NOAA West Watch Update
23 September 2025

NANOOS Update

Roxanne Carini on behalf of many

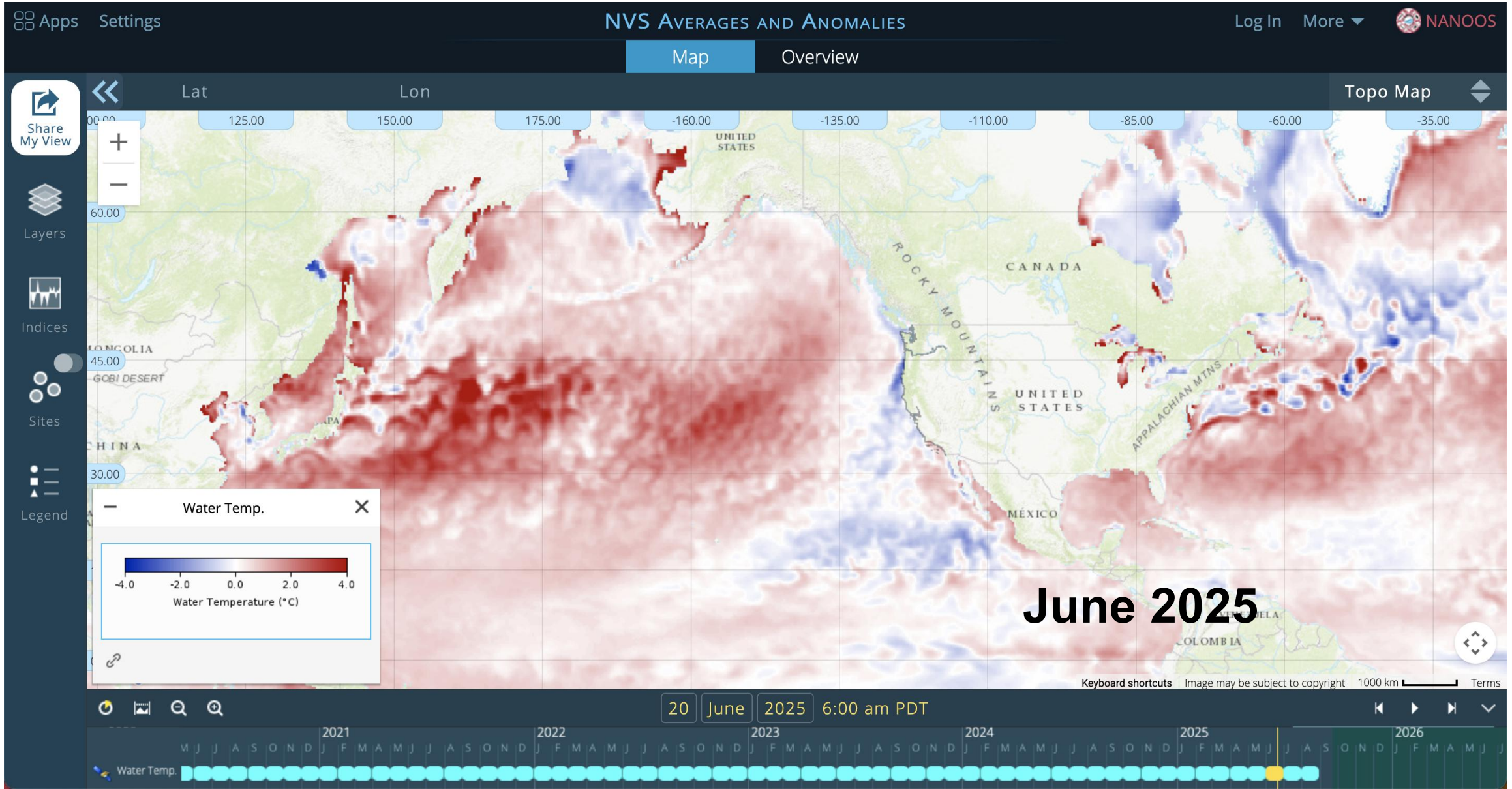
www.nanoos.org

NANOOS: www.nanoos.org
https://nvs.nanoos.org/Climatology

Climatology app:

Sea Surface Temperature Anomaly
NCEI Optimum Interpolation SST

NCEI OI SST vs. 1983-2012



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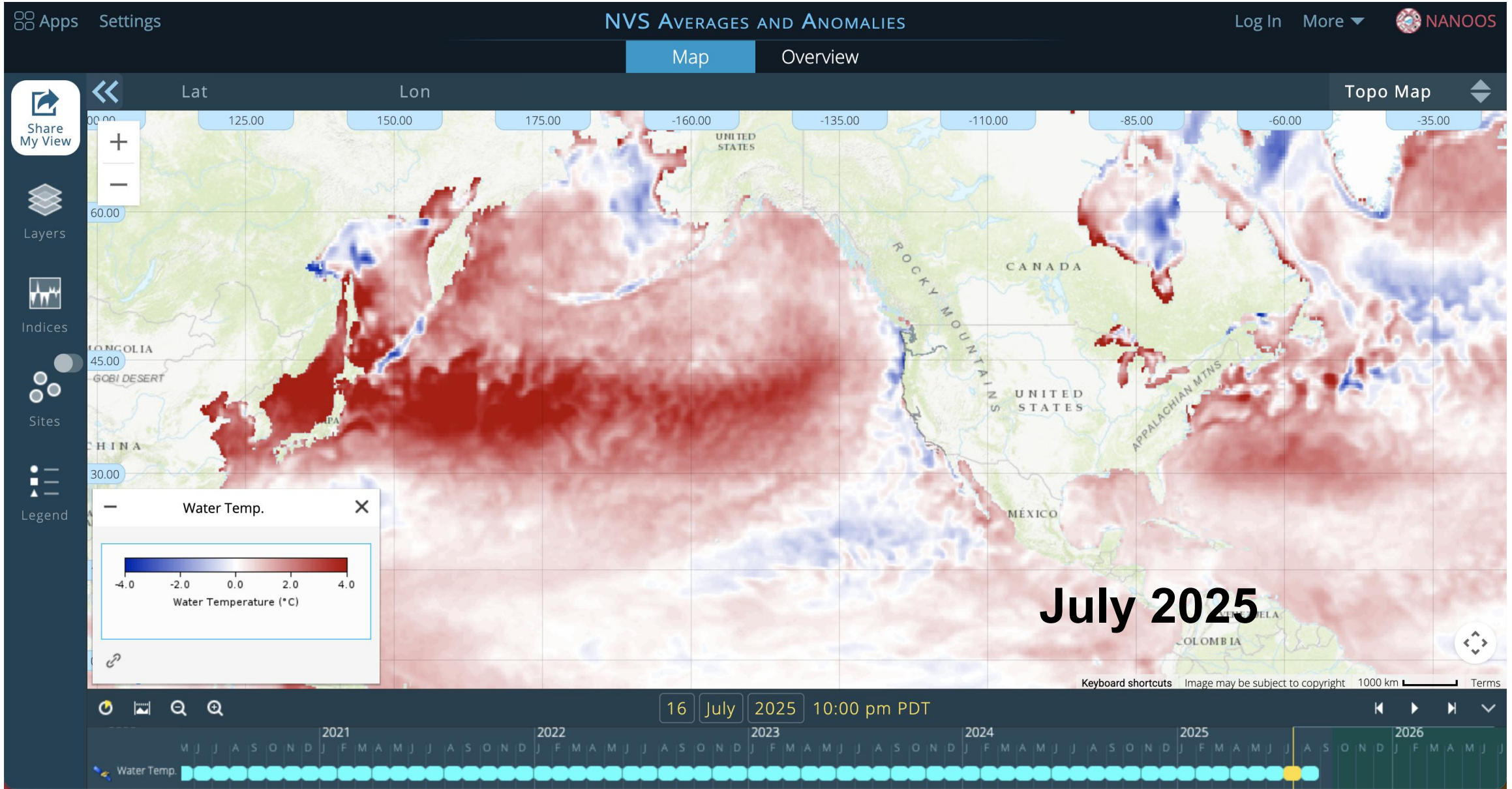

