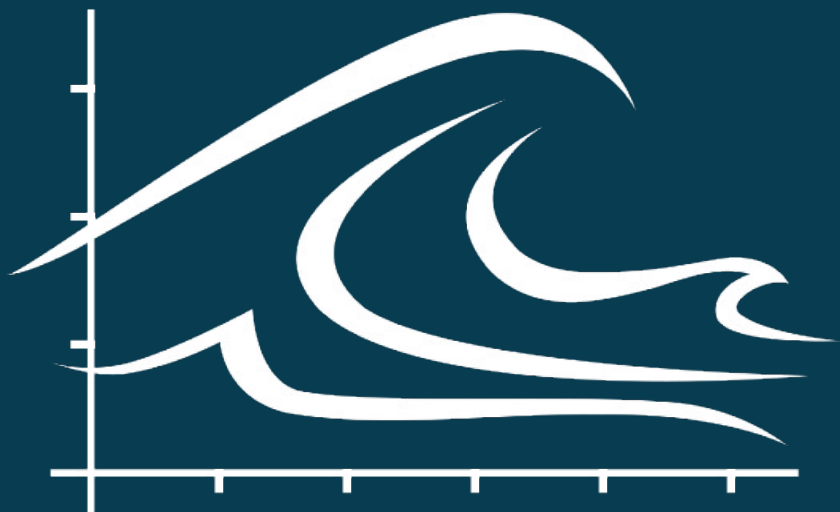


NERACOOS



NORTHEASTERN REGIONAL ASSOCIATION
OF COASTAL OCEAN OBSERVING SYSTEMS

Gulf of Maine Ocean Climate Trends in 2023

Jake Kritzer

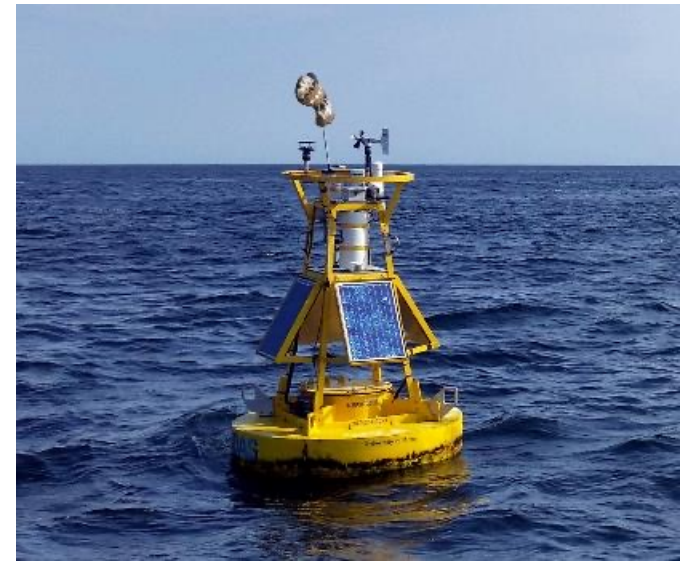
Eastern Regional Climate Team

Virtual Meeting

April 30, 2024

Overview

- Snapshot of IOOS & NERACOOS.
- Gulf of Maine ocean climate trends in 2023.
 - Temperature
 - Salinity
 - Plankton
- Summer forecasts for 2024.





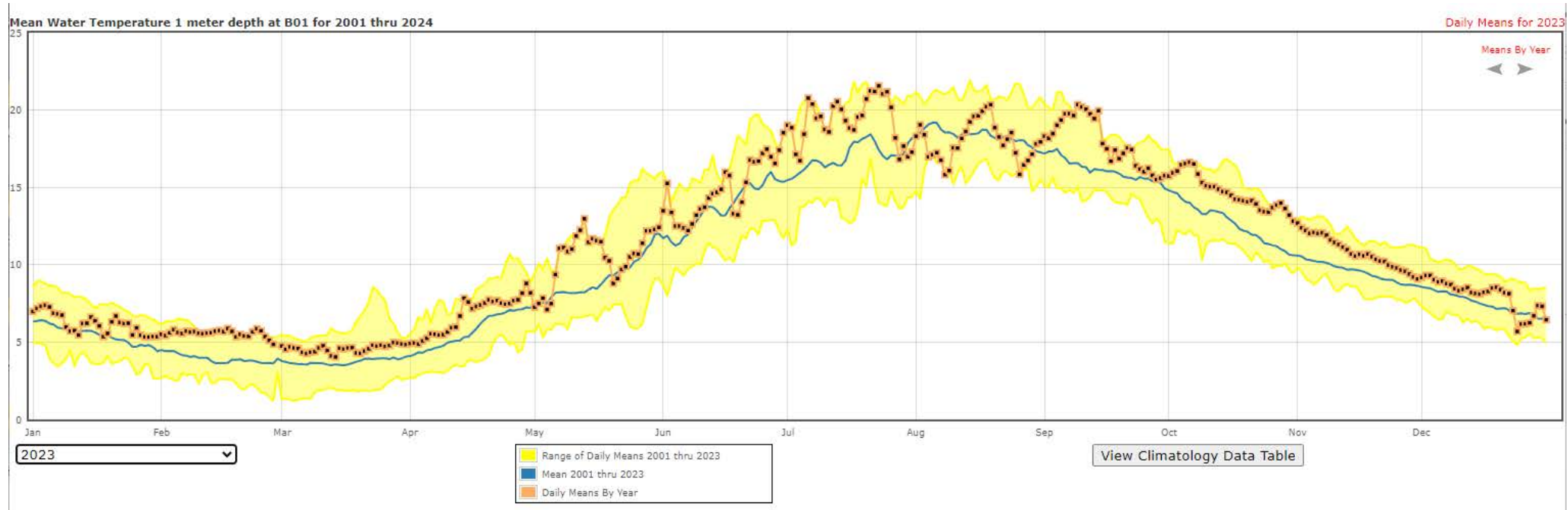
IOOS

Integrated Ocean
Observing System

IOOS is our eyes on the ocean, coasts, and Great Lakes. We are an integrated network of people and technology gathering observing data and developing tracking and predictive tools to benefit the economy, the environment, and public safety at home, across the nation, and around the globe.



