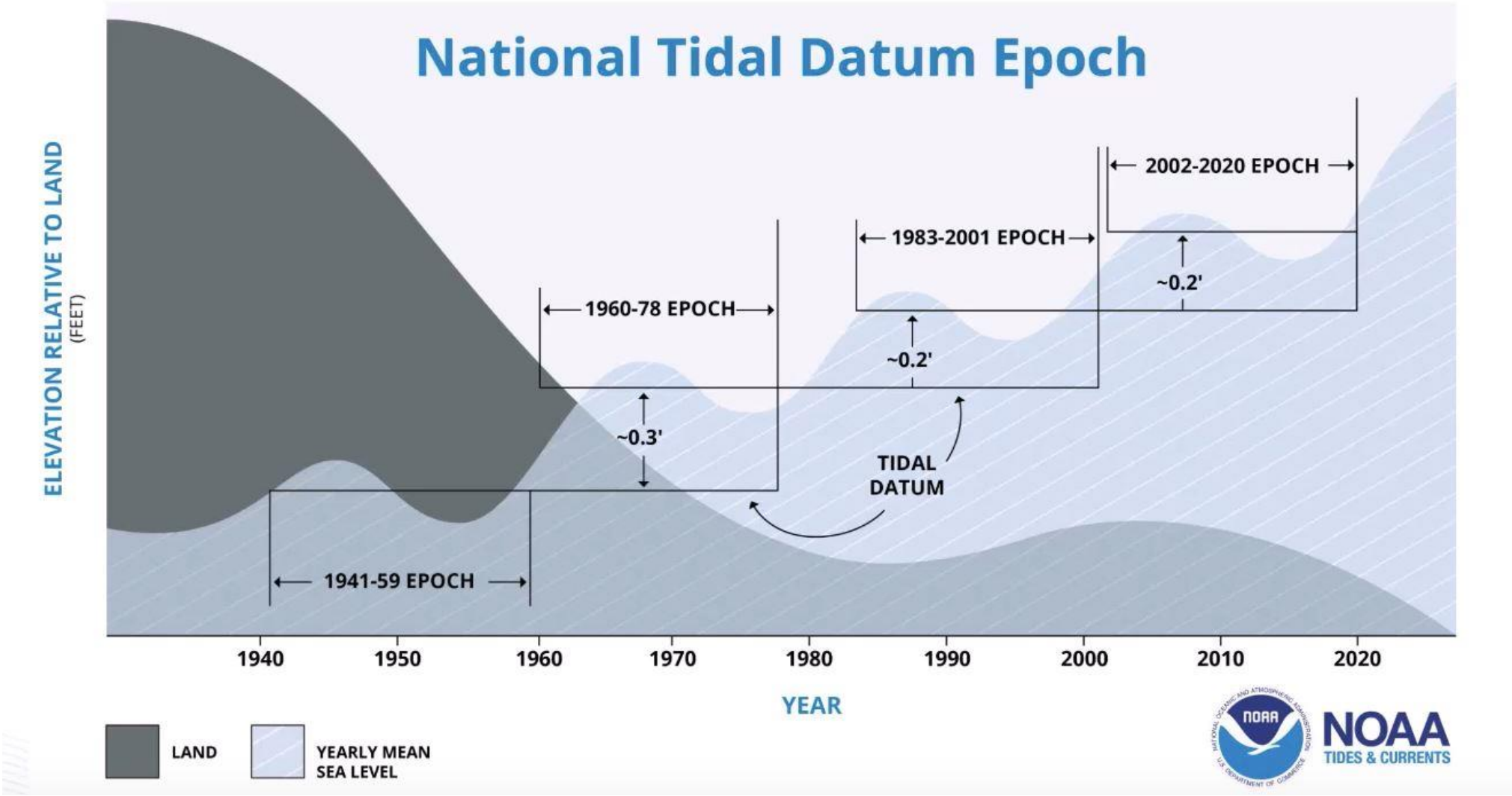
MSL Change & NTDE



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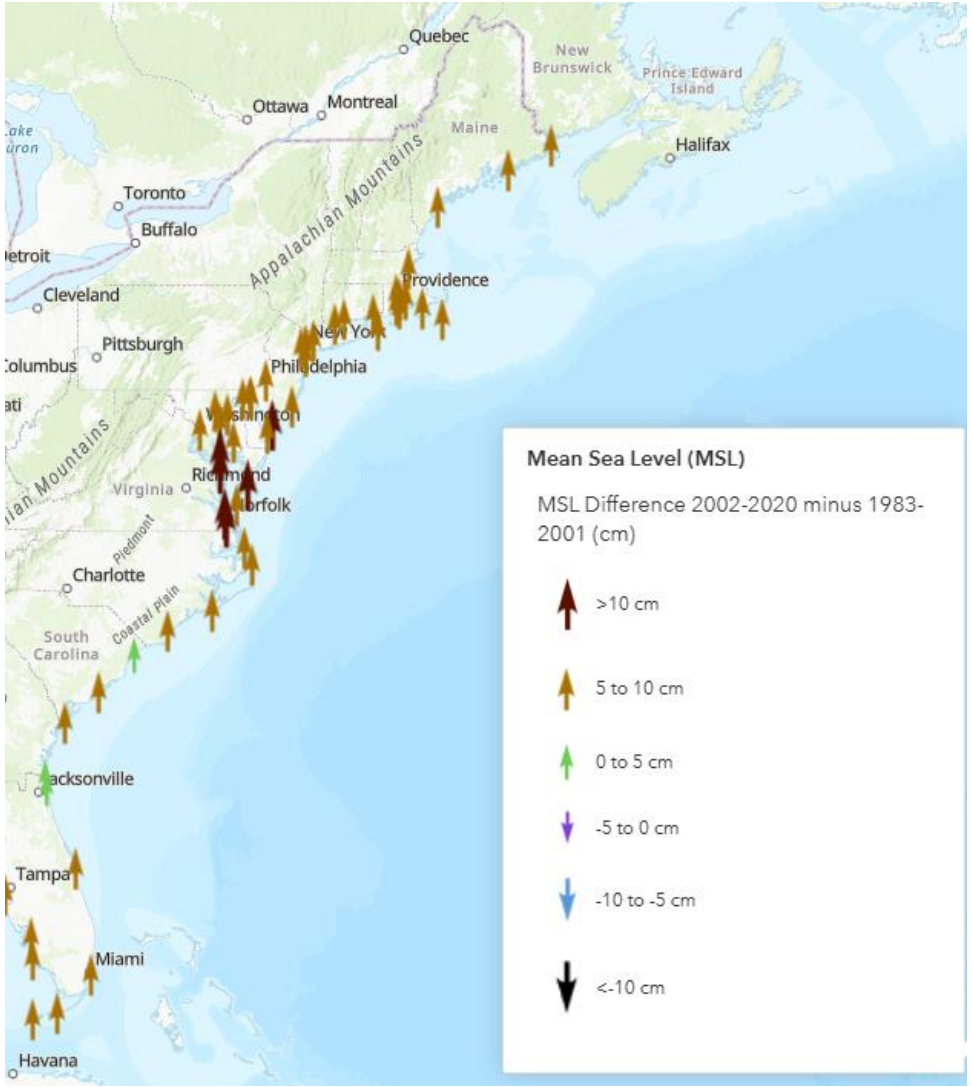
National Tidal Datum Epoch Impact Areas

- All east coast ports observed an increase in MSL height from 2001 to 2020.
- Amount of change in MSL varies by location on the east coast.
- Some of the largest changes occurring in the lower Chesapeake.
- Some of the smallest changes occurring in northern Florida.



NTDE Update
Stakeholder Impact

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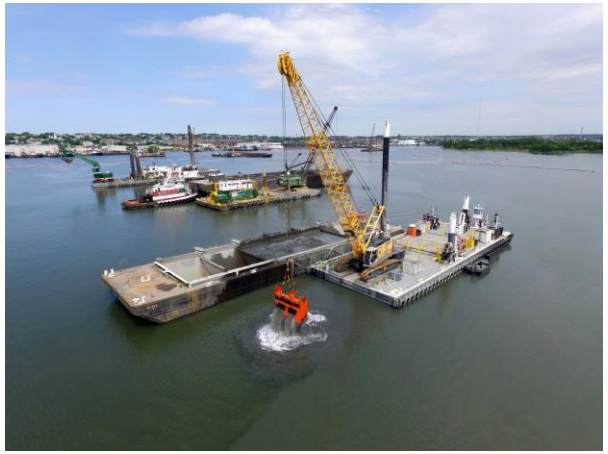
MSL Change & NTDE Datum Change

