NOAA West Watch Update
21 January 2025

NANOOS Update

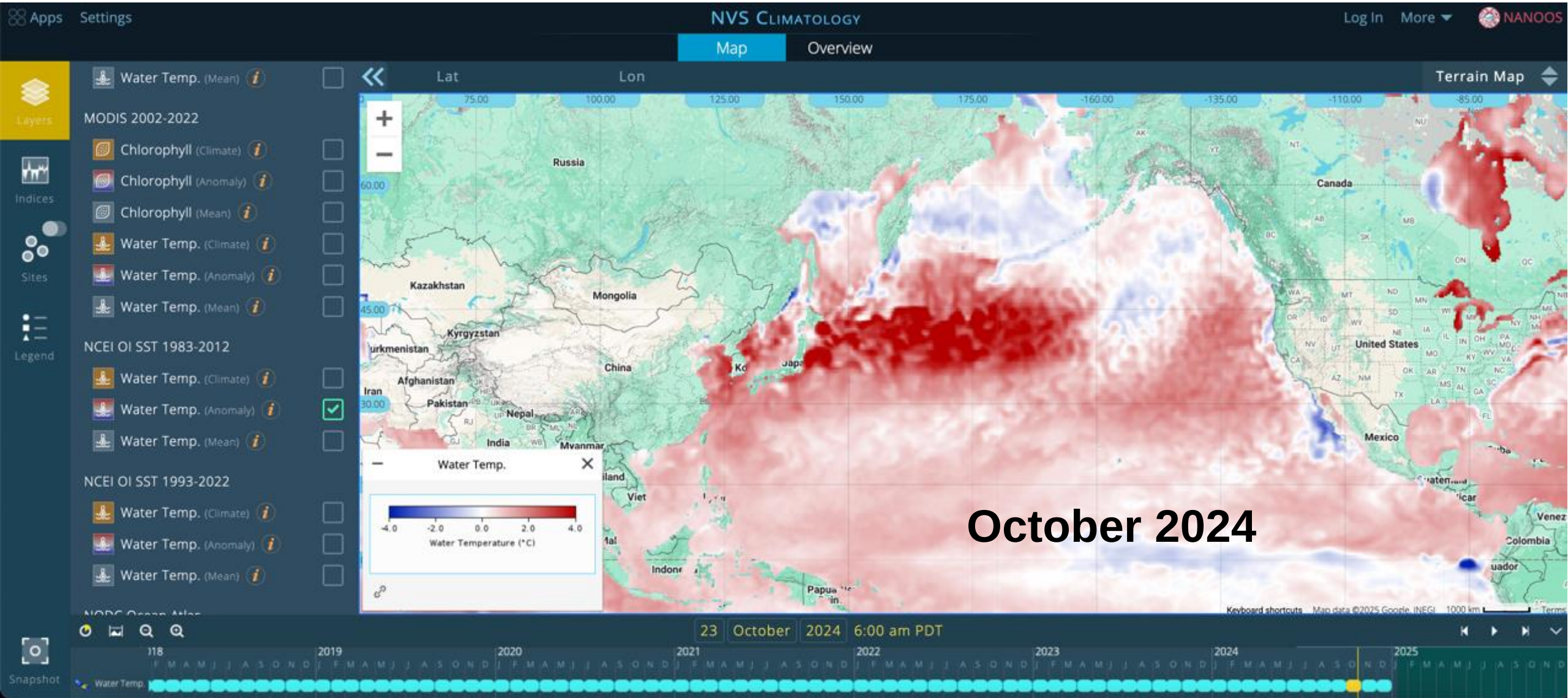
Jan Newton on behalf of many

www.nanoos.org

NANOOS: www.nanoos.org Climatology app

Sea Surface Temperature Anomaly
NCEI Optimum Interpolation SST

NCEI OI SST 1983-2012



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Sea Surface Temperature Anomaly
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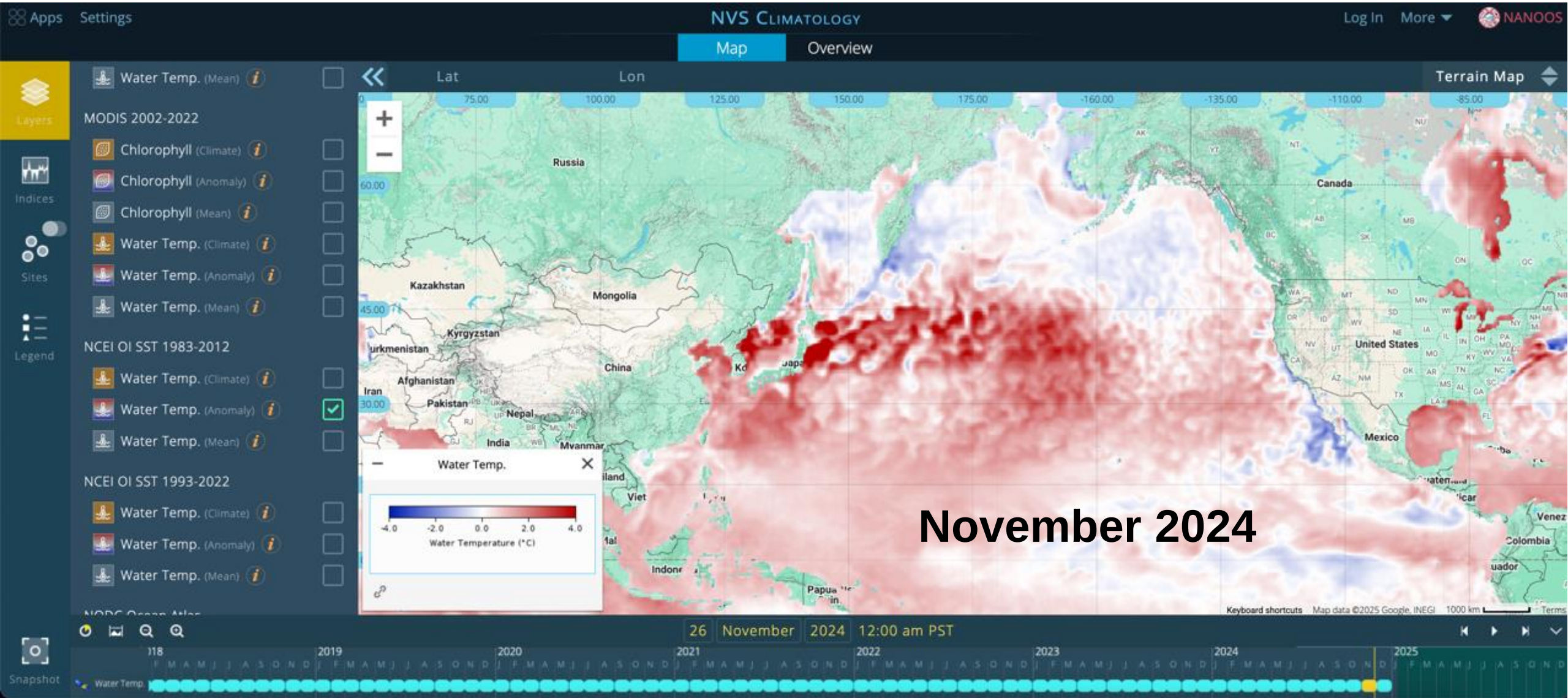