Western Maine Shelf – Temperature at 1m

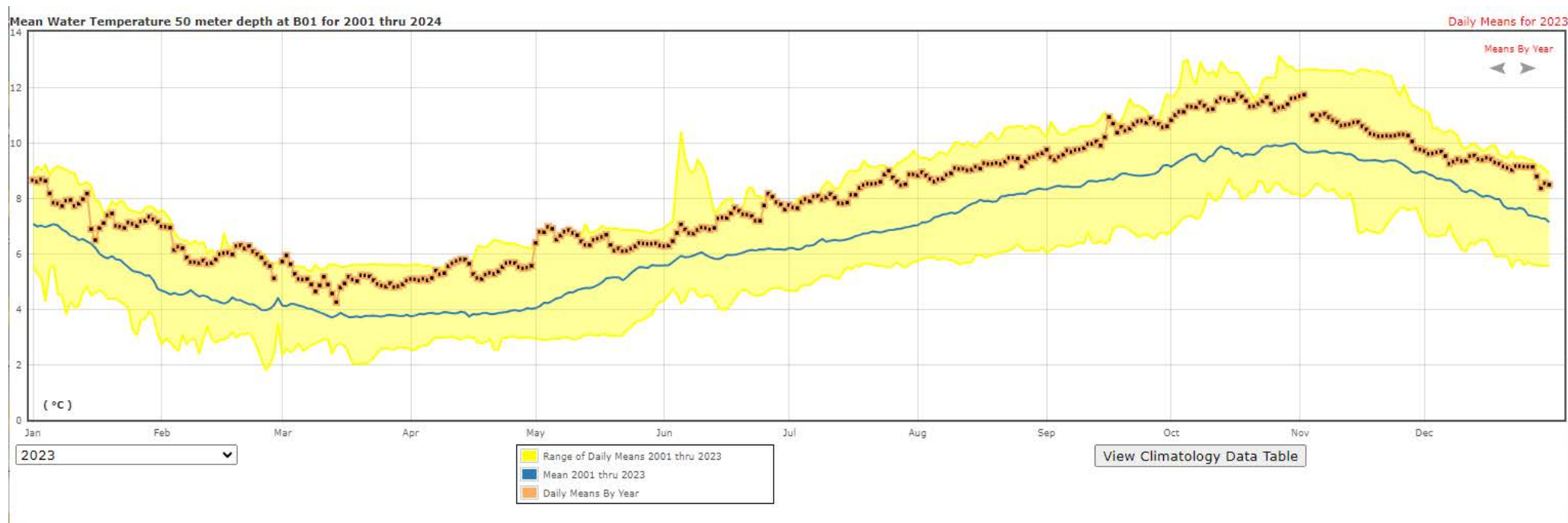


NERACOOS



Gulf of Maine
Research Institute

Western Maine Shelf – Temperature at 50m

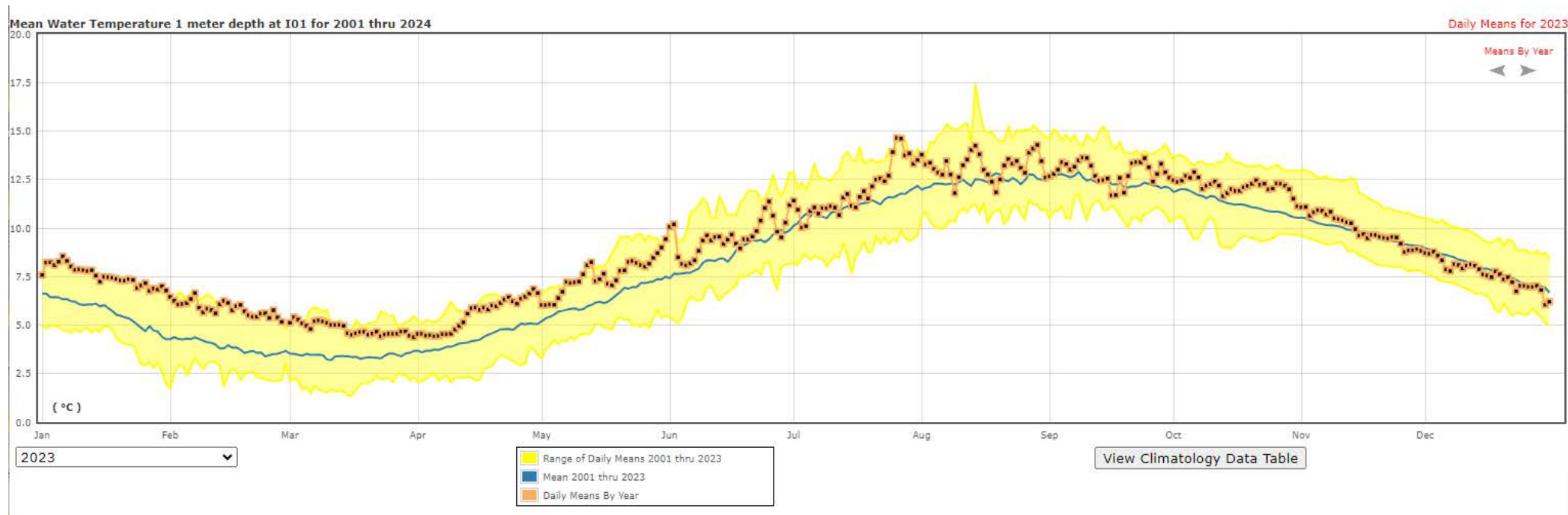


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Eastern Maine Shelf – Temperature at 1m