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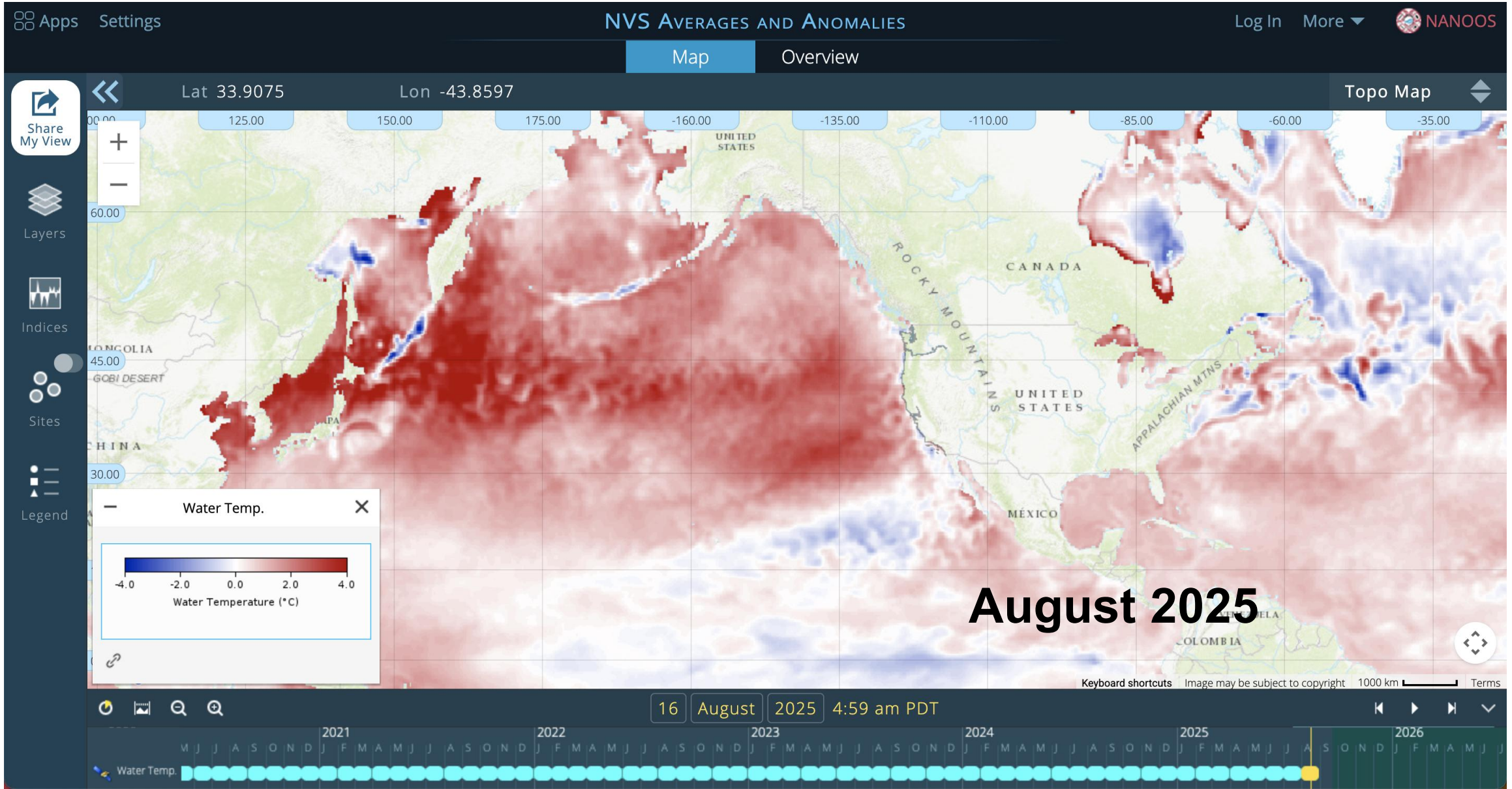
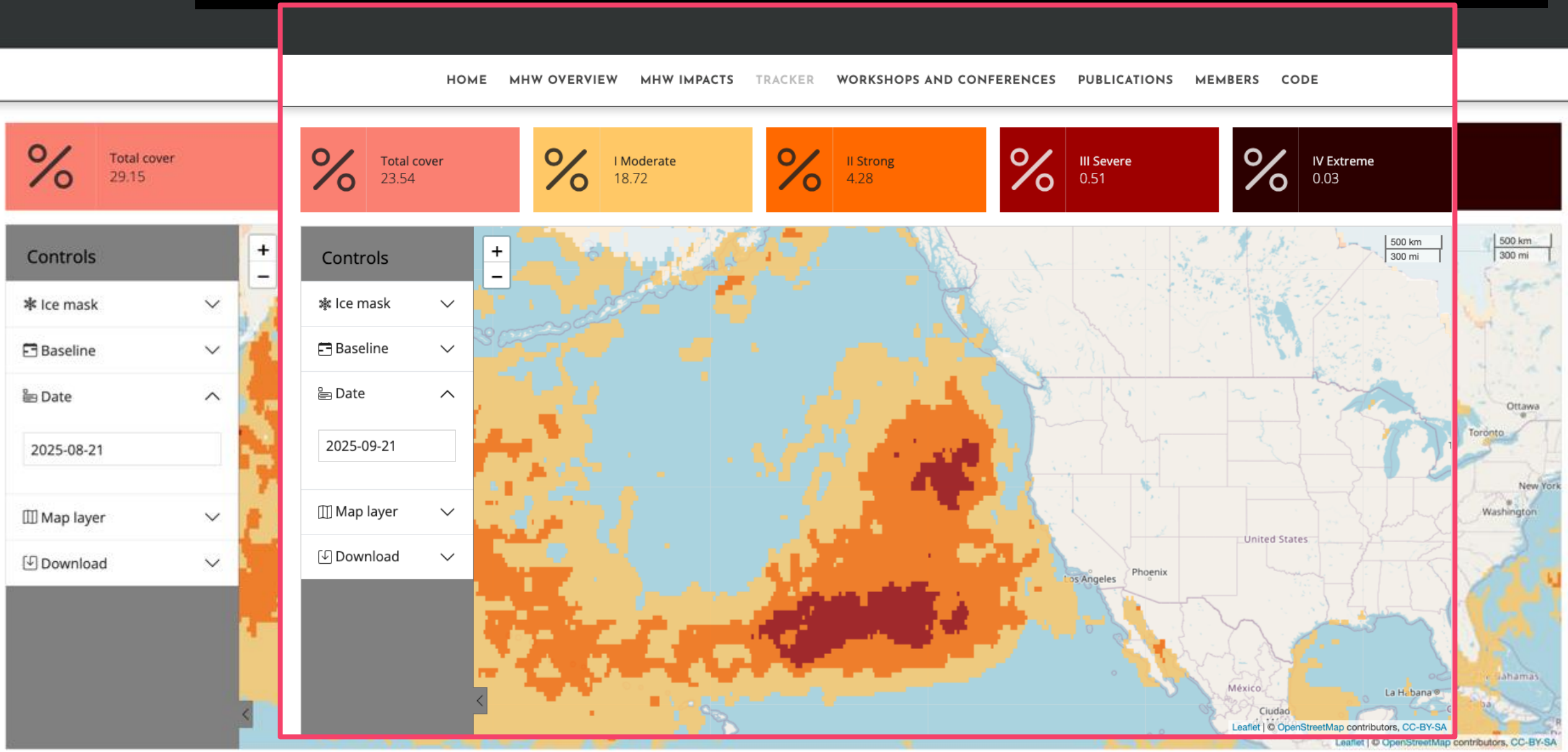