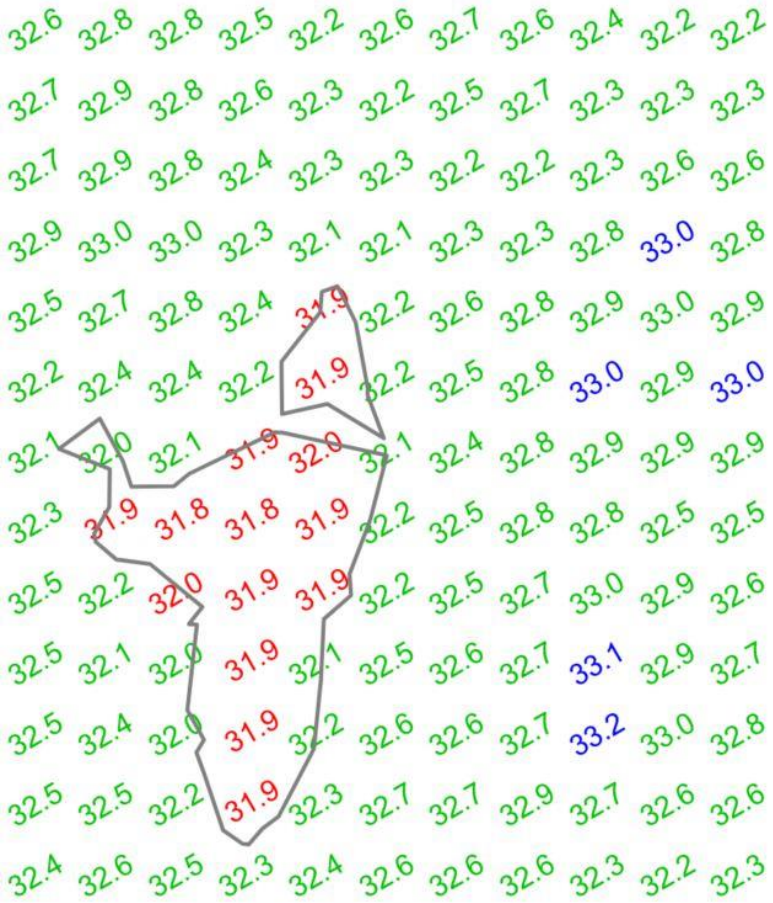
Stakeholder Impact

- Potential Impacts of the NTDE Update:
  - Interval of maintenance dredging events in the short term.
  - Sediment sampling.
  - Regulatory agency jurisdictional areas.
  - Design criteria for coastal structures.



Stakeholder Impact

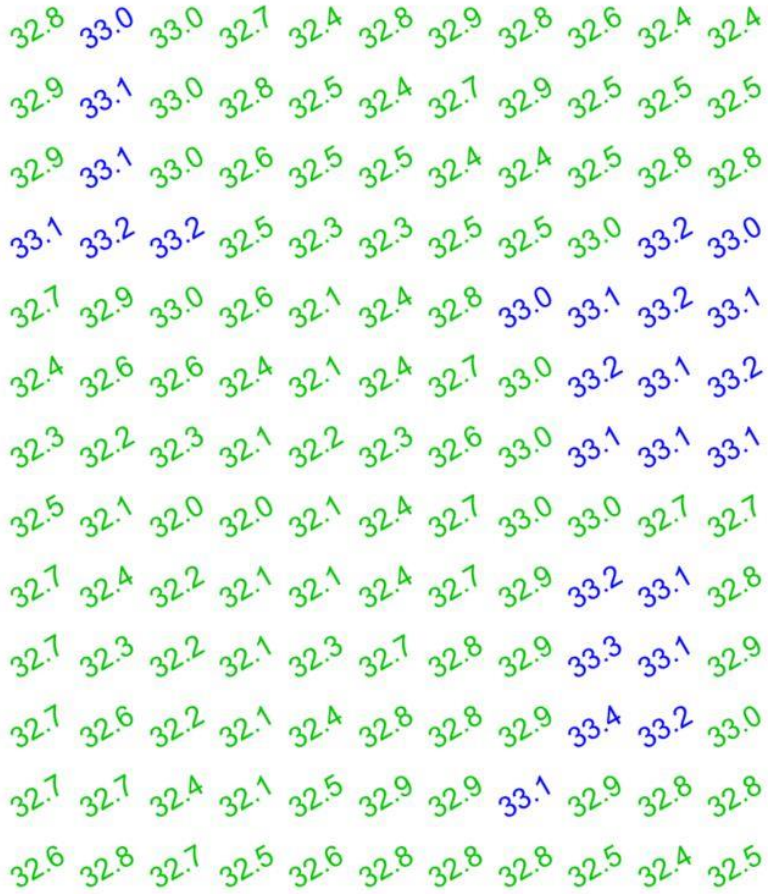
Soundings in MLLW
(1983-2001 Epoch)