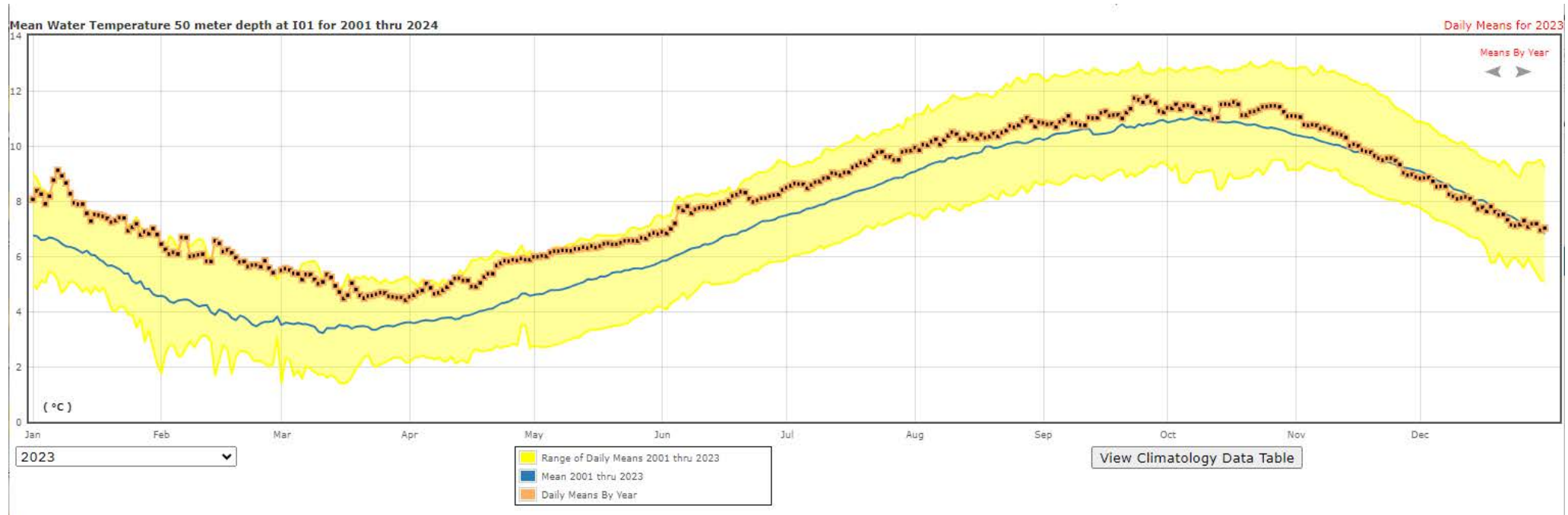


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Gulf of Maine
Research Institute

Eastern Maine Shelf – Temperature at 50m

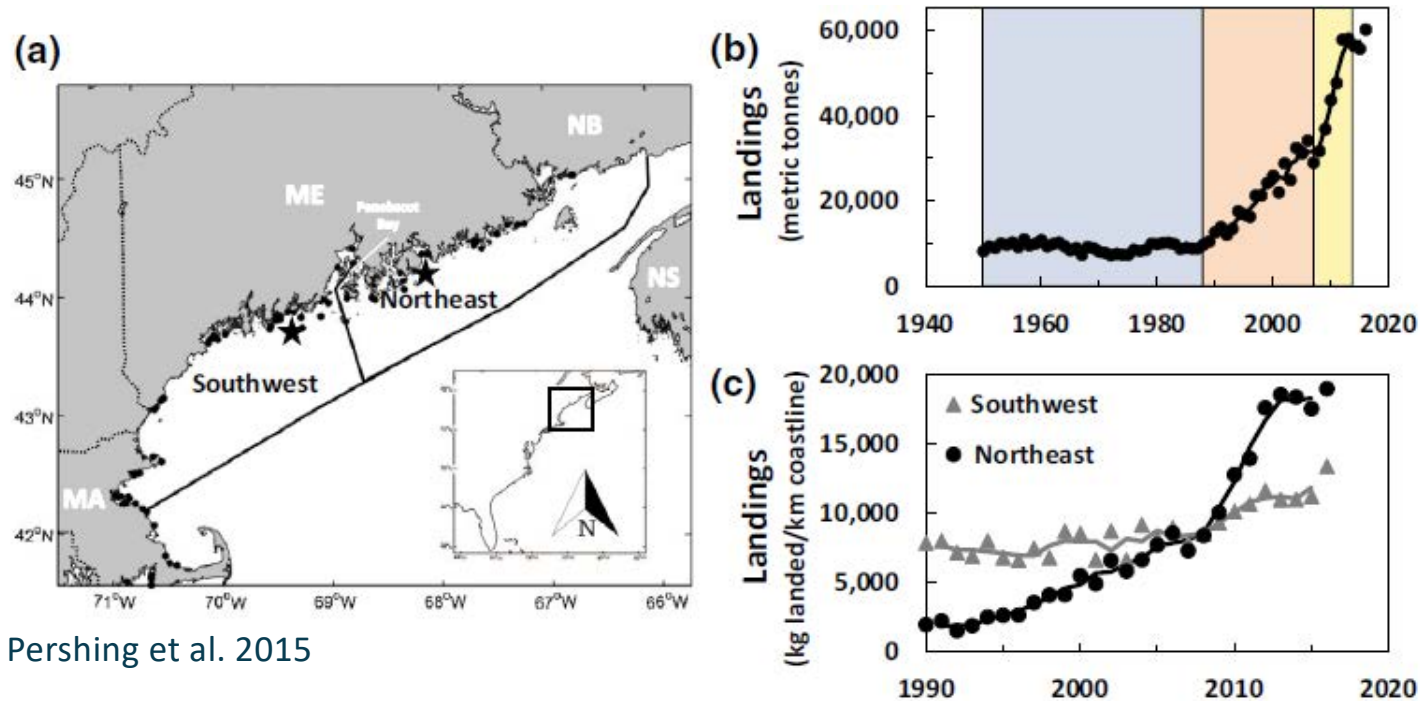


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Spatial Trends in Lobster Abundance