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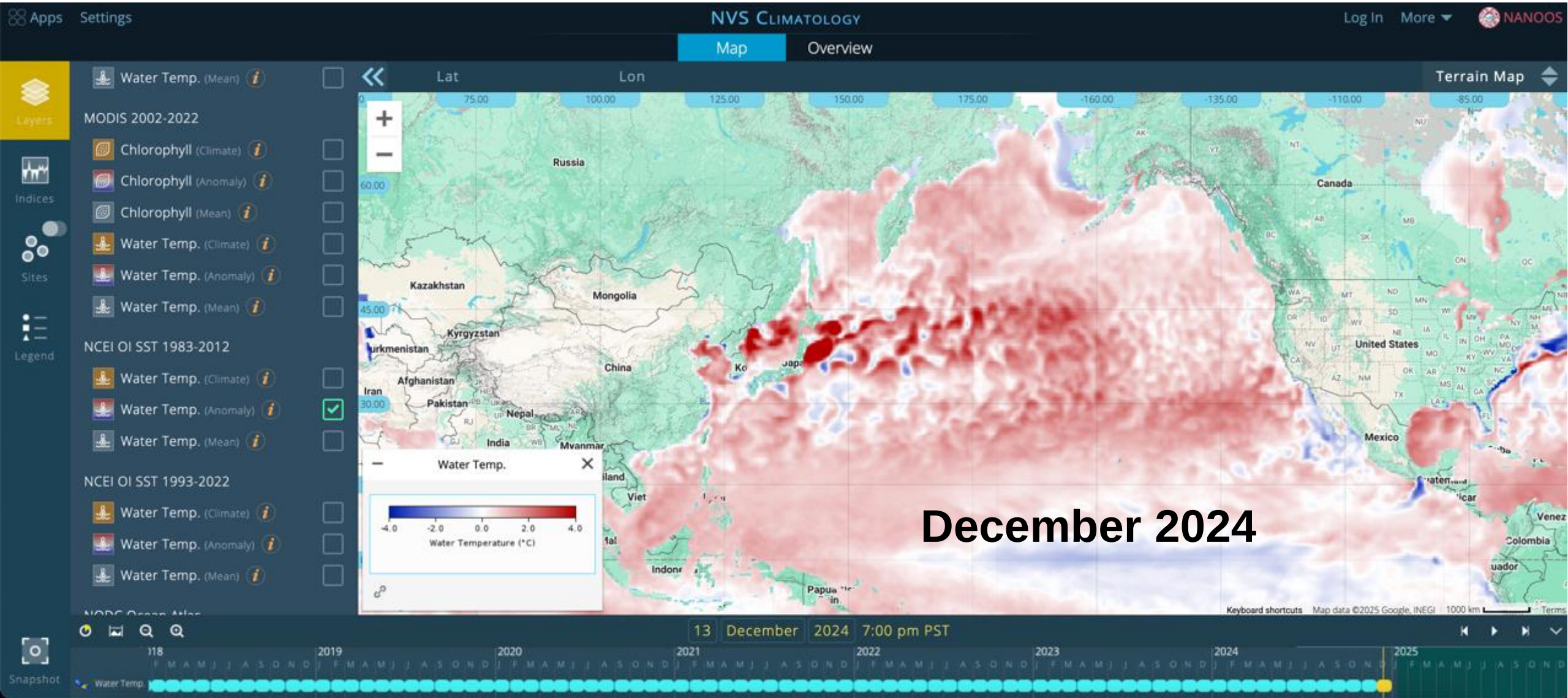
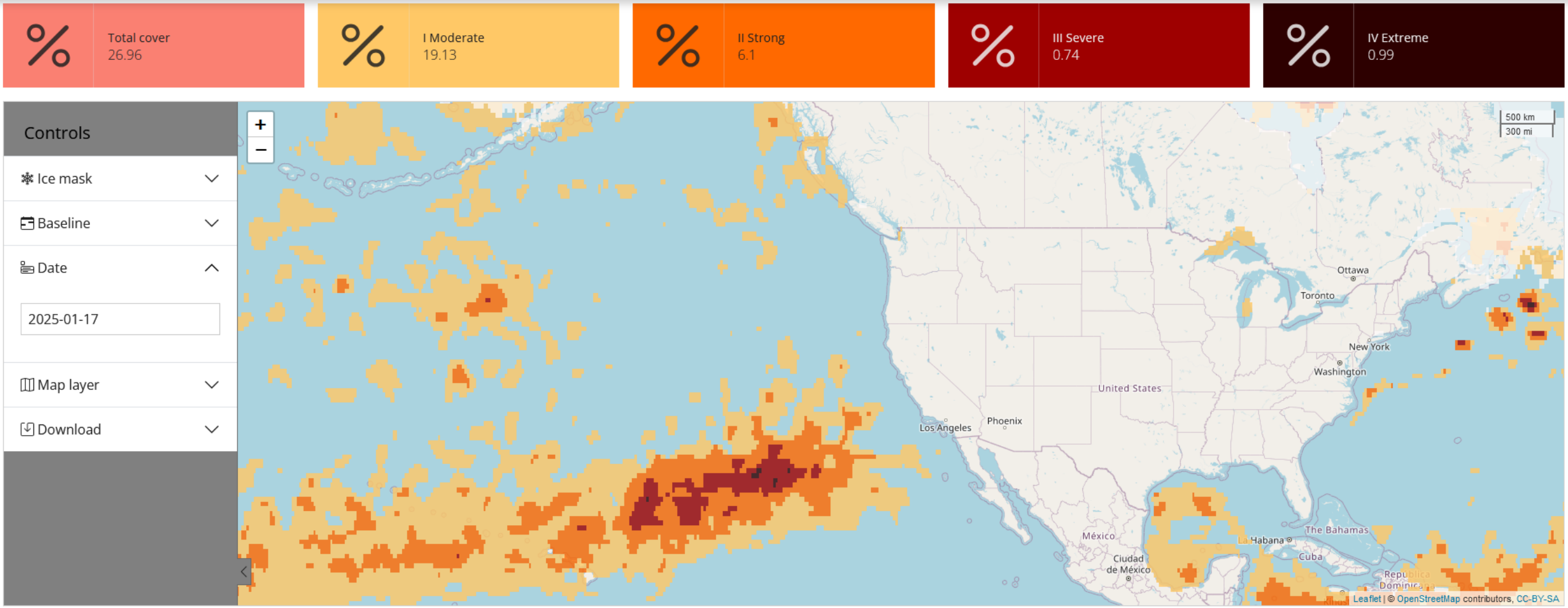
Sea Surface Temperature Anomaly
NCEI Optimum Interpolation SST

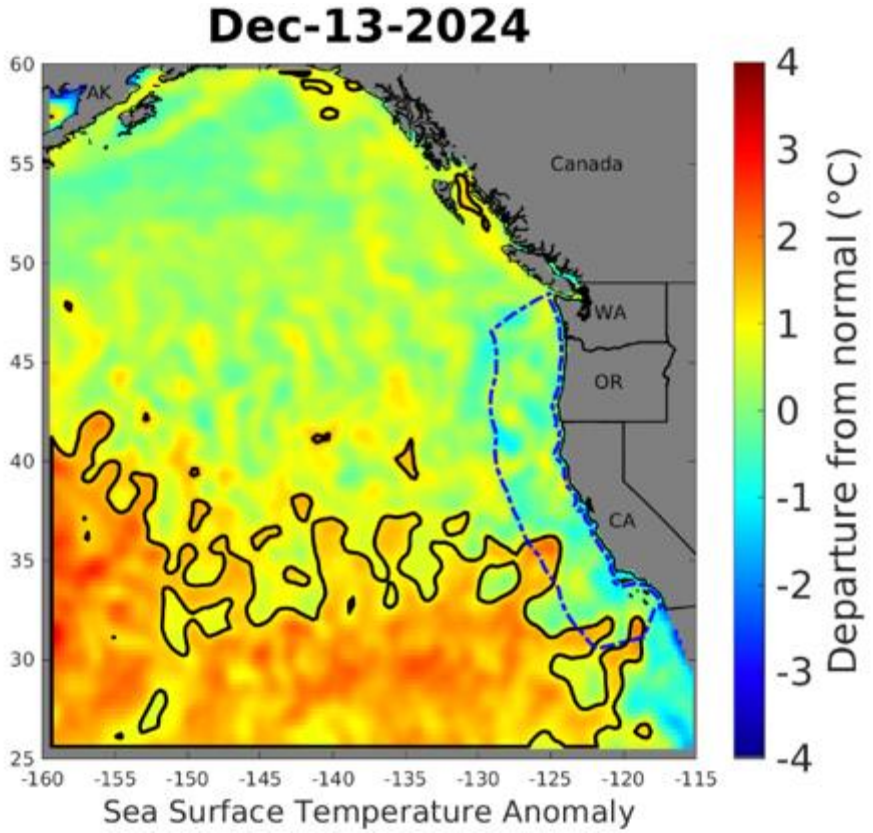
NCEI OI SST 1983-2012

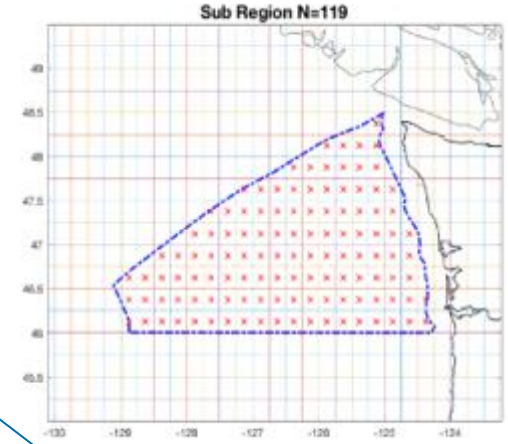




http://www.marineheatwaves.org/tracker.html

The California Current Marine Heatwave Tracker - Blobtracker





Fall MHW (Sep – Nov)

Washington

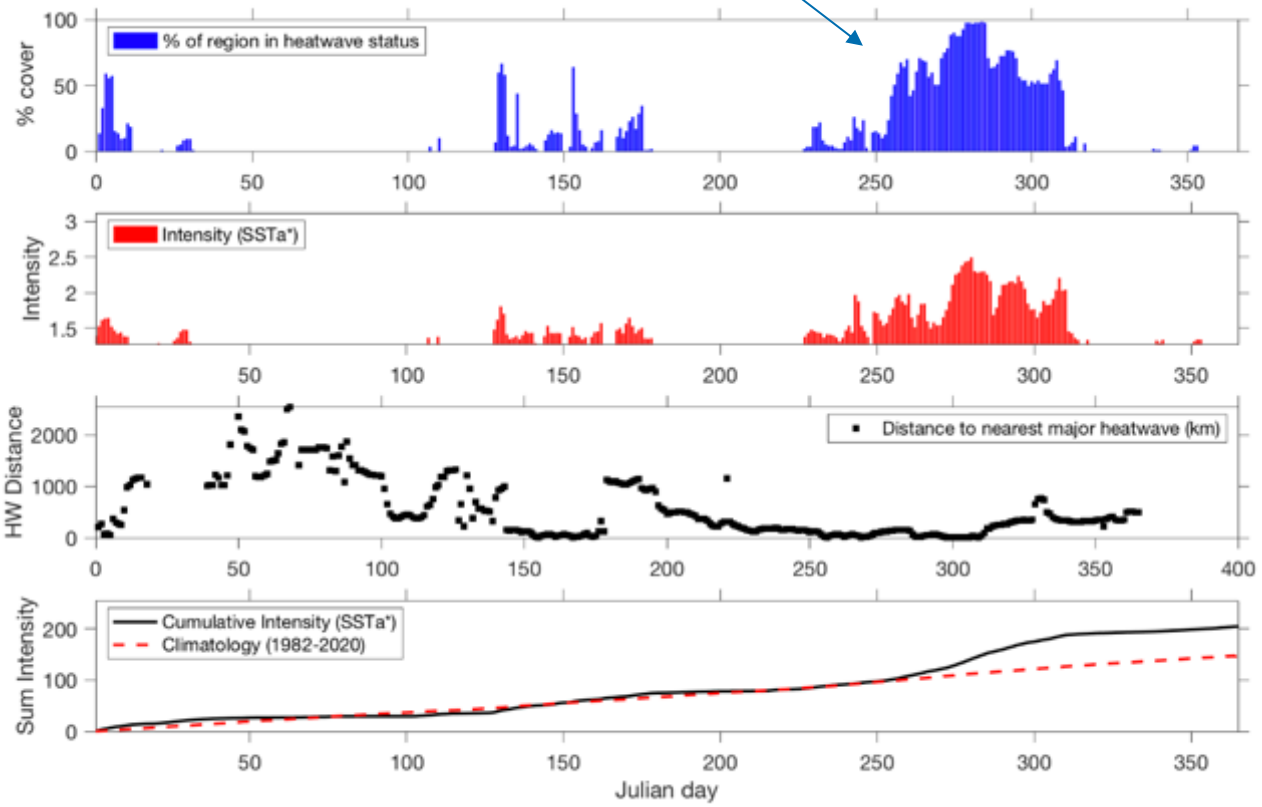


Figure 2: Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. Data from NOAA's Optimum interpolation Sea Surface Temperature analysis (OISST), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

https://www.integratedecosystemassessment.noaa.gov/regions/california-current/california-current-marine-heatwave-tracker-blobtracker