MARINE HEATWAVES International Working Group



http://www.marineheatwaves.org/tracker.html

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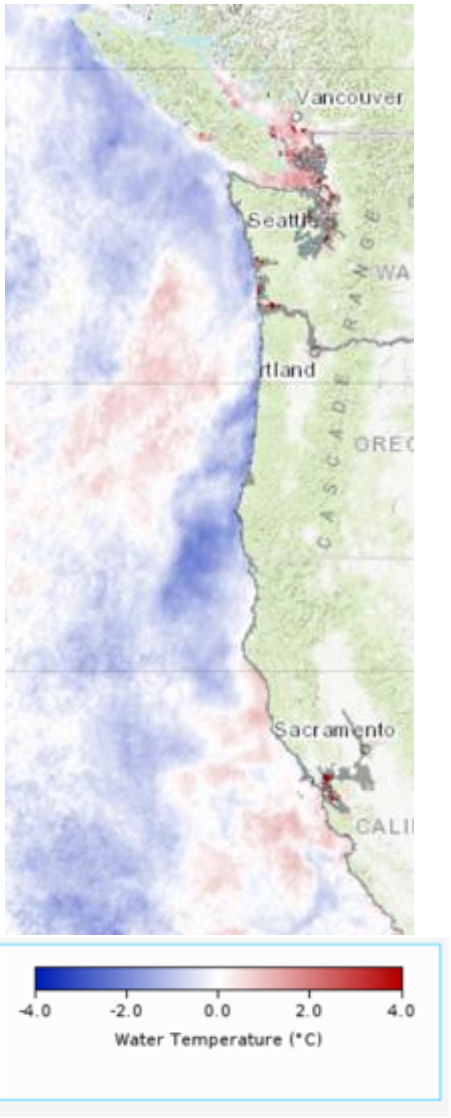
https://nvs.nanoos.org/Climatology

Climatology app:

Sea Surface Temperature Anomaly
OSU Modis

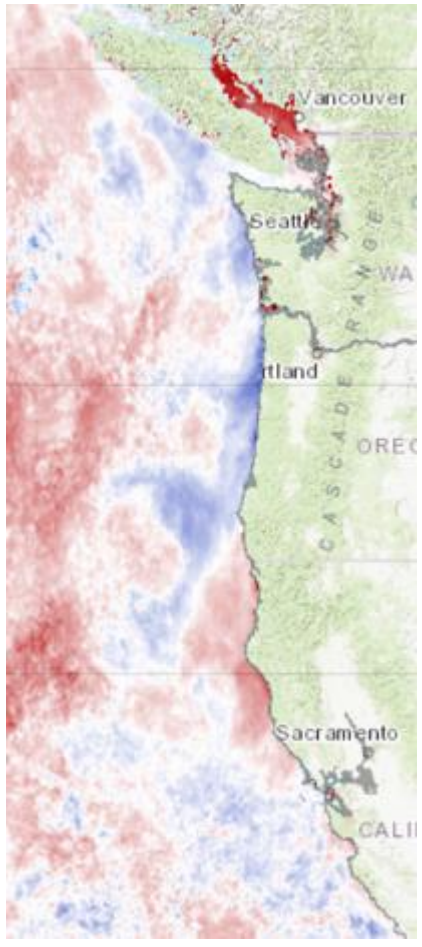
June 2025

OSU MODIS vs. 2002-2012



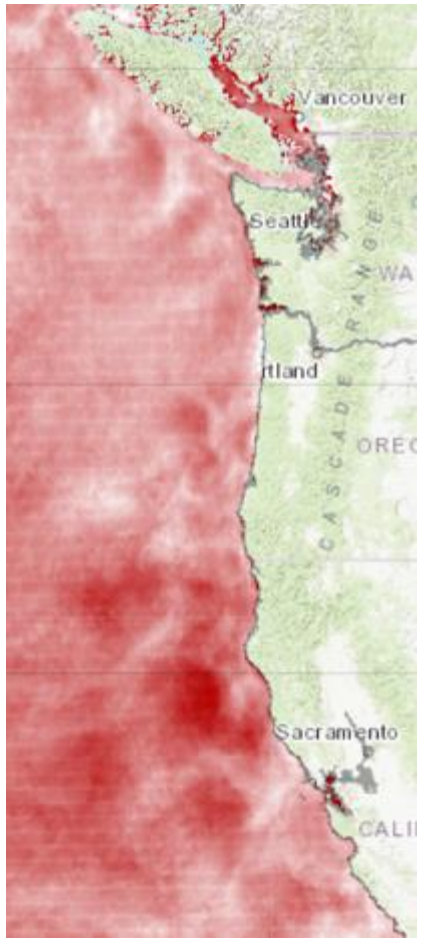
July 2025

OSU MODIS vs. 2002-2012



August 2025

OSU MODIS vs. 2002-2012



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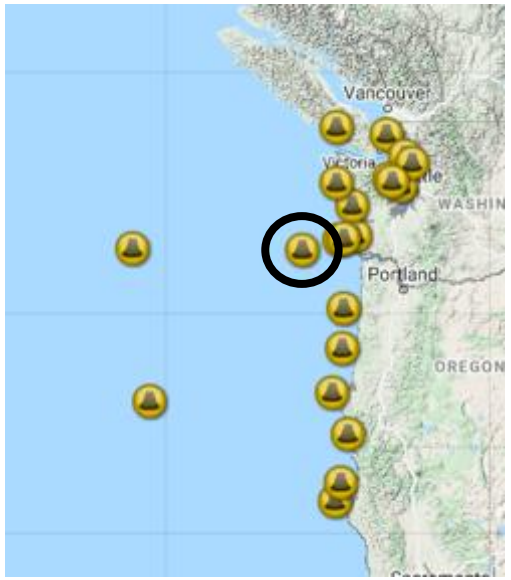
Climatology app:

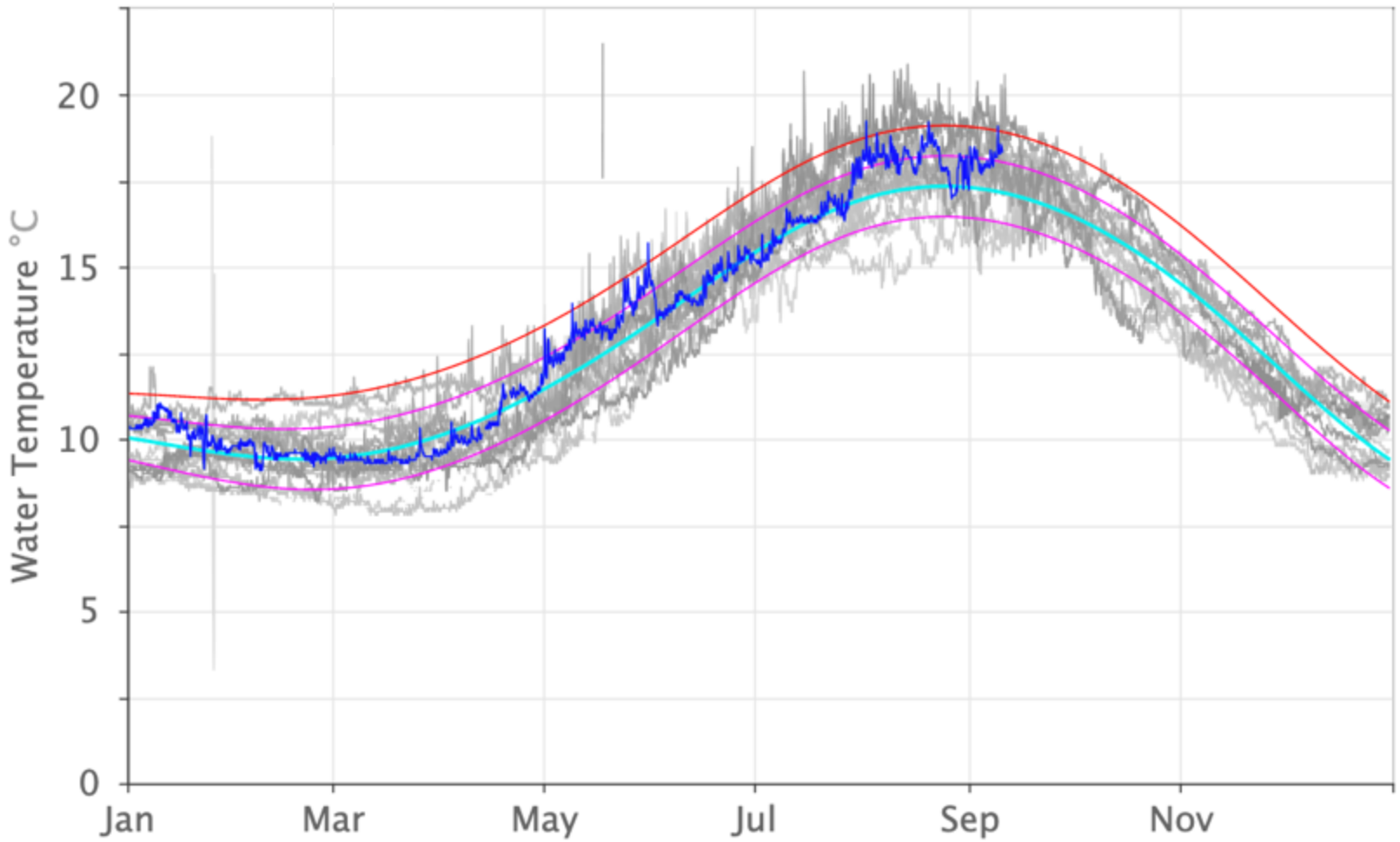
Sea Surface Temperature

~115 km



- Average 2004 - 2020
- -1 STD
- +1 STD
- +2 STD
- 2025

NDBC Tillamook



IOOS

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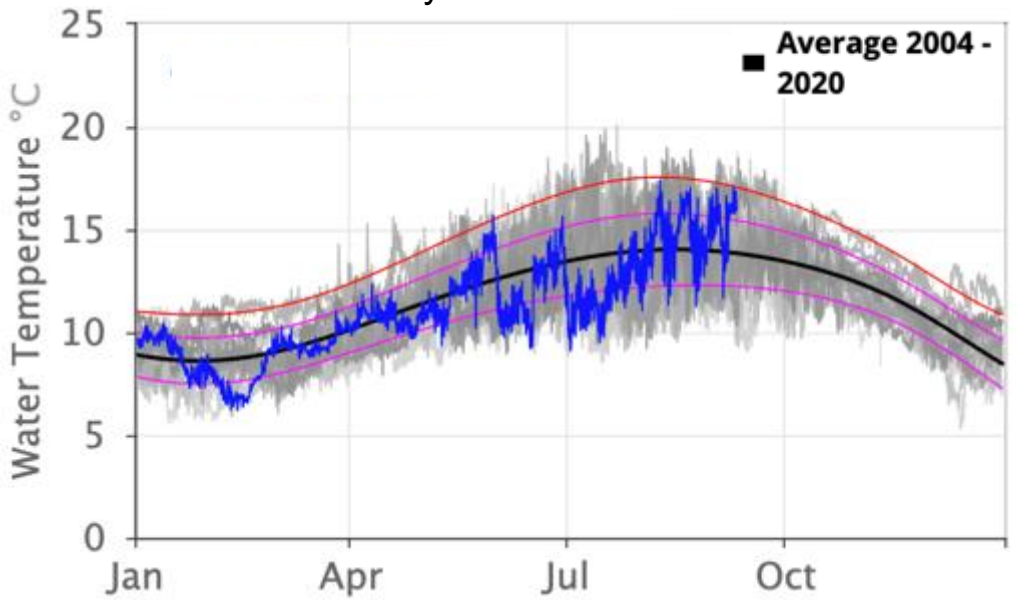
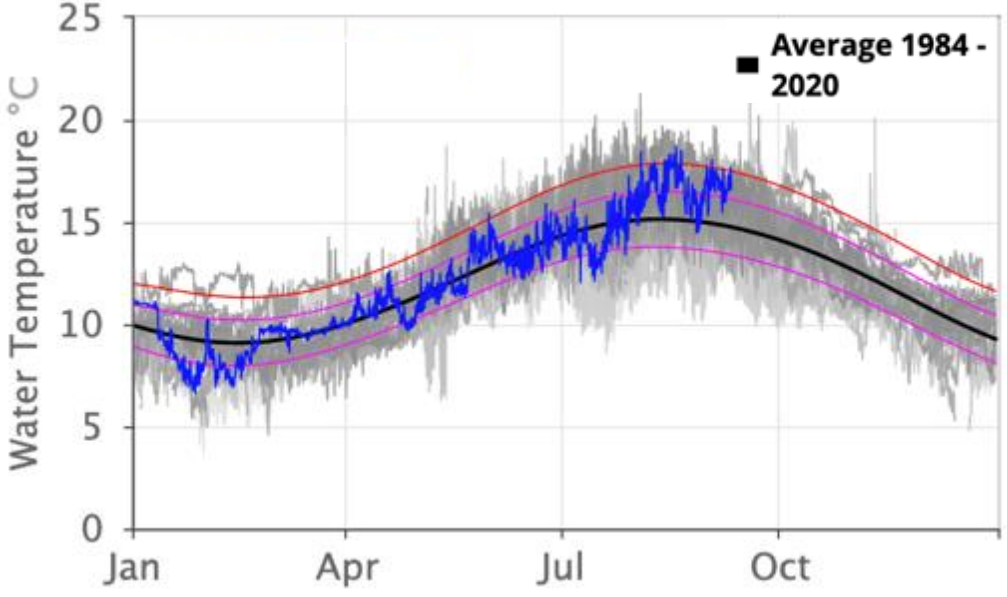
Climatology app: https://nvs.nanoos.org/Climatology