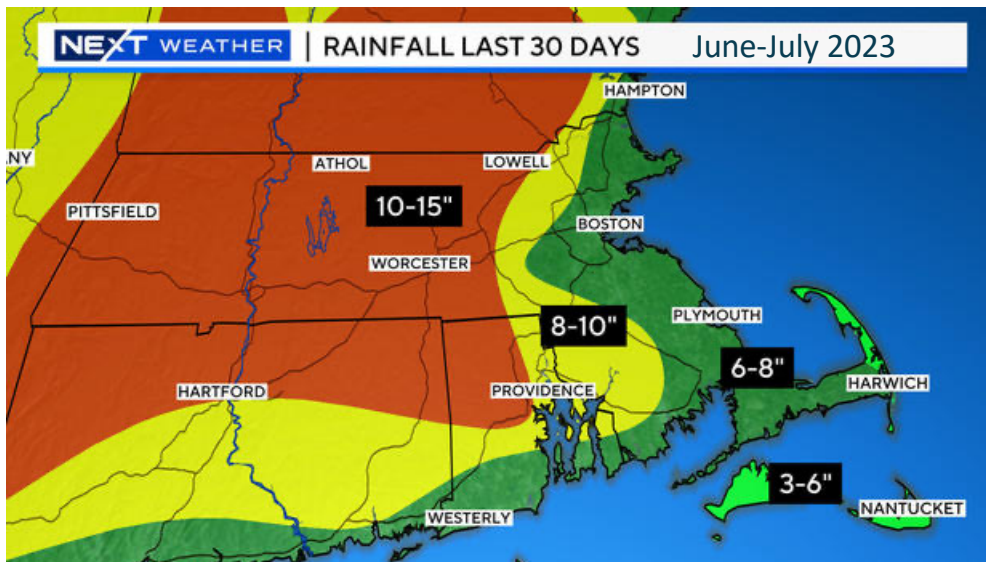


→ Driven by warming water + greater mixing due to larger tides Downeast



NERACOOS

2023 Rainfall Records



WBZ Boston

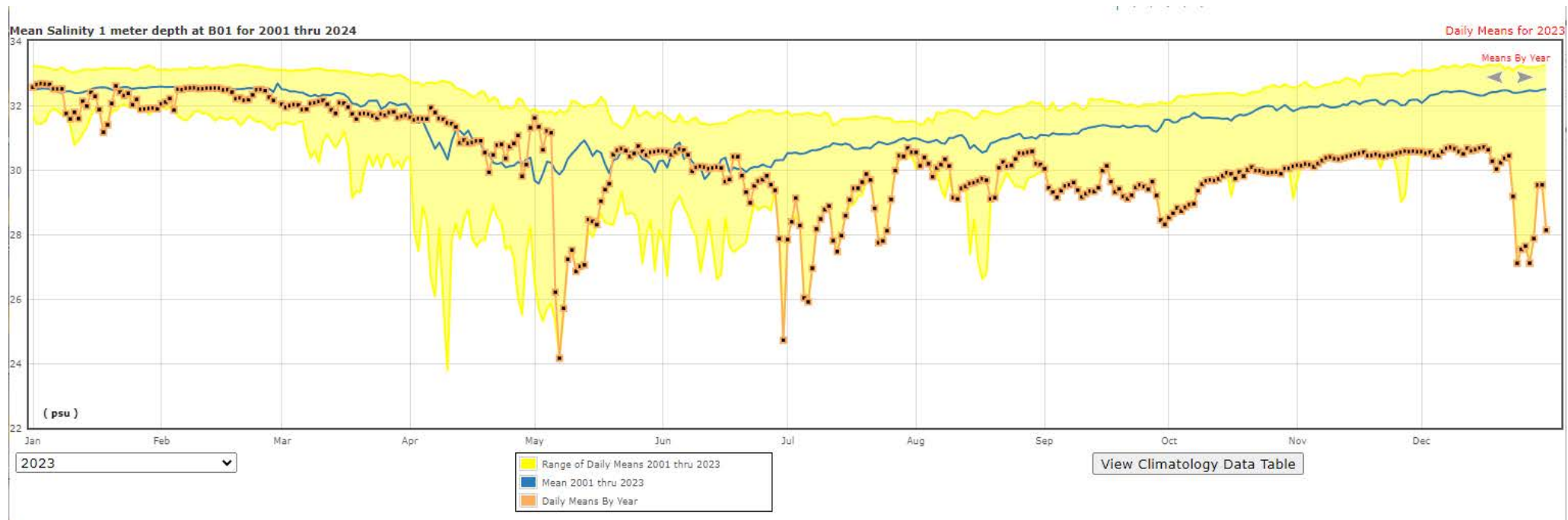


Bangor Daily News



NERACOOS

Western Maine Shelf – Salinity at 1m