< 32.00
32.00 - 32.99
>= 33.00

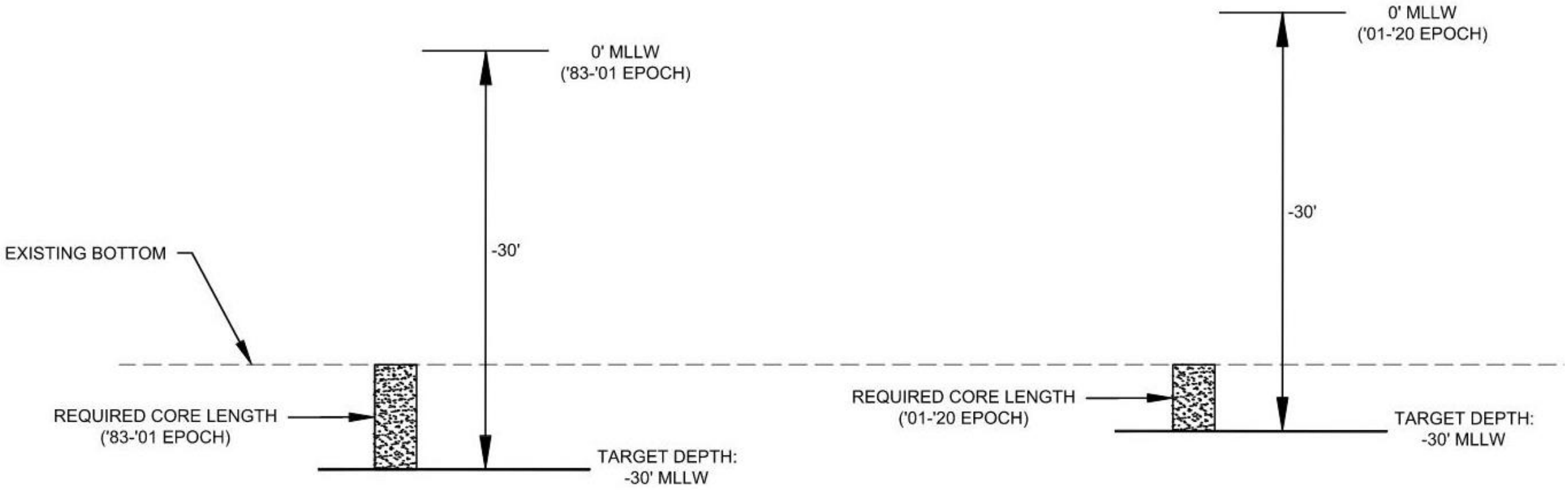
+0.2’ shift in MSL
from previous Epoch

Soundings in MLLW
(2001-2020 Epoch)