Sea Surface Temperature

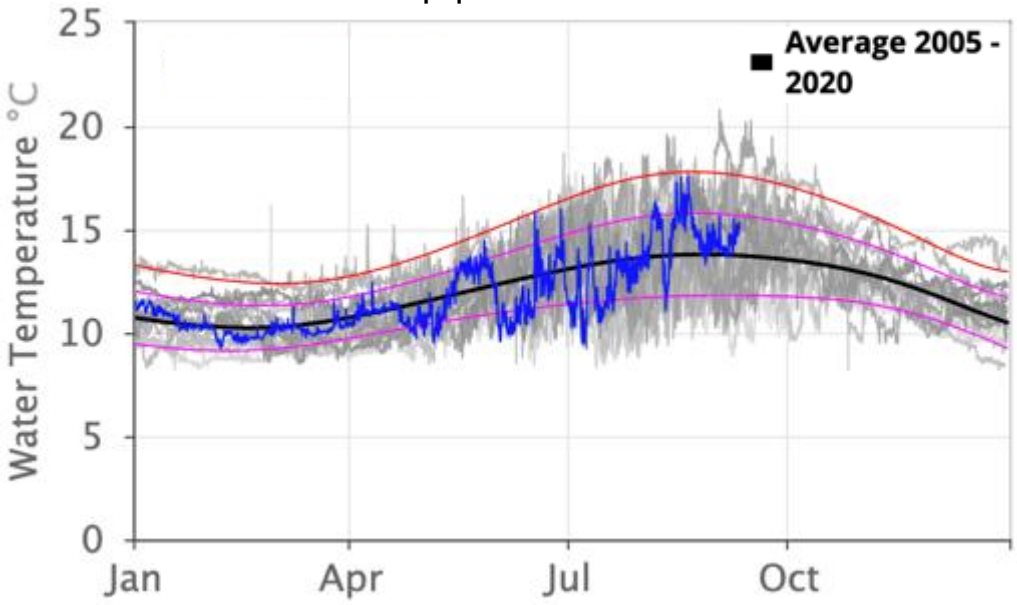
● CDIP Grays Harbor



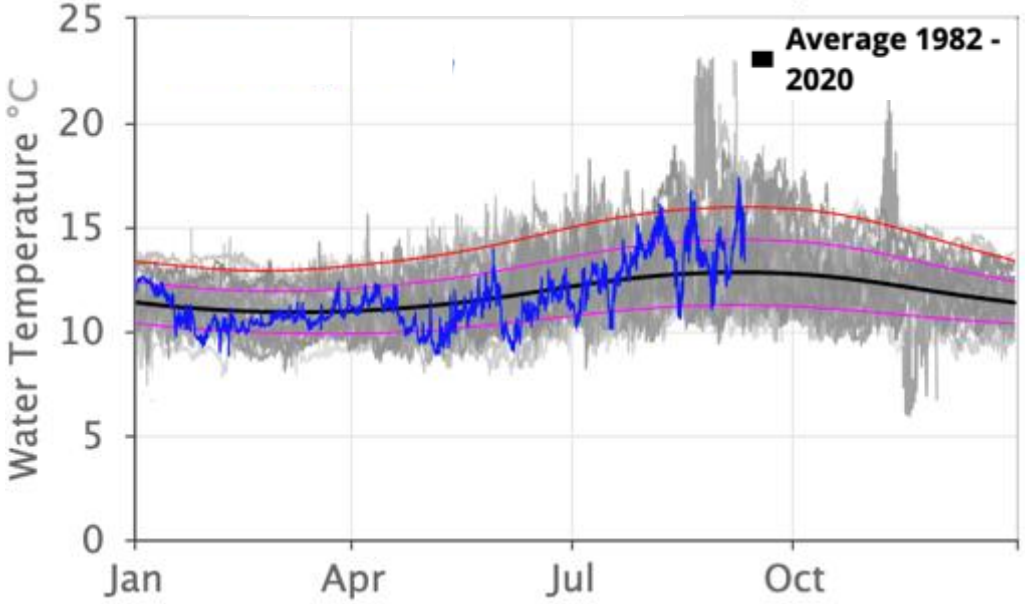
● NDBC Columbia River Bar



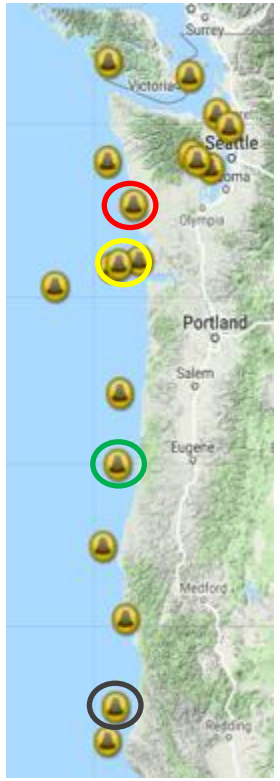
● CDIP Umpqua Offshore



● NDBC Eel River



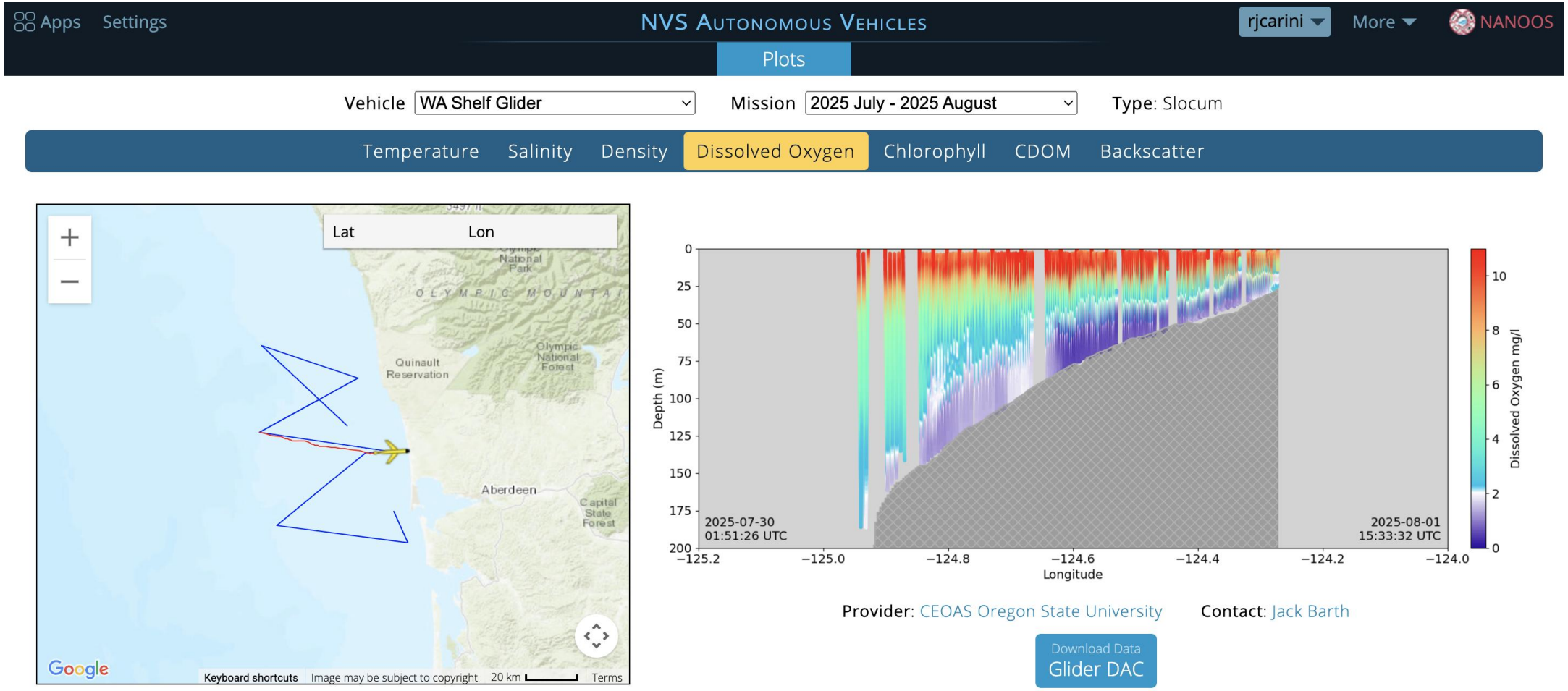
~5-25 km



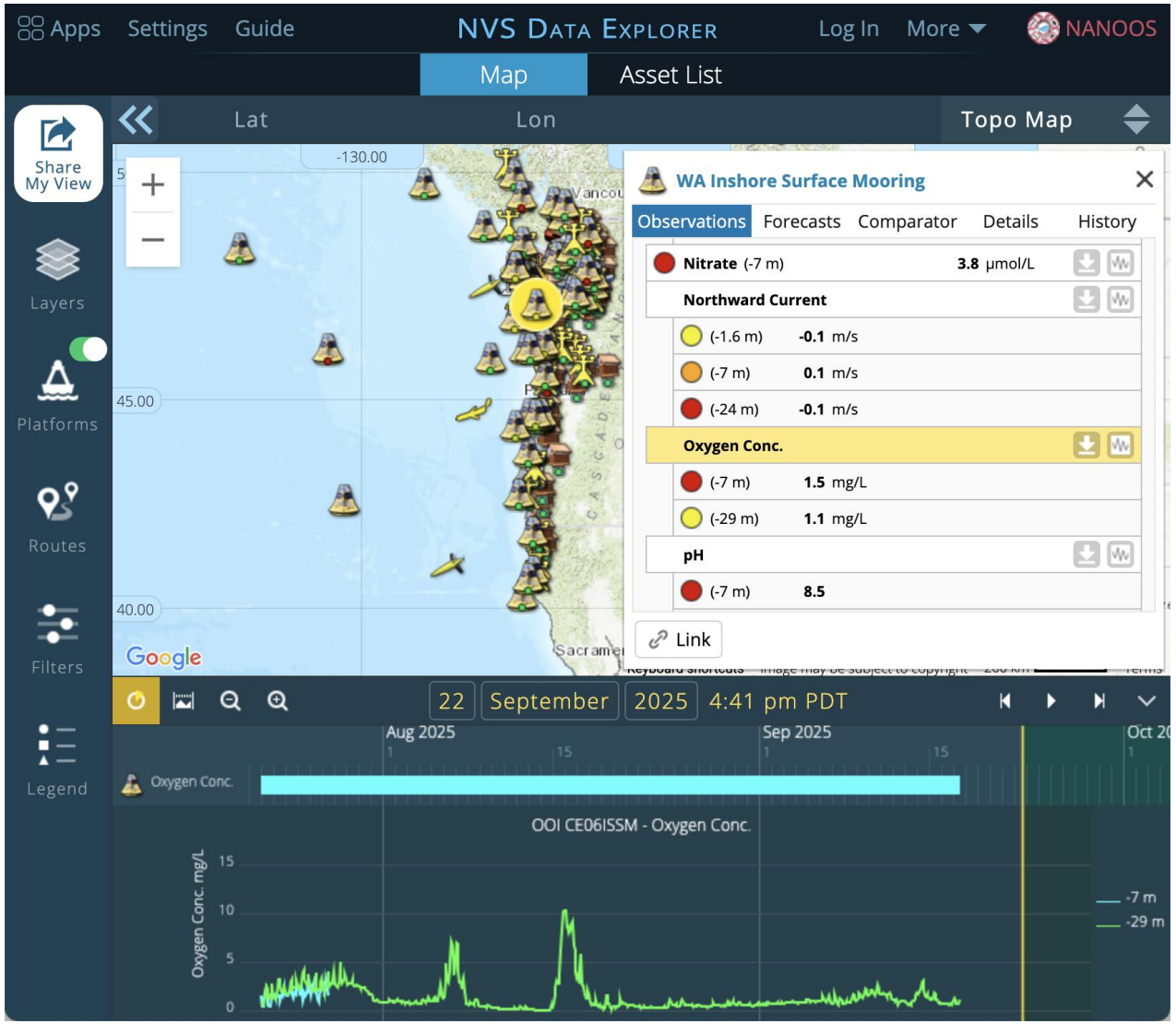
IOOS