NANOOS: www.nanoos.org

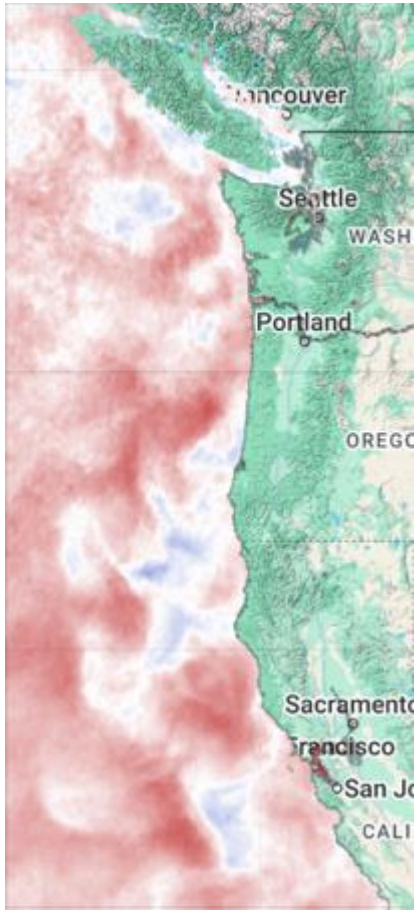
Climatology app: https://nvs.nanoos.org/Climatology