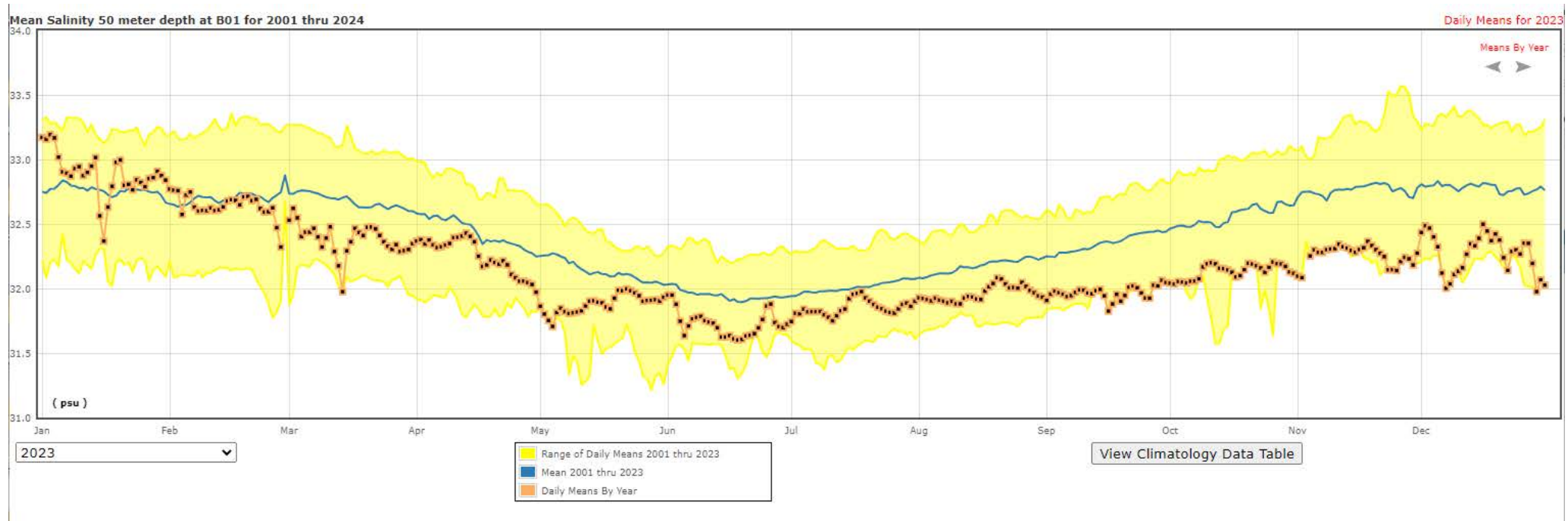


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Research Institute

Western Maine Shelf – Salinity at 50m

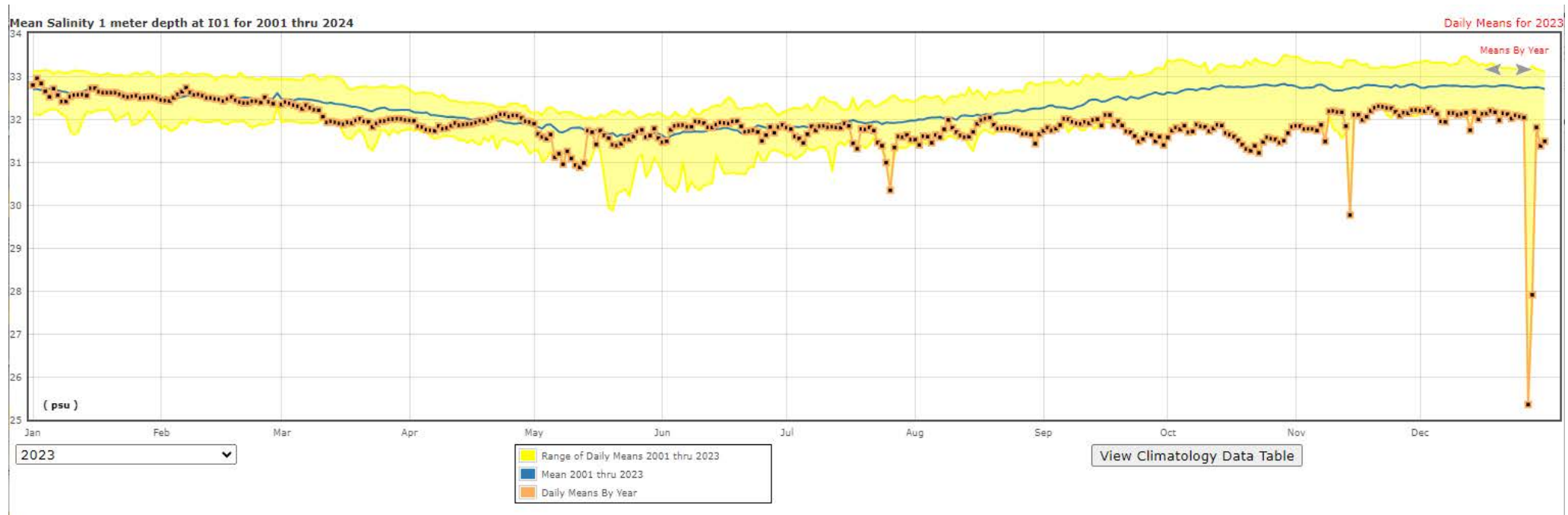


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Eastern Maine Shelf – Salinity at 1m