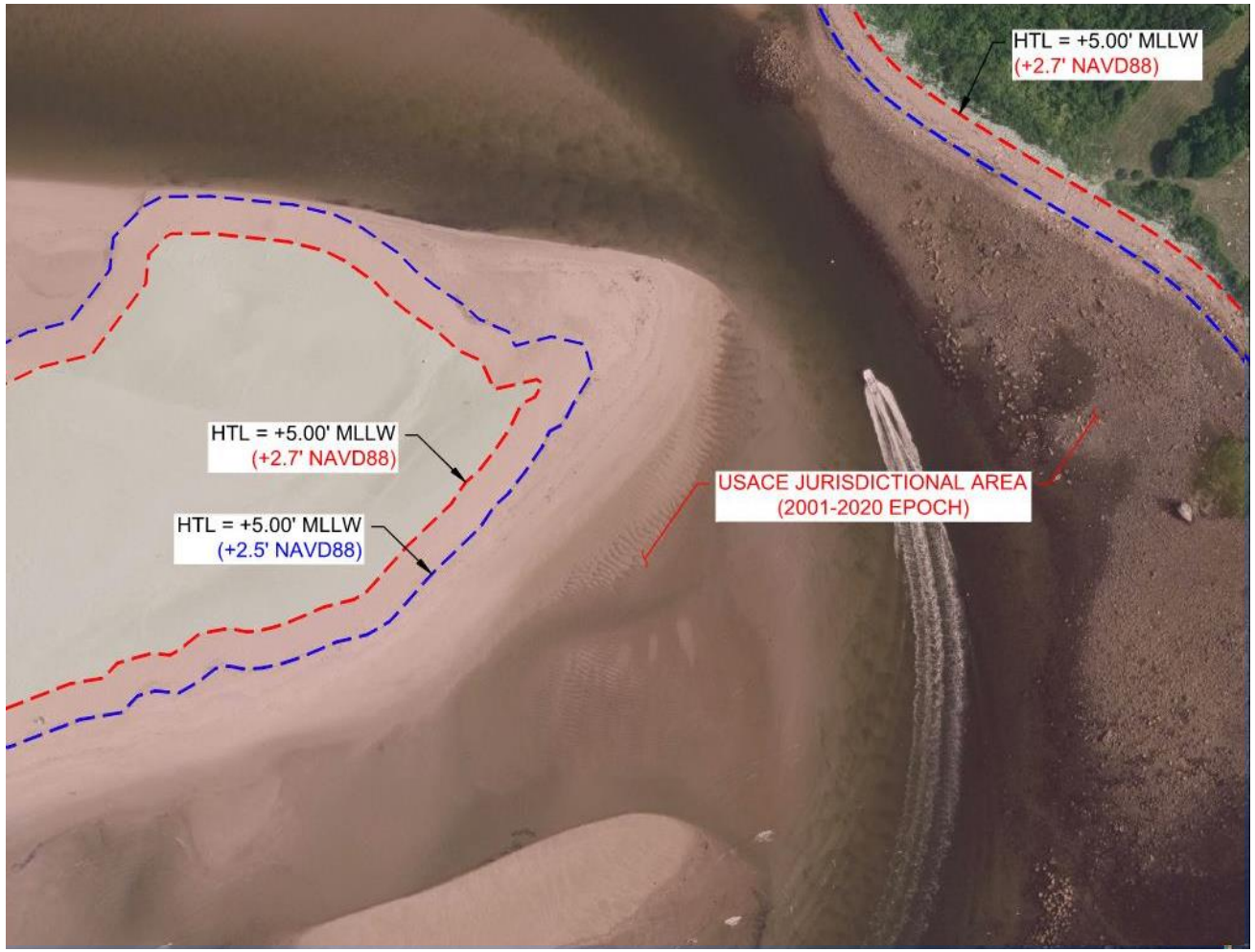
Stakeholder Impact

- Sediment Sampling



Stakeholder Impact

- Regulatory Area Jurisdiction
  - Many federal & state regulatory agencies jurisdictional boundaries are defined by AHTL or MHW.
  - The National Tidal Datum Epoch Update will impact where these tidal benchmarks fall on land.
  - For most of the east coast, expect an increase in federal & state jurisdictional boundary.



Stakeholder Impact

- Structures
  - Design criteria of coastal structures could be impacted by NTDE update.
  - Updated tidal datums could impact storm surge and flood modeling used in design.
  - Vertical reference points used to define elevations of existing structural features could change

NTDE & Revitalizing Harbors, Balancing Economy, Environment and Community

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NTDE Update & Balancing Economy

- A change in the MLLW datum could result in reduced required dredge volume for dredging projects.
- Potential cost savings to the owner by being able to delay maintenance dredge events.
- Potential impacts to available work for contractors if routine maintenance dredging jobs are delayed.

NTDE & Environment

- Enhanced Coastal Ecosystem Monitoring.
- Improved Flooding Risk Assessment.
- Potential impacts to planning for habitat restoration & creation projects.

Questions & Answers

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