Sea Surface Temperature Anomaly

OSU Modis

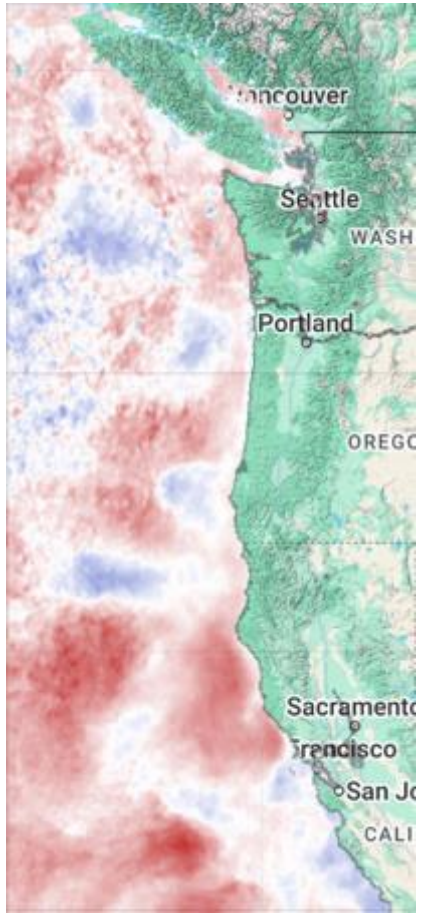
October 2024

OSU MODIS 2002-2012



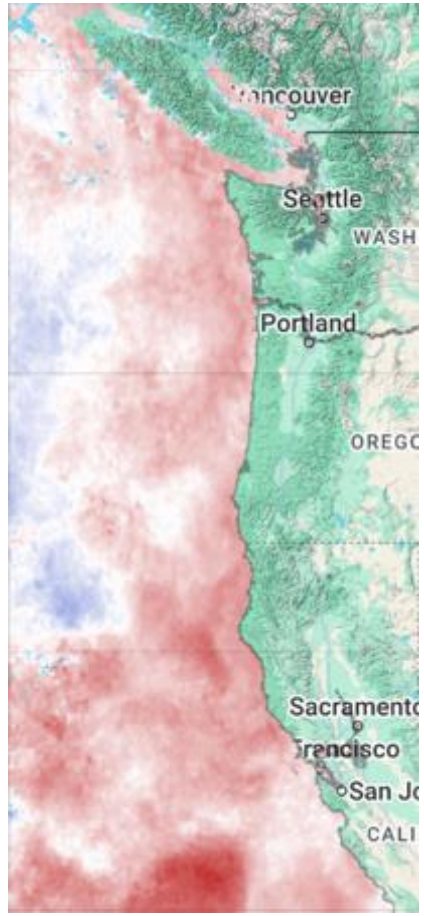
November 2024

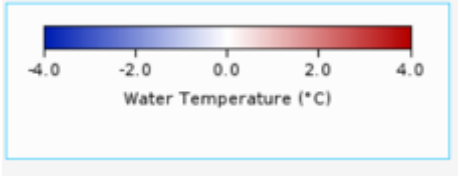
OSU MODIS 2002-2012



December 2024

OSU MODIS 2002-2012

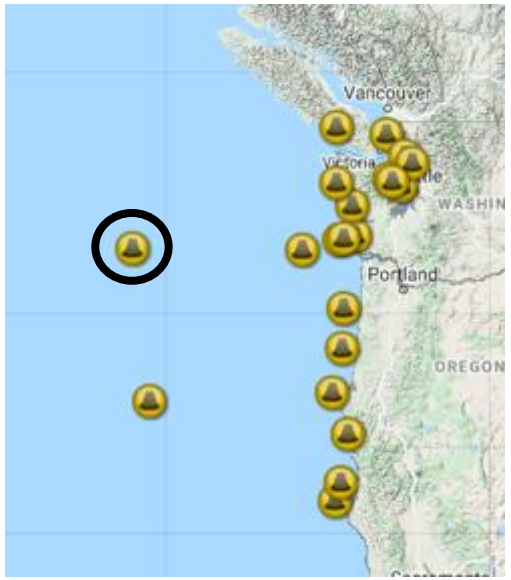




NANOOS: www.nanoos.org *Climatology app:* https://nvs.nanoos.org/Climatology

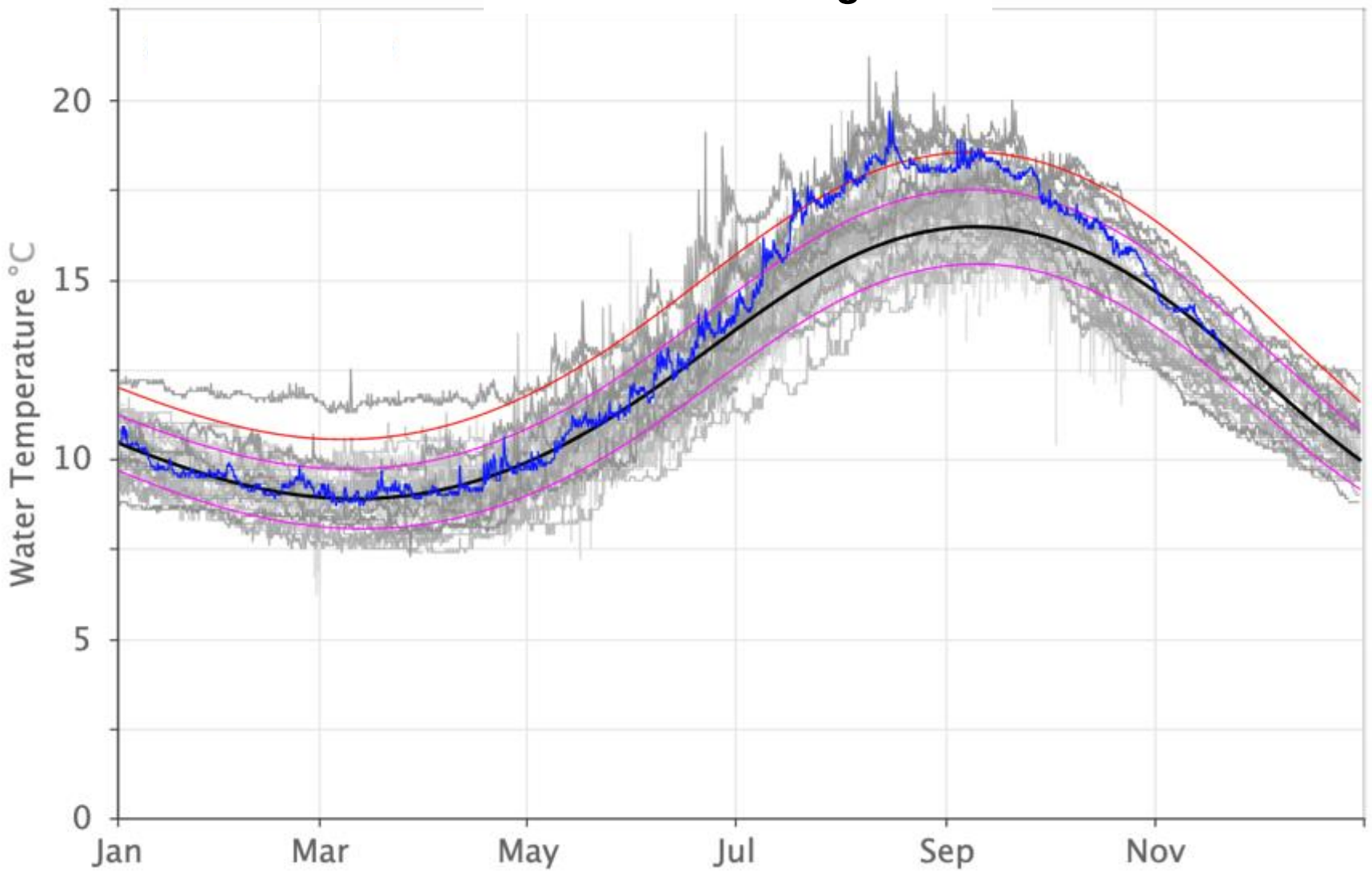
Sea Surface Temperature

~300 nautical miles



Seasonal Cycle
n=45 Yrs
-1 STD
+1 STD
+2 STD
2024

NDBC Washington

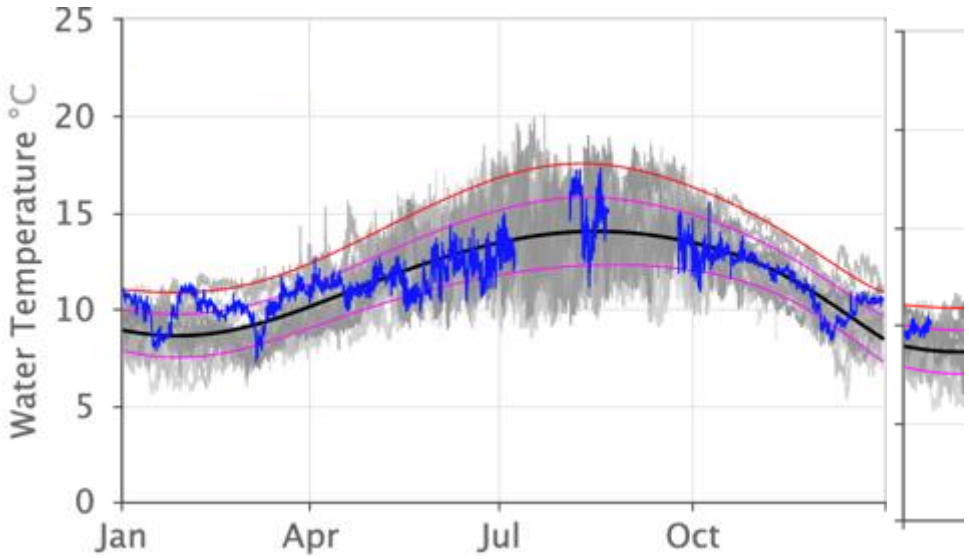


IOOS

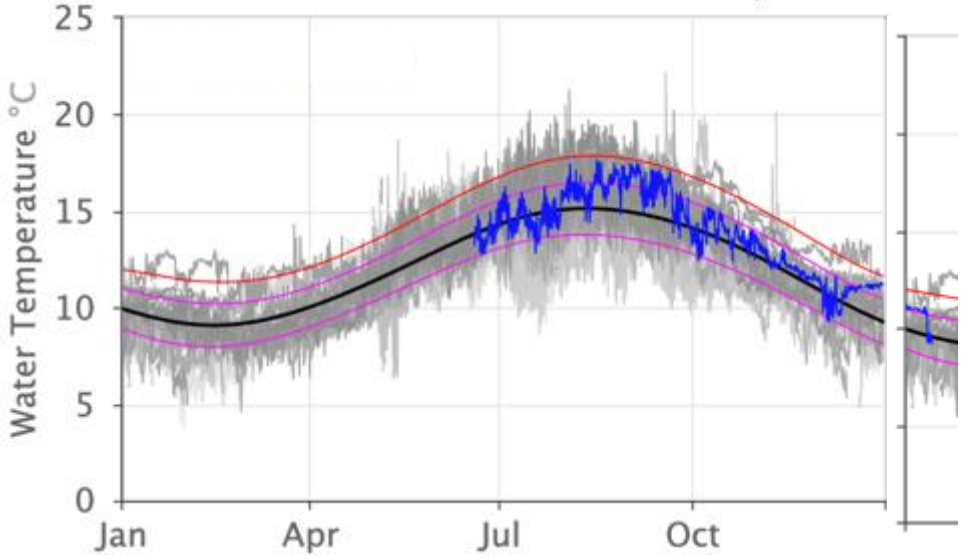
NANOOS: www.nanoos.org *Climatology app:* https://nvs.nanoos.org/Climatology