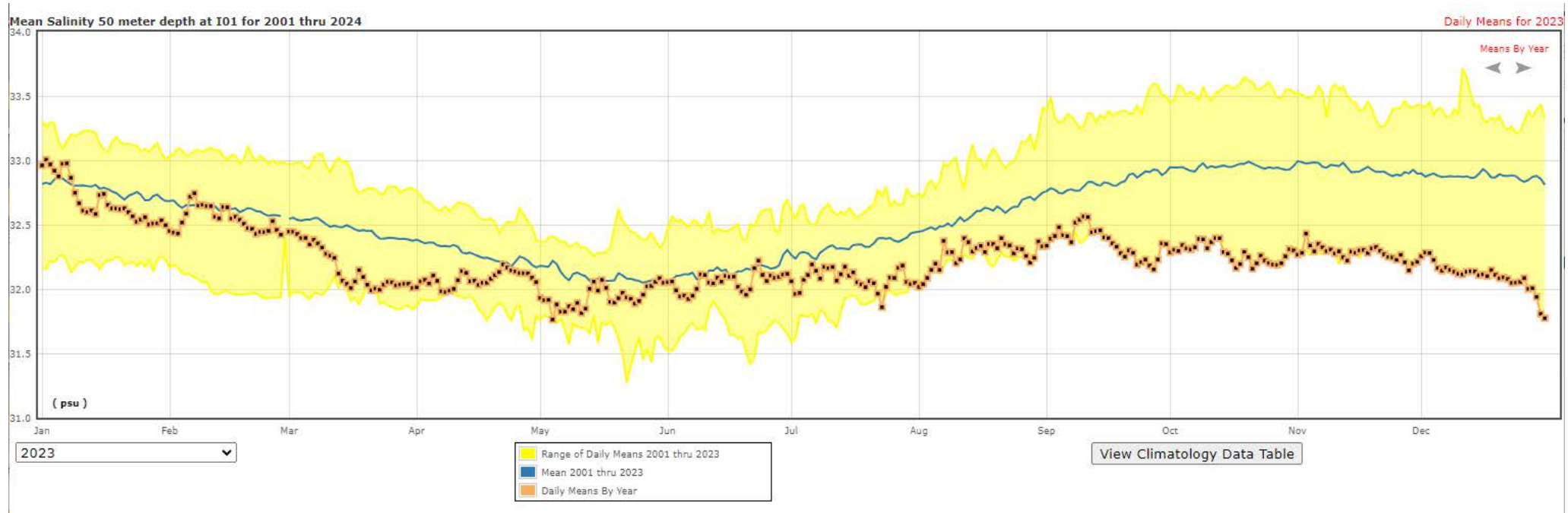


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Eastern Maine Shelf – Salinity at 50m

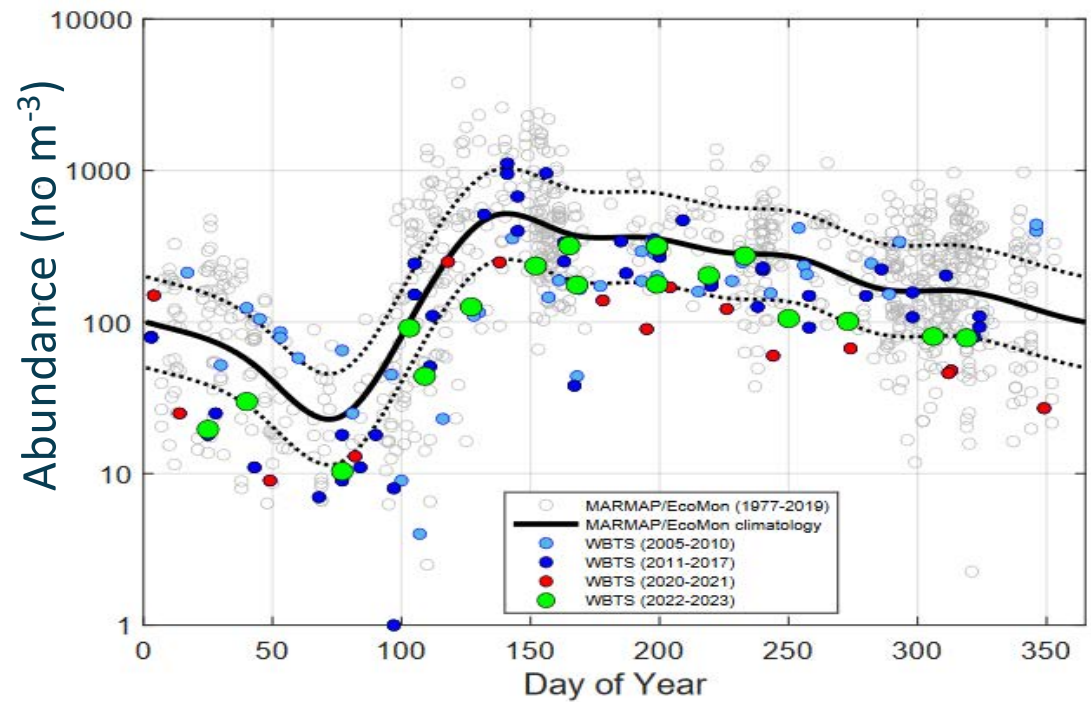
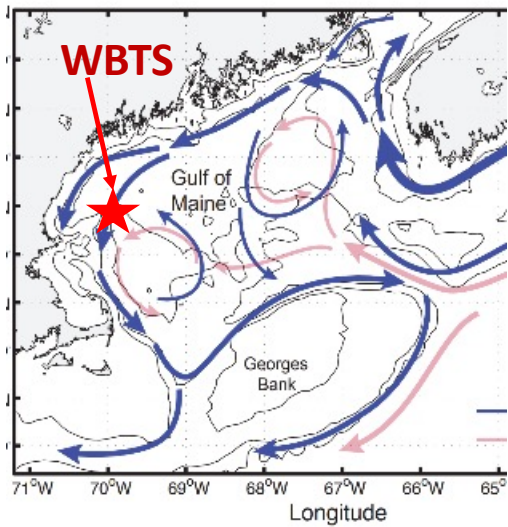