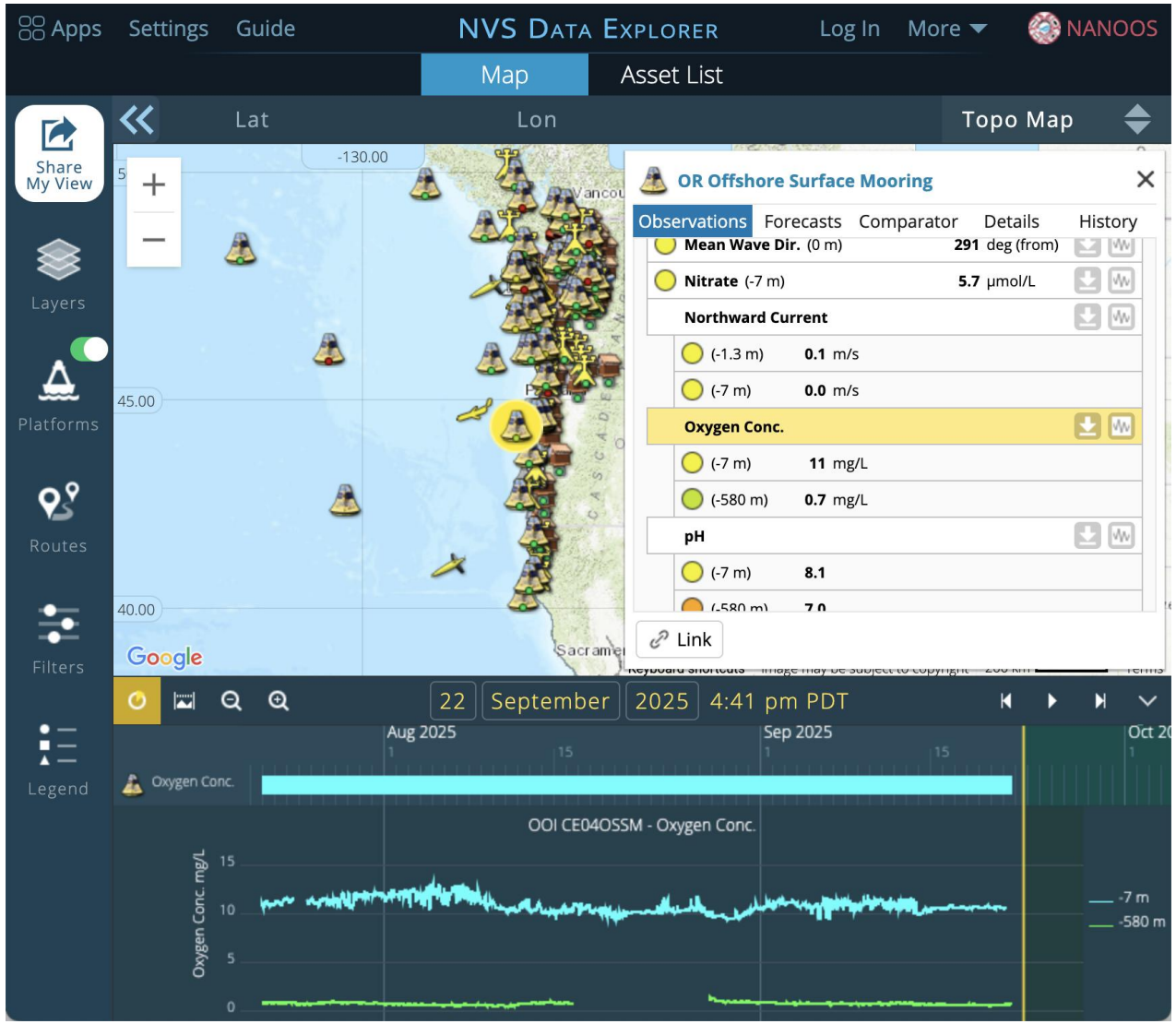
Autonomous Vehicles App:
https://nvs.nanoos.org/AutonomousVehicles

Dissolved Oxygen from WA Shelf Glider



Dissolved Oxygen from OOI





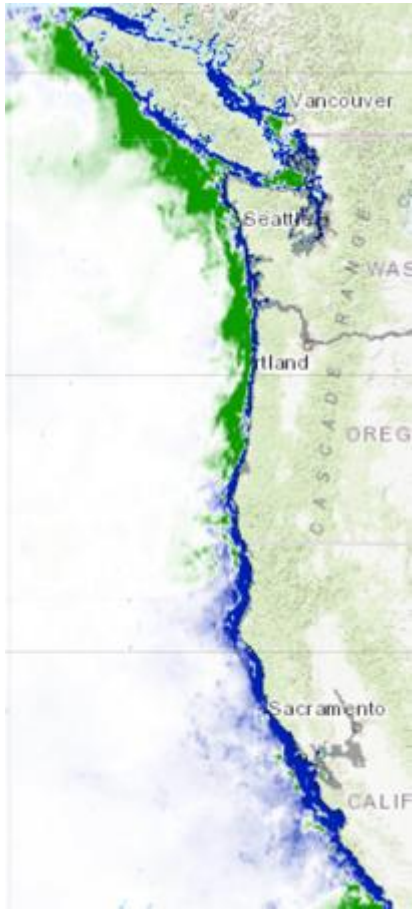
NANOOS: [*www.nanoos.org*](http://www.nanoos.org)
[*https://nvs.nanoos.org/Climatology*](https://nvs.nanoos.org/Climatology)