Sea Surface Temperature

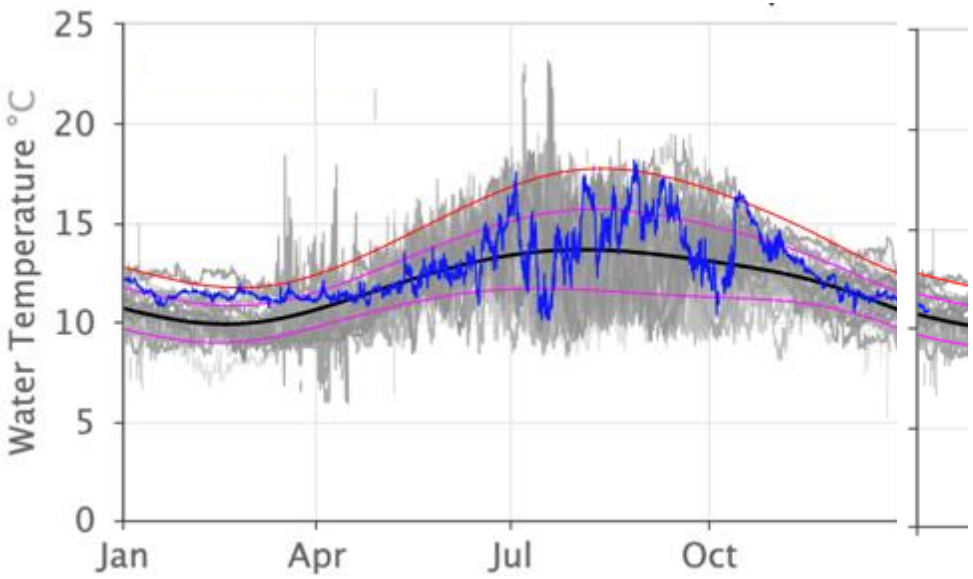
CDIP Grays Harbor ● 17 yrs



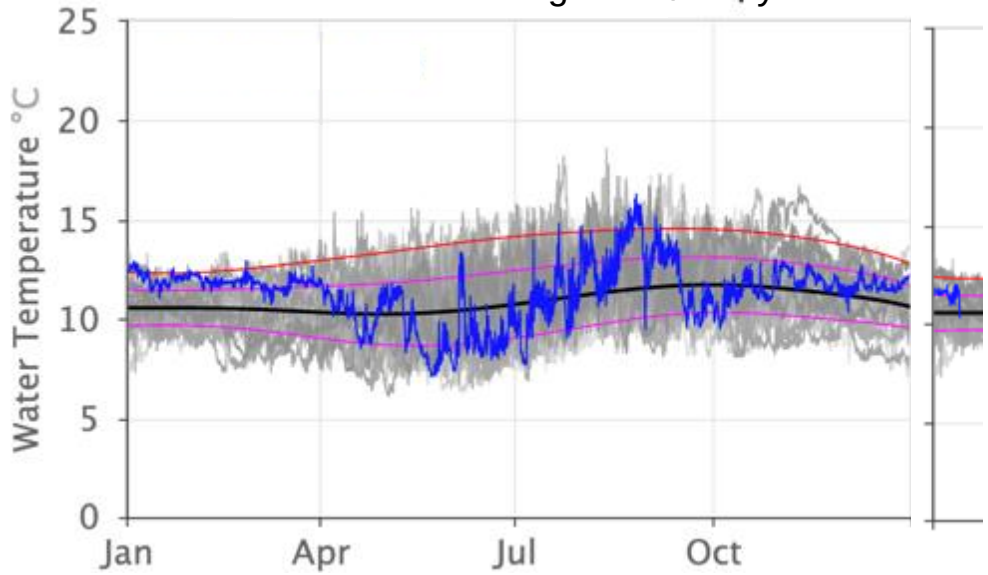
NDBC Columbia River Bar ● 37 yrs

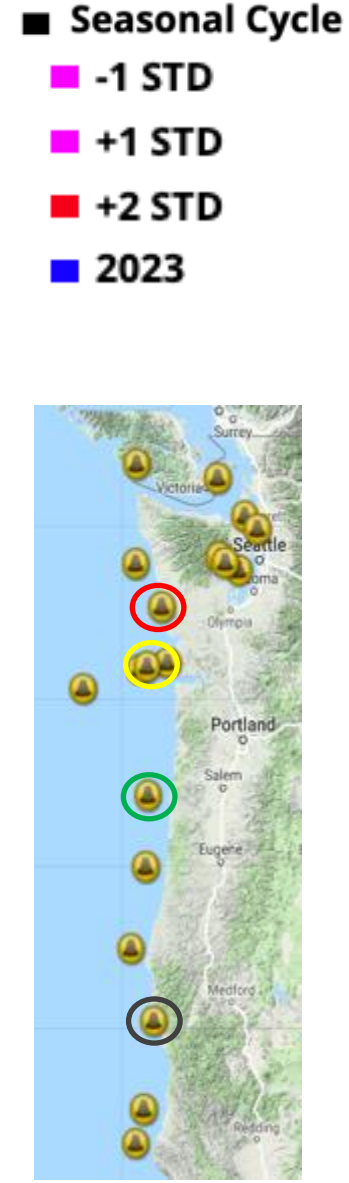


NDBC Stonewall Bank ● 34 yrs



NDBC St. Georges ● 38 yrs

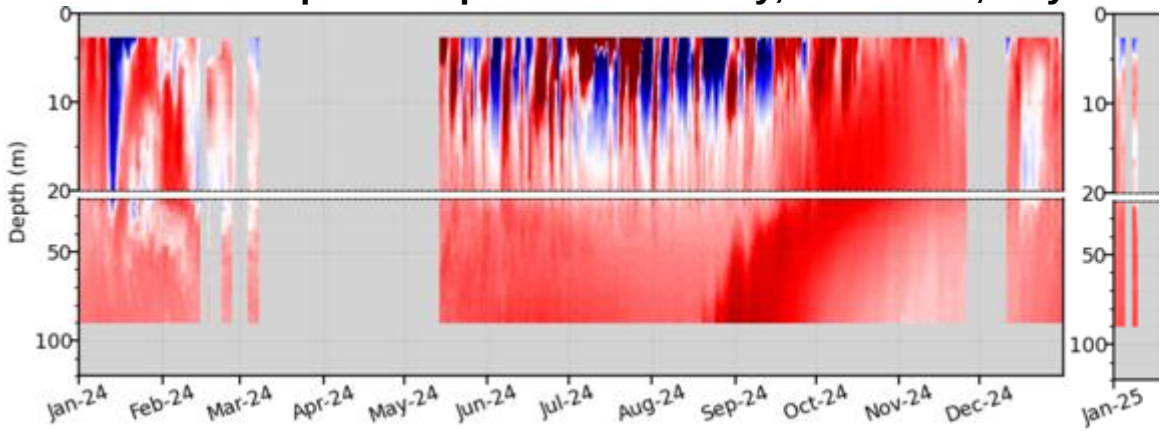




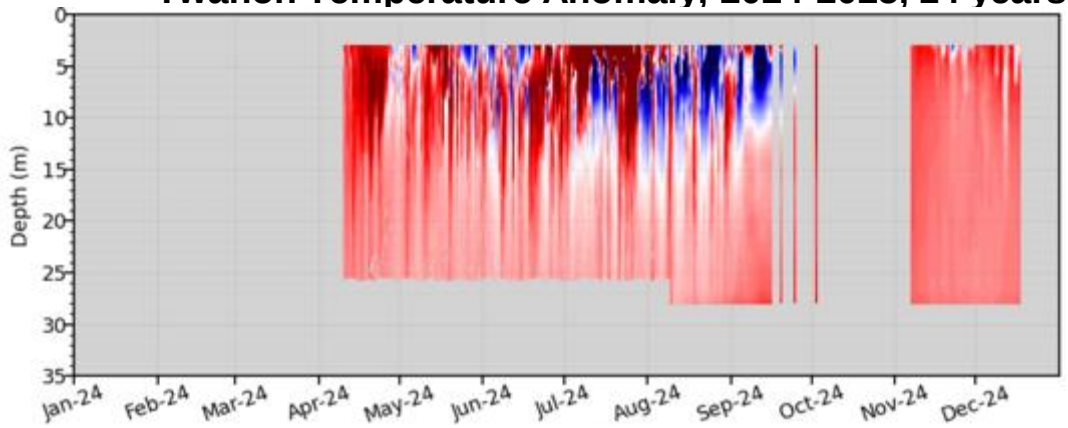
IOOS

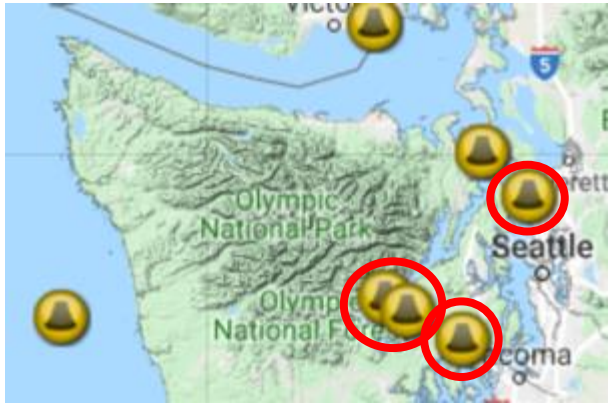
Temperature Anomalies

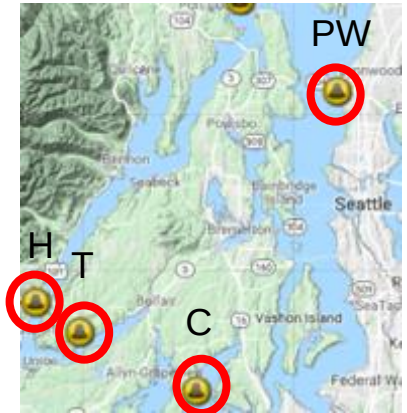
Hoodsport Temperature Anomaly, 2024-2025, 14 years



Twanoh Temperature Anomaly, 2024-2025, 14 years

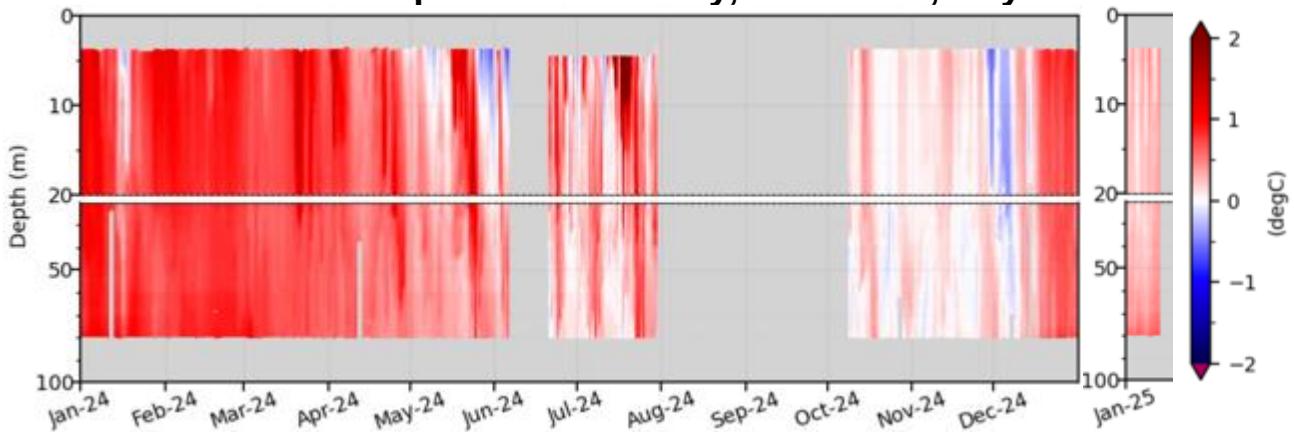




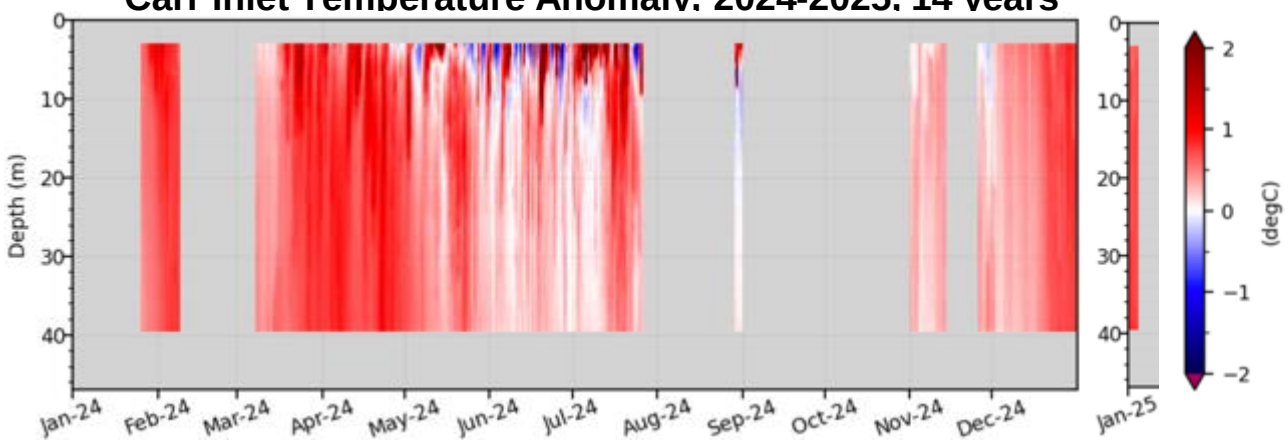


Puget Sound Profiling Buoys

Point Wells Temperature Anomaly, 2024-2025, 14 years



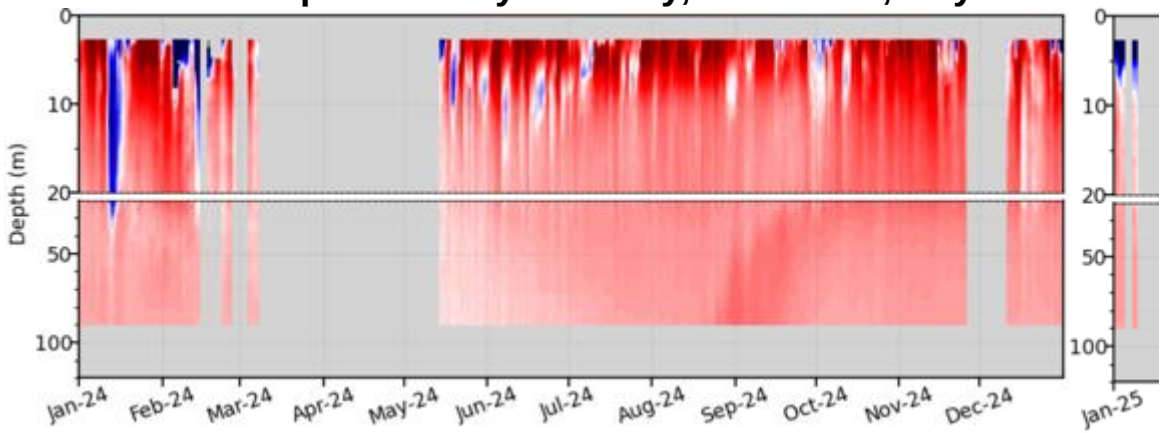
Carr Inlet Temperature Anomaly, 2024-2025, 14 years