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Calanus Index

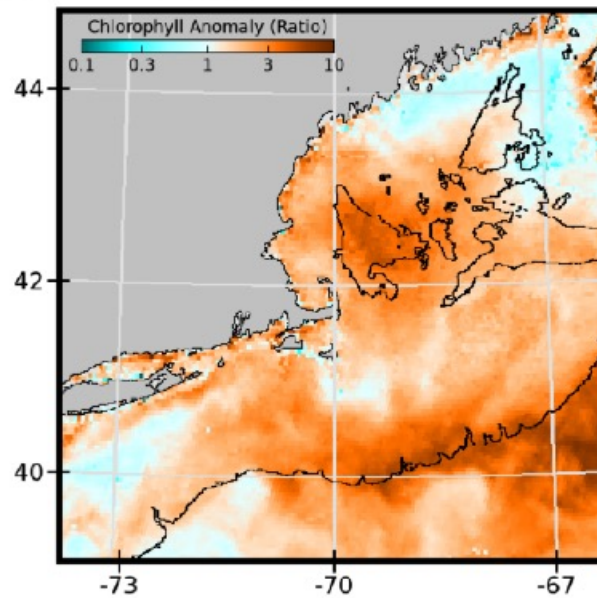
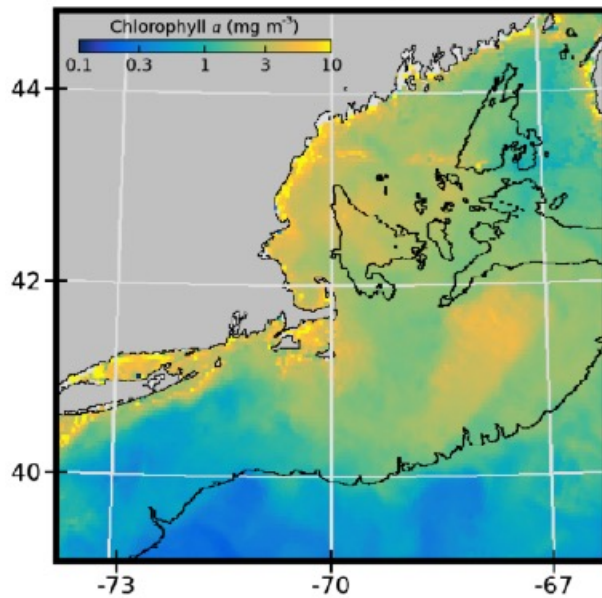


NERACOOS



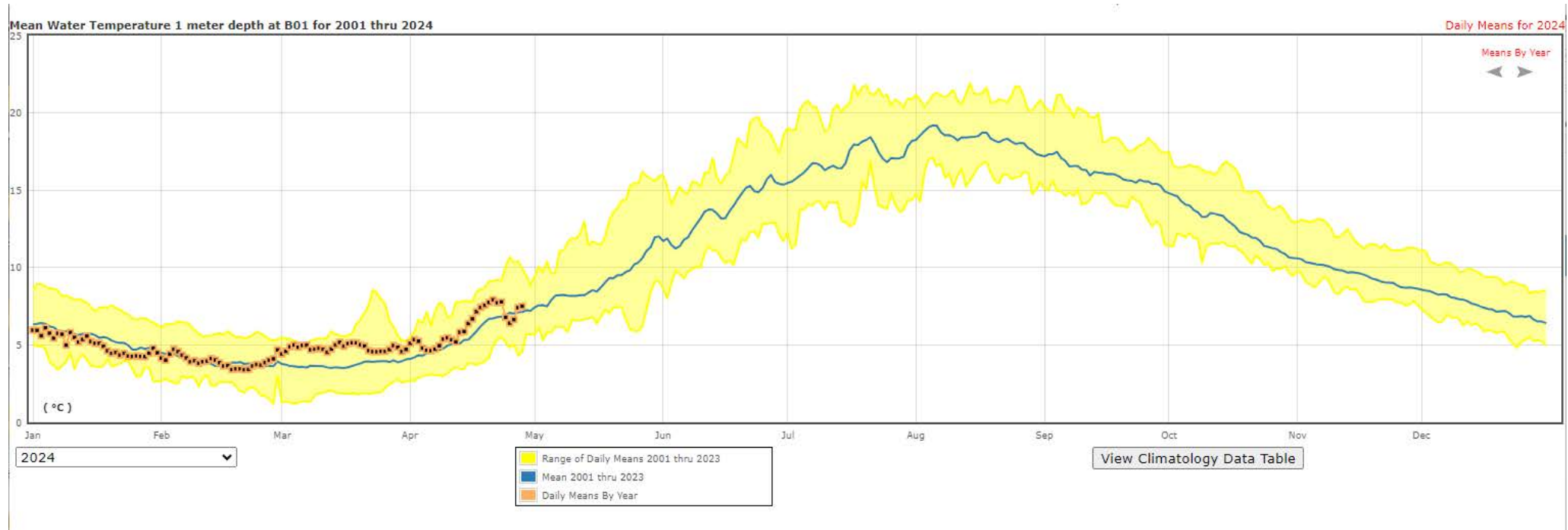
Triplos Bloom

Week 38: 20230917 - 20230923



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2024 So Far: Western Maine Shelf – Temp. at 1m