Climatology app:

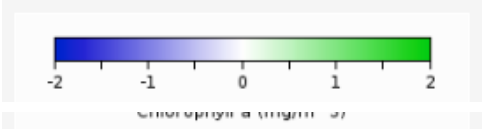
Chlorophyll Anomaly
OSU Modis

June 2025

OSU MODIS 2002-2012

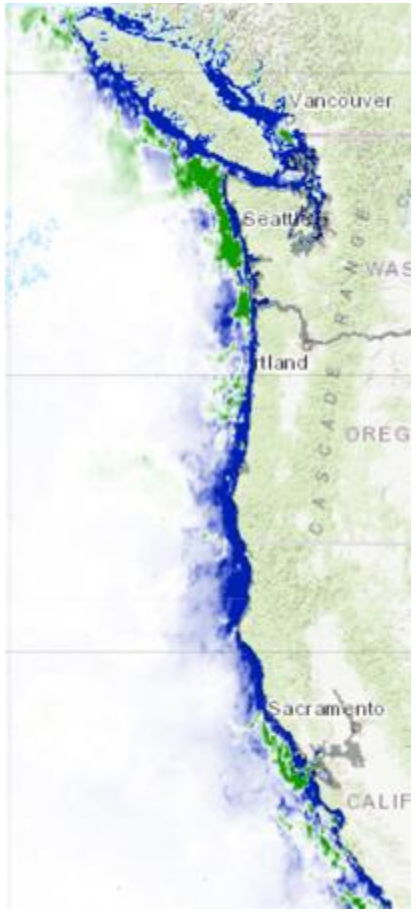


Chlorophyll



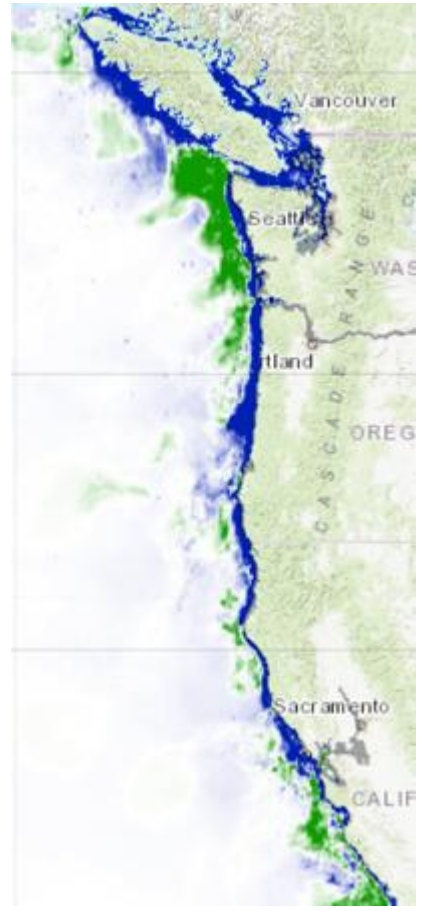
July 2025

OSU MODIS 2002-2012



August 2025

OSU MODIS 2002-2012



Pacific Northwest Harmful Algal Blooms Bulletin

Aug 18, 2025 HAB risk = ✅

HAB risk key:
- ✅ = *low*
- ⚠ = *medium*
- ✖ = *high*

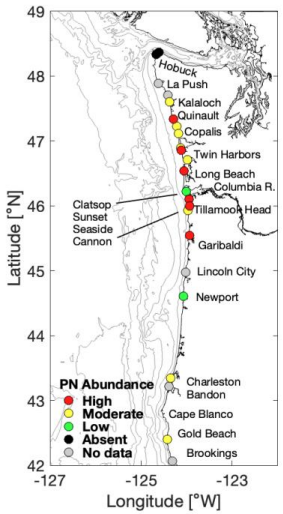
Cooperative Institute for CLIMATE, OCEAN & ECOSYSTEM STUDIES

The statements, findings, conclusions, and recommendations do not necessarily reflect the views of NOAA or the Department of Commerce.

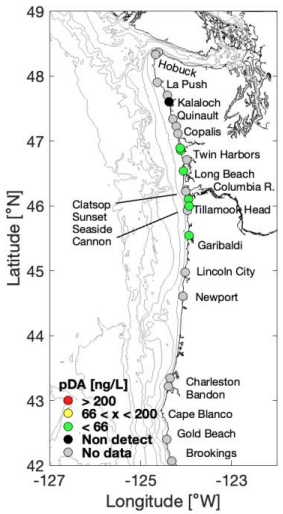
https://www.nanoos.org/products/habs/forecasts/bulletins.php

Beach Sampling

(*Pseudo-nitzschia*)

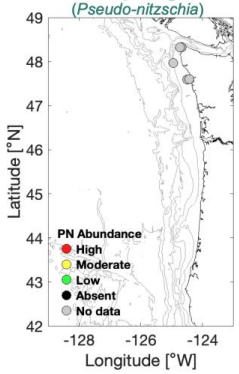


(particulate domoic acid)

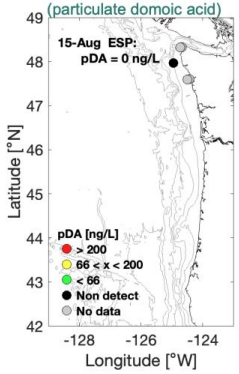


Offshore Sampling

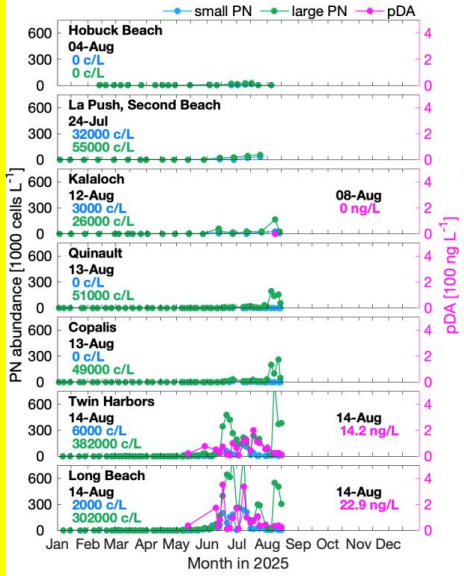
(*Pseudo-nitzschia*)



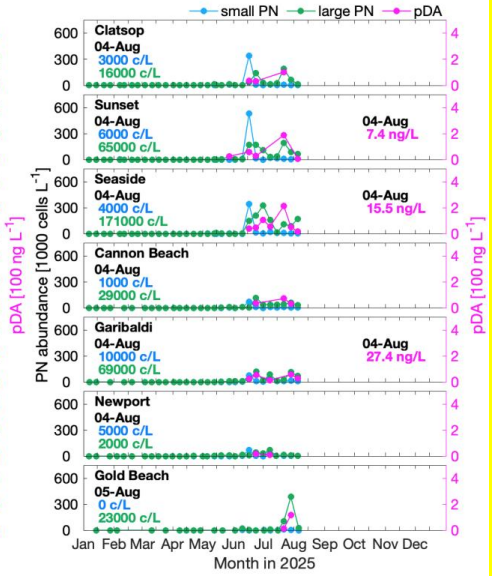
(particulate domoic acid)



WA *Pseudo-nitzschia* & Domoic Acid



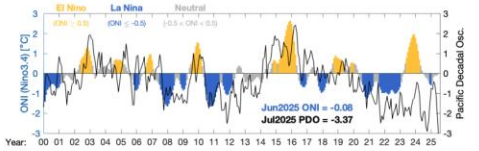
OR *Pseudo-nitzschia* & Domoic Acid



Pseudo-nitzschia (*PN*) abundances are quantified for large and small cell morphologies using light microscopy. Threshold values: 50,000 cells/L for large *PN*; 1,000,000 cells/L for small *PN*; which trigger additional testing for seawater particulate domoic acid (pDA). Seawater pDA values >200 ng/L lead to toxin accumulation in shellfish such as razor clams. Sampling sites, colored by relative *PN* abundance (*high:* > threshold value for either cell morphology; *moderate:* > 1/3 threshold; *low:* < 1/3 threshold) and pDA, are shown in the upper left two panels. "*No data*" indicates that there were no data within the previous 15 days. Time series of *PN* abundance (cells per liter = c/L) and pDA at select beaches are shown in the upper right main two panels. Offshore samples (lower left) are collected and analyzed at ~2 week intervals during late summer/early fall. Additional samples are collected by a remotely operated Environmental Sample Processor (ESP) that is moored off La Push, WA, in late spring and late summer.