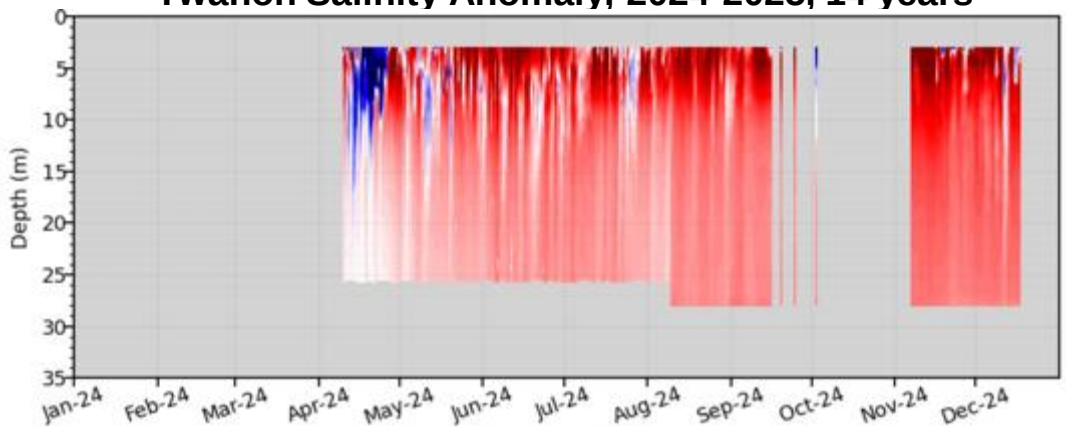
IOOS

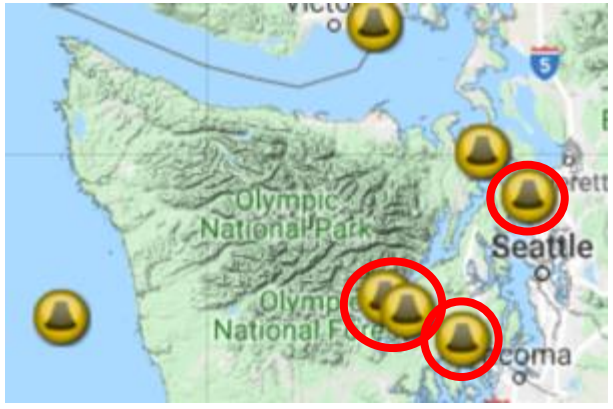
Salinity Anomalies

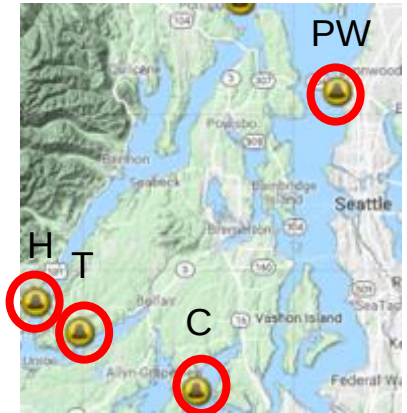
Hoodsport Salinity Anomaly, 2024-2025, 14 years