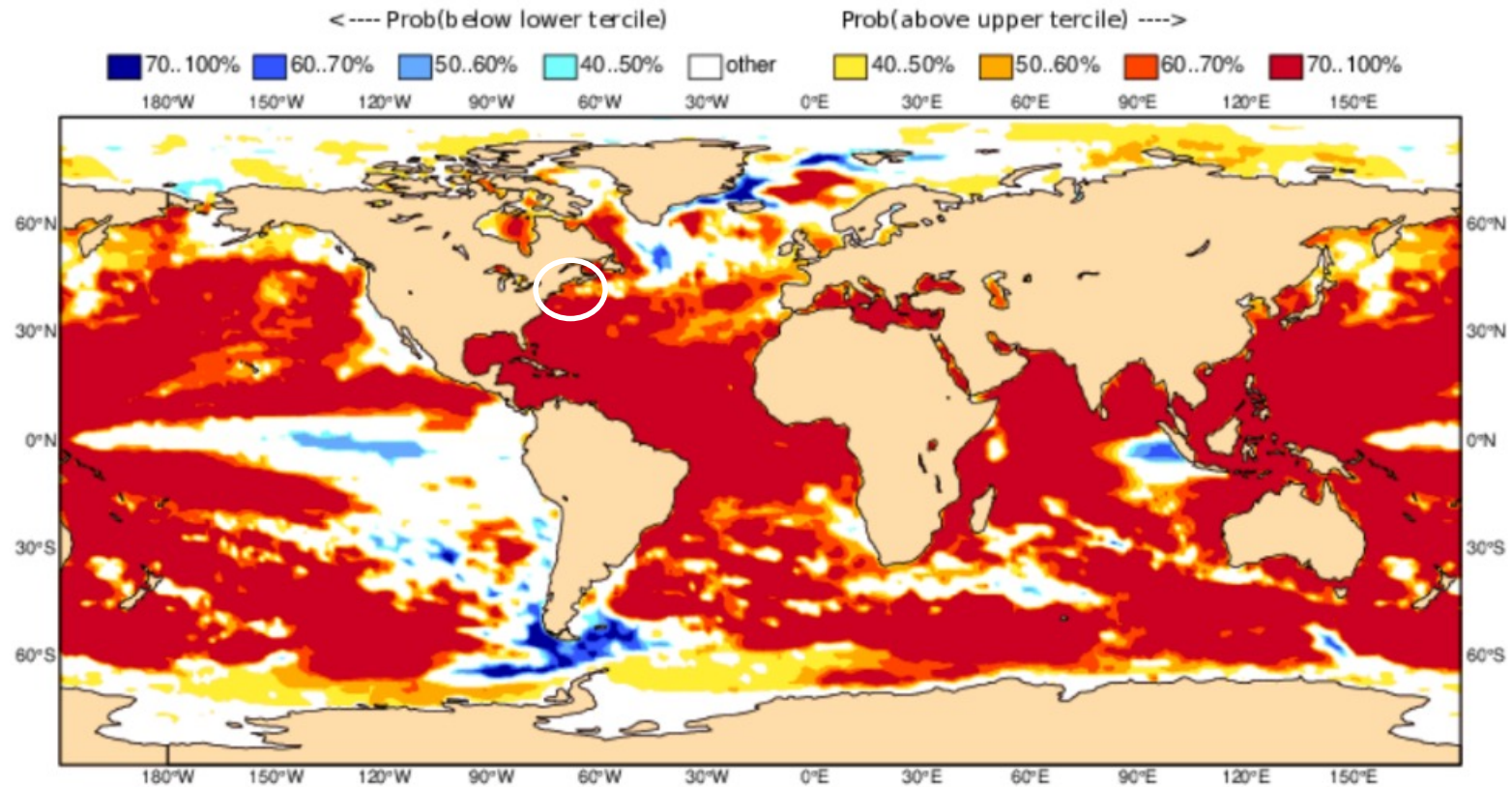


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ECMWF SST Forecast

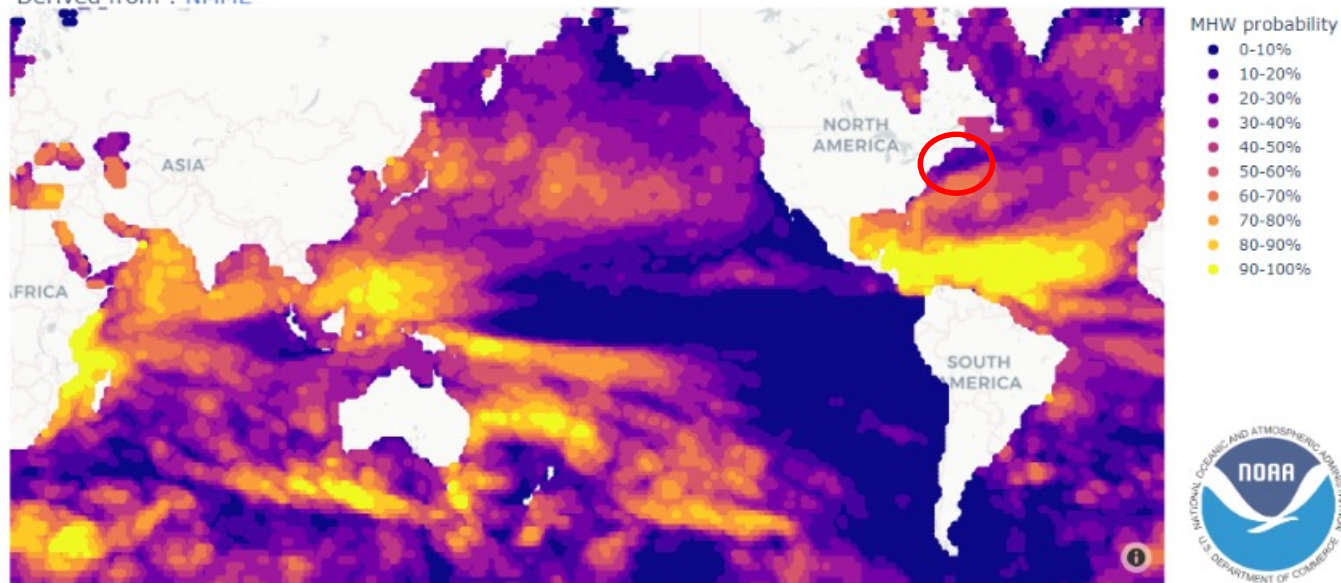


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NOAA PSL MHW Forecast

Marine Heatwave (MHW) Forecast [Jacox et al., 2022]

Derived from : [NMME](#)



Lead time = 4.5 months (08/2024)



NERACOOS

Summary

- **Trends in 2023:**

- Temperatures were generally, but not anomalously high.
- More cooling throughout the water column late in the year in Eastern Maine.
- Greater stratification in Western Maine with temperature remaining relatively higher at depth.
- Record low salinities took hold over the second half of the year throughout the system following record high rainfall.
- *Calanus* index show some signs of recover from record lows in 2020-2021.
- *Tripos* was through the roof, but the drivers and long-term consequences are unclear.

- **Forecasts for 2024:**

- Early temperature trends are average to high, but not yet extreme.
- Forecast for ~60-70th percentile summer temperatures.
- Probability of summer marine heat wave is low.