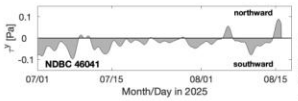
Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA link; OR link), and not from the information presented here. However, the information presented here aids coastal managers in better understanding and predicting the onset, duration, and magnitude of toxin outbreaks as well as their impacts.

Pacific Ocean Indices



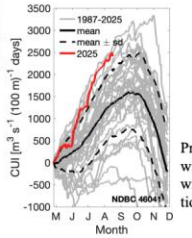
Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm.

North-south Wind Stress

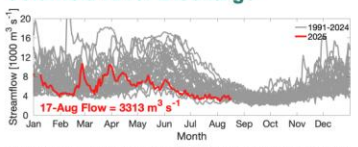


Southward wind stress drives coastal upwelling that can lead to plankton blooms. Northward wind stress tends to push any existing offshore plankton and toxins towards beaches. In addition, summer/fall toxic blooms often occur in years with a moderate cummulative upwelling index (i.e. during years with fluctuating winds) rather than in years with sustained upwelling or downwelling winds.

Cumulative Wind Stress



Columbia River Discharge



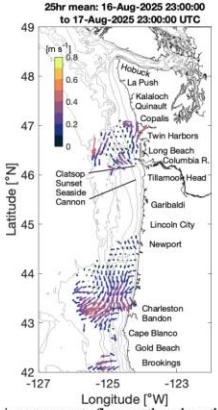
The Columbia River plume can help transport HABs and toxins from the south, northward along the WA coast. However, the plume can also serve as a protective barrier by preventing offshore toxins from reaching beaches.

Marine Weather Forecast

Tues - S wind, 5 kt
Wed - NW wind, 5 kt
Thur - NW wind, 10 kt
Fri - NW wind, 10 kt

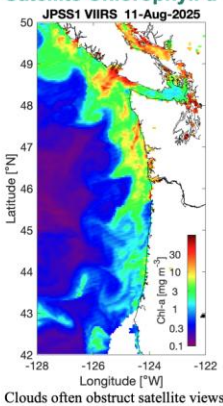
Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.

Ocean Surface Currents



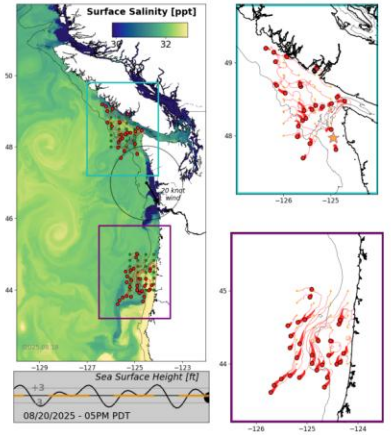
Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction.

Satellite Chlorophyll-*a*



Clouds often obstruct satellite views, but the extent of phytoplankton blooms can at times be seen from space. Blooms do not necessarily reflect the presence of toxins.

LiveOcean Forecast Model



Model predicted sea surface salinity with particles released near the Juan de Fuca eddy and Heceta Bank and tracked three days into the future. Red dots indicate particle end points.

ESP measuring domoic acid off La Push, WA

IOOS NHABON & MERHAB

Harmful Algal Blooms

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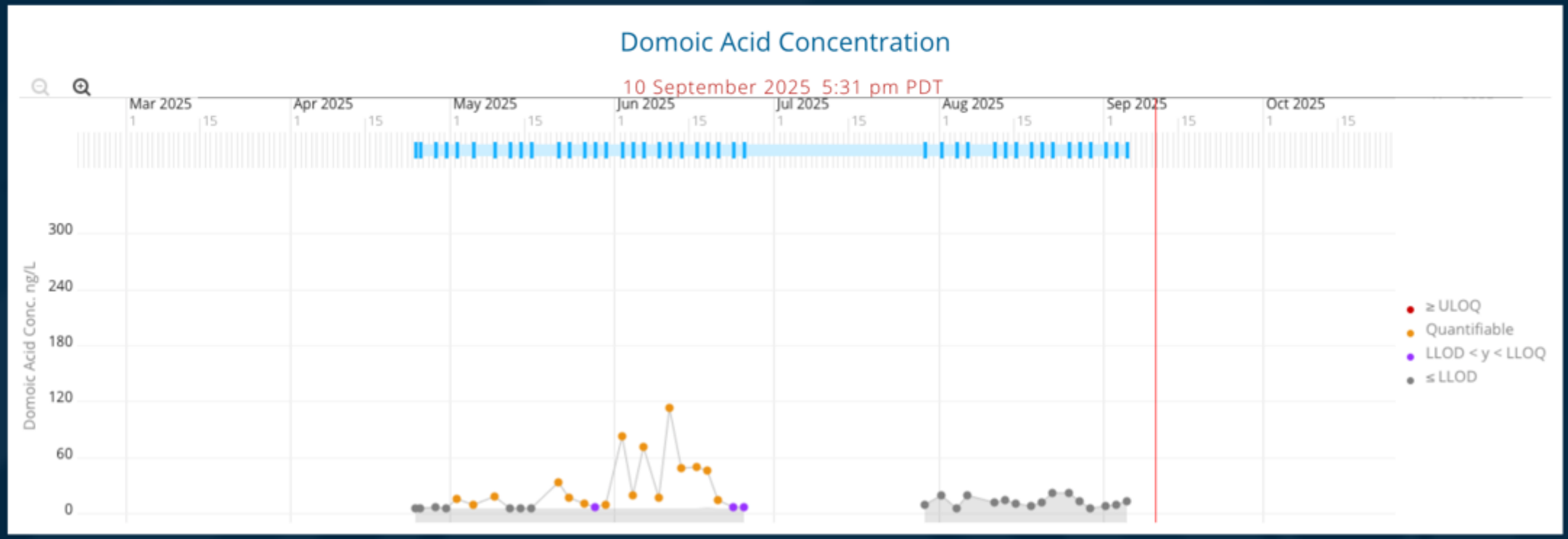
NANOOS

The latest water measurements at the NEMO Observatory site where the Environmental Sample Processor is located 13 miles off La Push, Washington. Data are updated in near-real time. These products are provided to help understand where toxic algae may be moving and the conditions that may influence toxic blooms.

While the Environmental Sample Processor can detect both phytoplankton species and domoic acid, the focus for deployments starting in 2021 will be on detecting toxins. Data (species and toxin) from previous deployments dating back to 2016 are available on request.



To summarize:

La Niña watch: Currently ENSO neutral, La Niña likely to start this fall.
PDO is strongly negative.

Temperature & MHWs

- No MHW along coast of PNW, but strong warm anomalies
- Temperature offshore (~115 km) around average June and July, up to 1 and 2 SD above average in August and September
- Temperature nearshore (5-25 km) highly variable, but spending more time above average in August

Dissolved Oxygen & Hypoxia

- Deep offshore hypoxic water upwelled on the coast
- WA bottom hypoxia episodically refreshed; OR bottom hypoxia more consistent

Blooms & HAB Toxins

- Satellite data show coastal blooms throughout the summer, stronger in Washington than Oregon in July and August
- Given the recent persistently low pDA results, risk appears low.

www.nanoos.org

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