Twanoh Salinity Anomaly, 2024-2025, 14 years

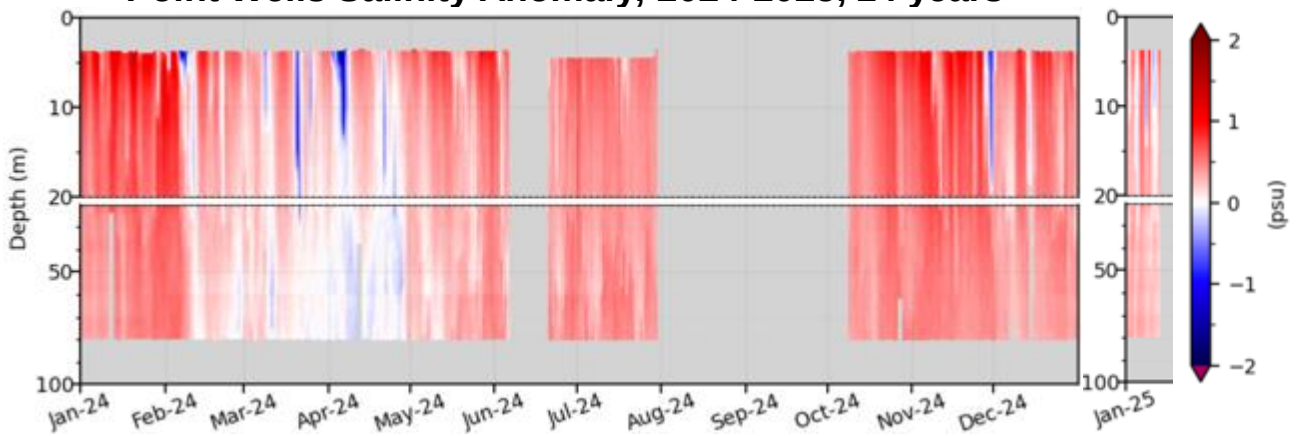




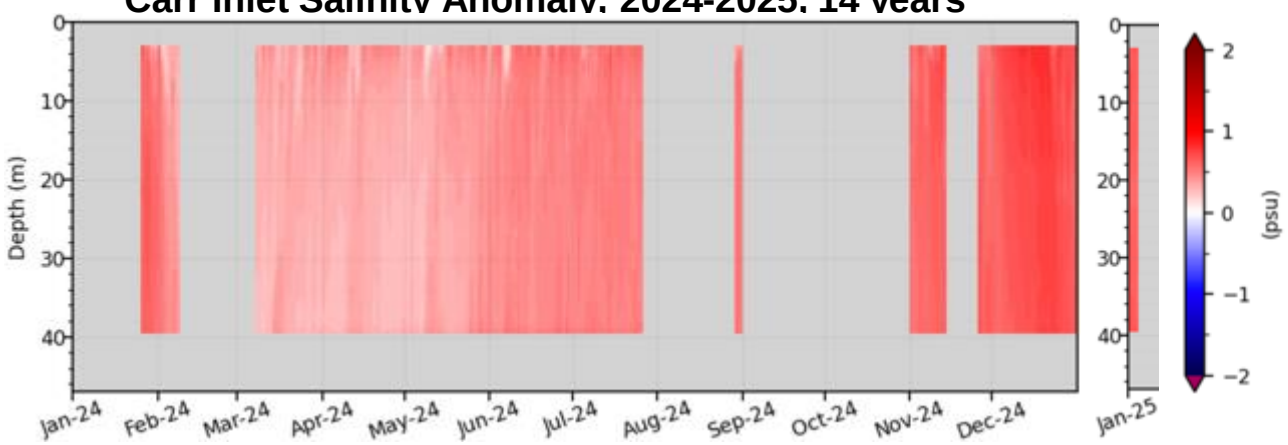


Puget Sound Profiling Buoys

Point Wells Salinity Anomaly, 2024-2025, 14 years

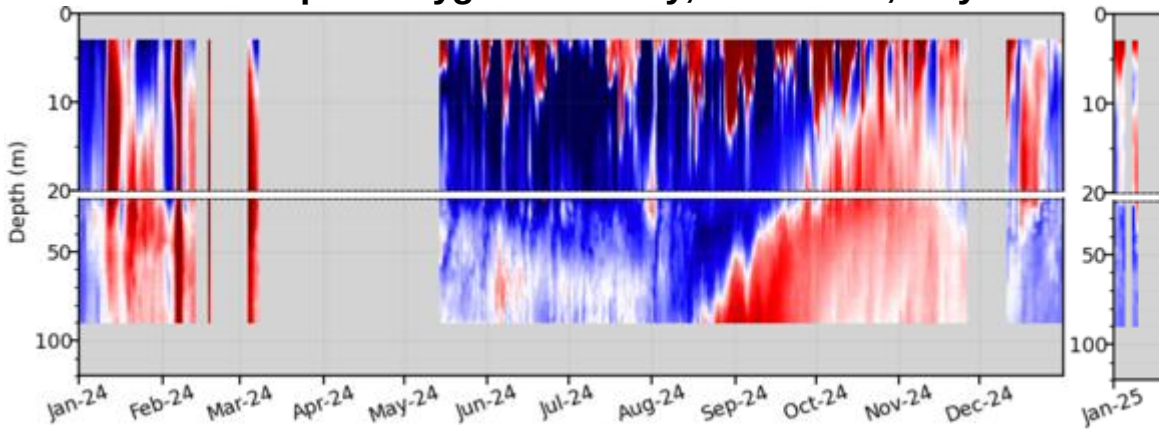


Carr Inlet Salinity Anomaly, 2024-2025, 14 years

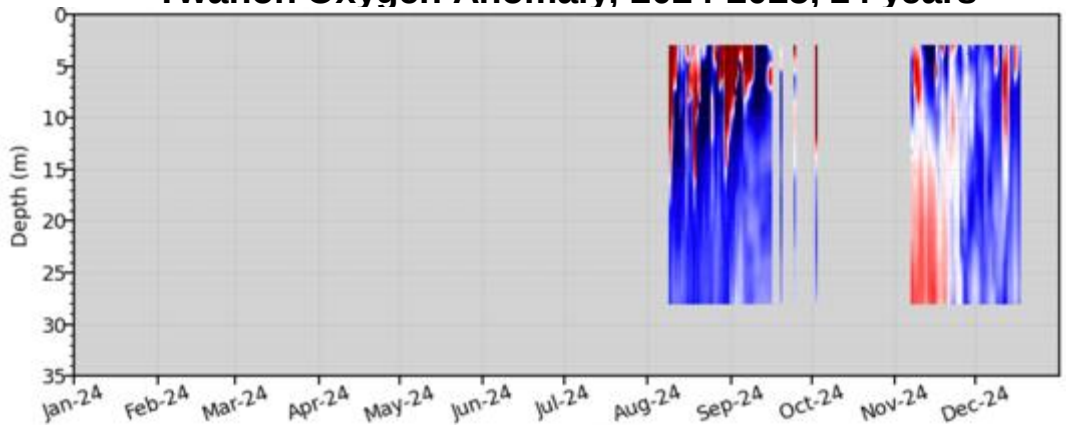


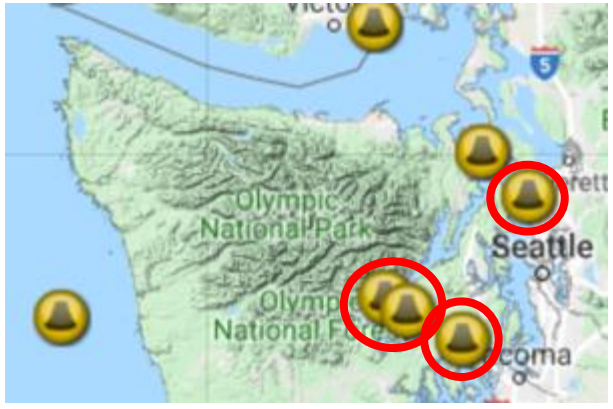
Dissolved Oxygen Anomalies

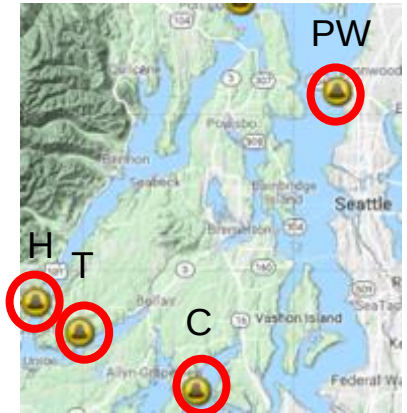
Hoodsport Oxygen Anomaly, 2024-2025, 14 years



Twanoh Oxygen Anomaly, 2024-2025, 14 years

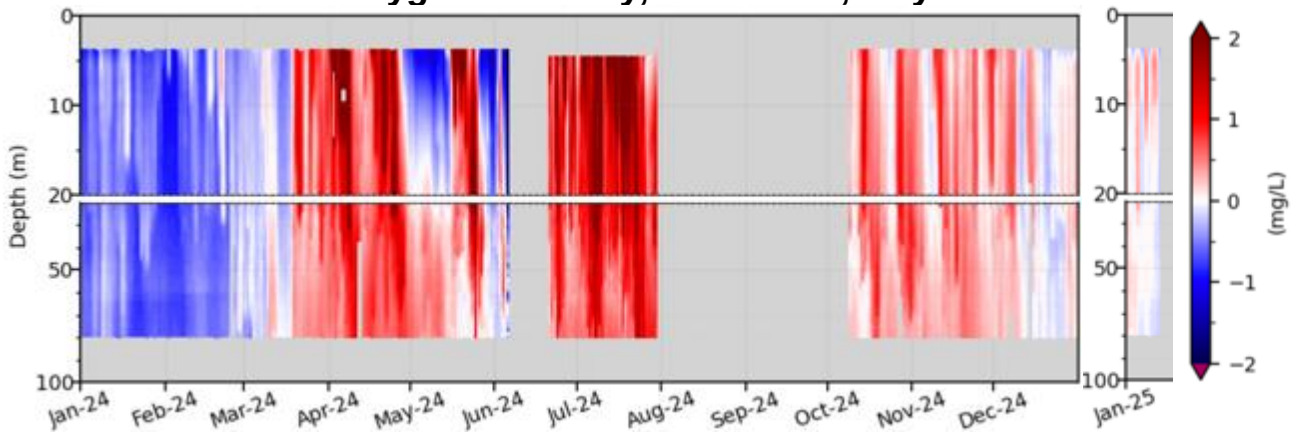




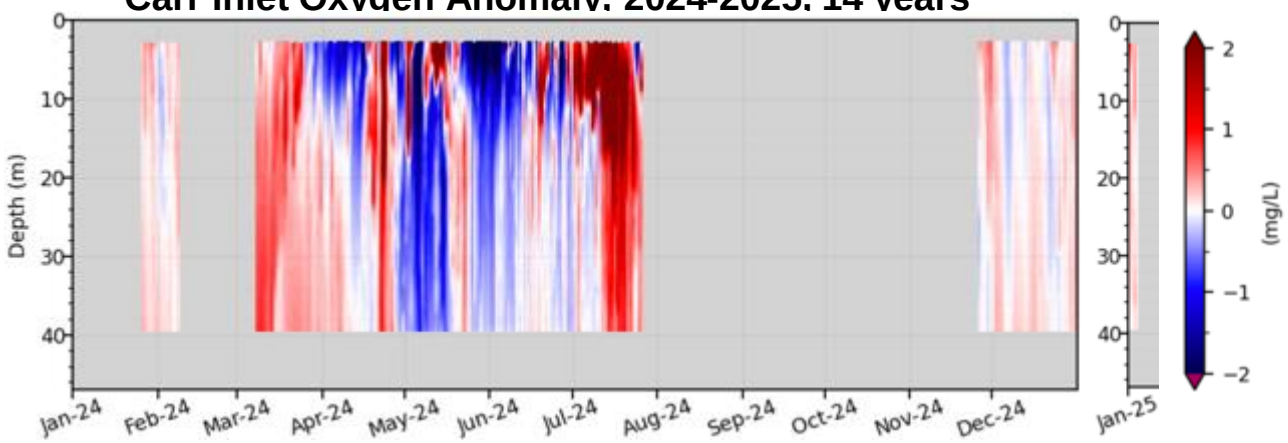


Puget Sound Profiling Buoys

Point Wells Oxygen Anomaly, 2024-2025, 14 years



Carr Inlet Oxygen Anomaly, 2024-2025, 14 years

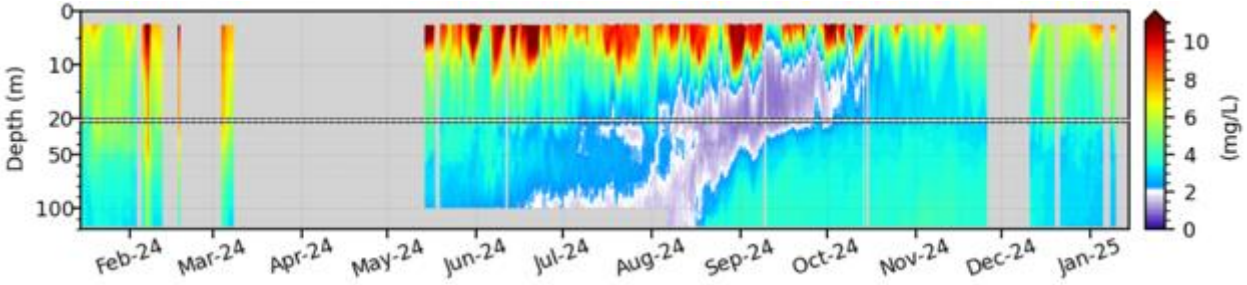


IOOS

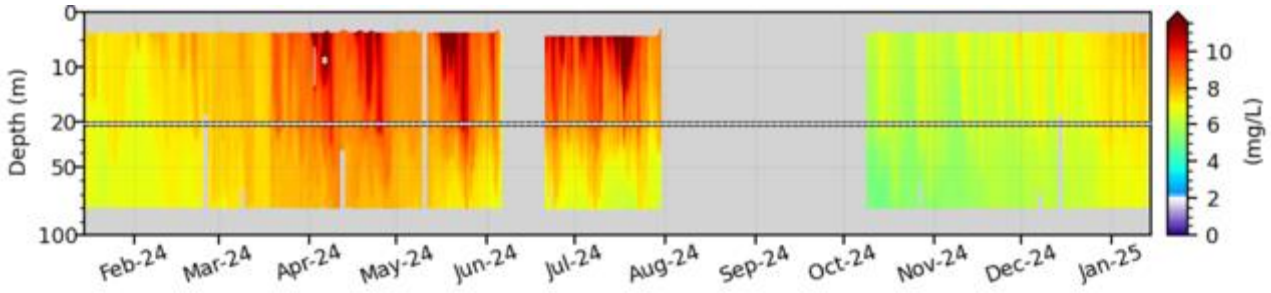
Oxygen Concentration

Puget Sound Profiling Buoys

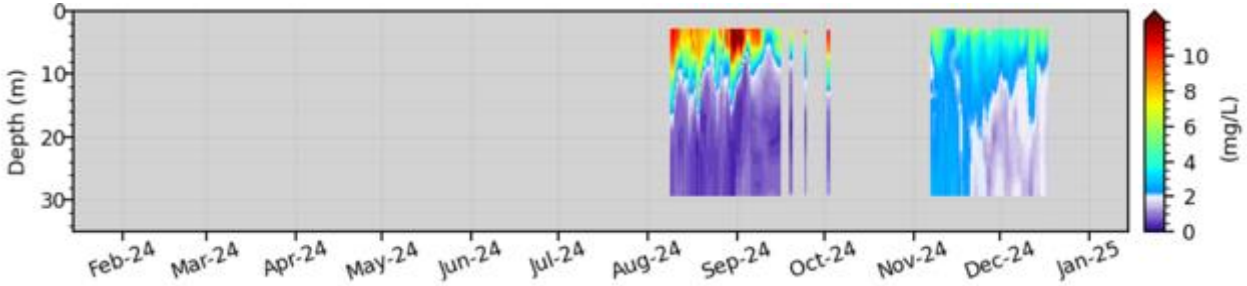
Hoodsport Oxygen Concentration, 2024-2025



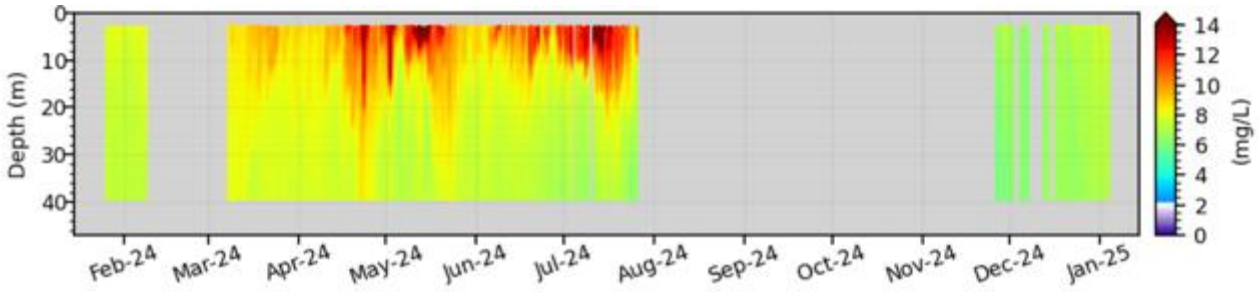
Point Wells Oxygen Concentration, 2024-2025

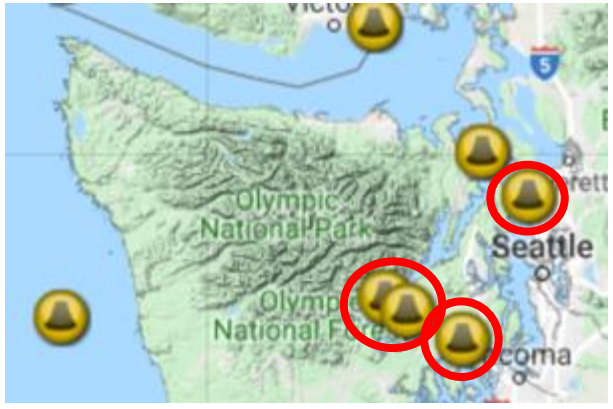


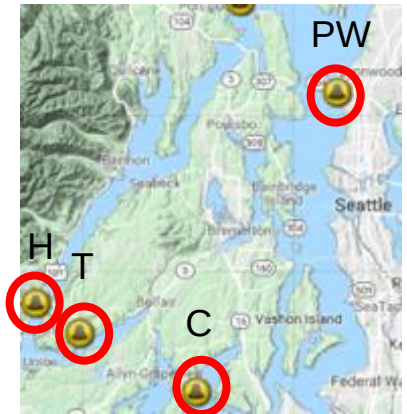
Twanoh Oxygen Concentration, 2024-2025



Carr Inlet Oxygen Concentration, 2024-2025







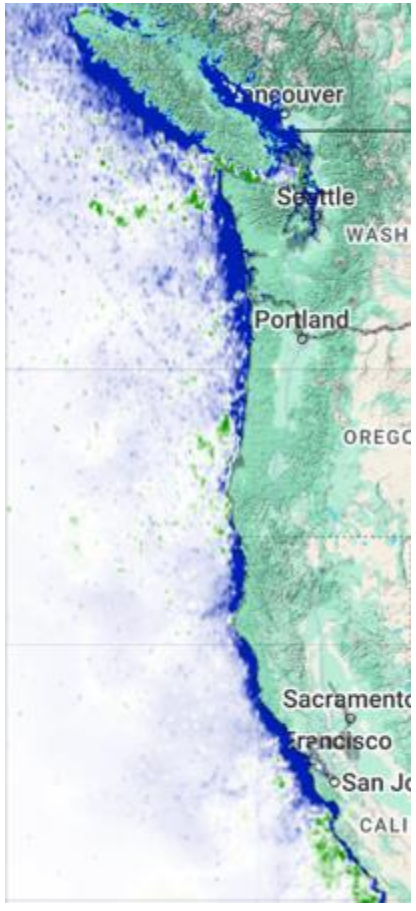
NANOOS: www.nanoos.org

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

Chlorophyll Anomaly
OSU Modis

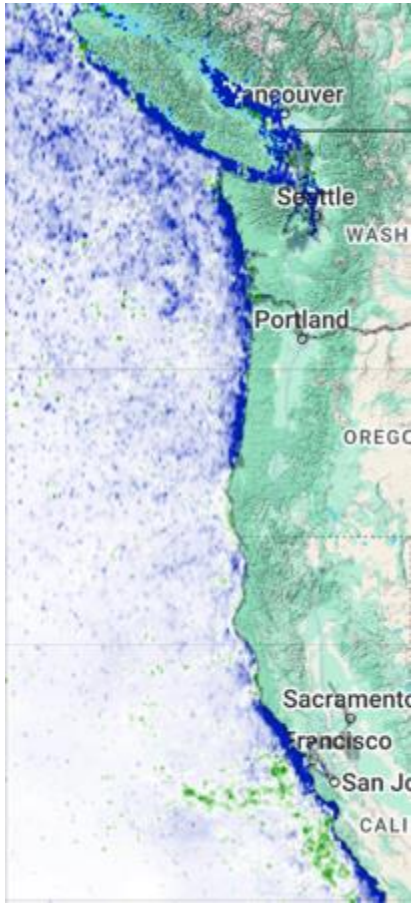
October 2024

OSU MODIS 2002-2012



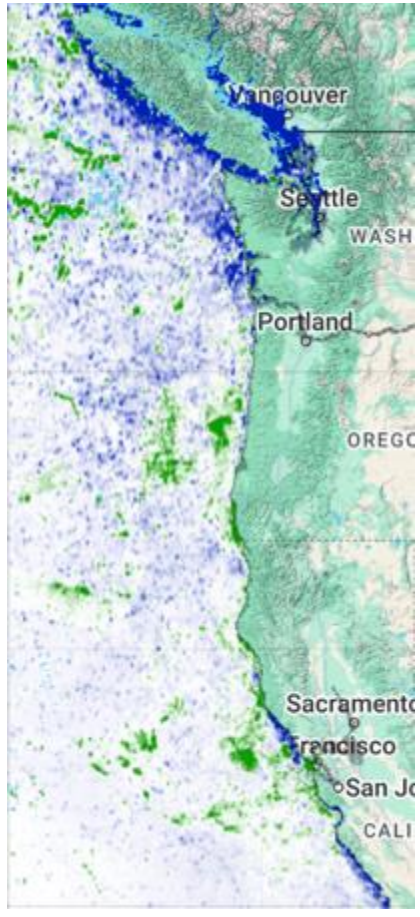
November 2024

OSU MODIS 2002-2012

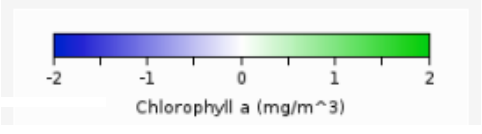


December 2024

OSU MODIS 2002-2012



Chlorophyll

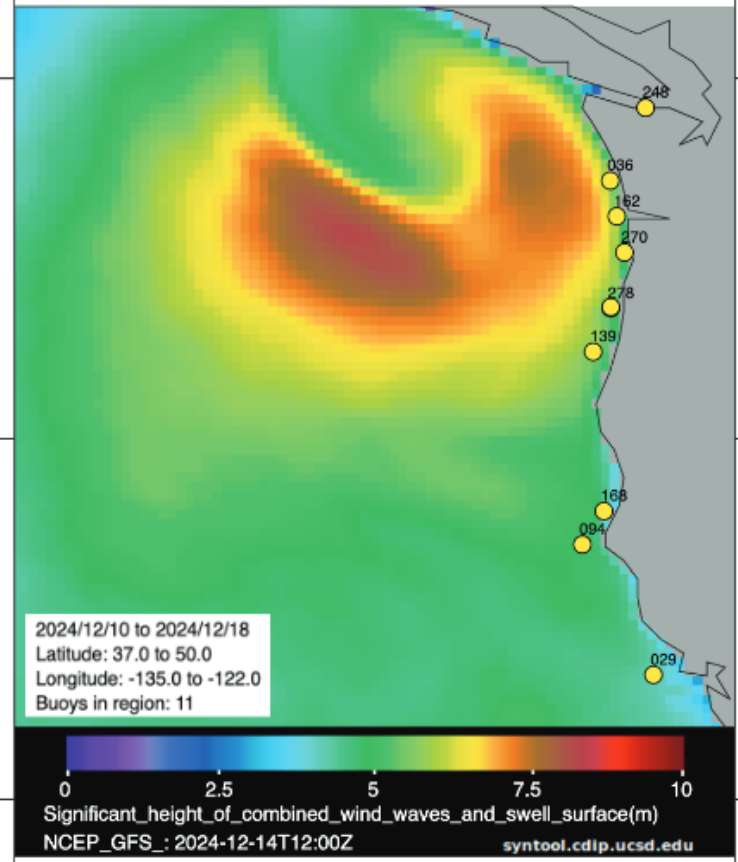


CDIP Wave Observations:
NW Pacific Coast Extratropical Storms
December 12-15, 2024

US Army Corps of Engineers

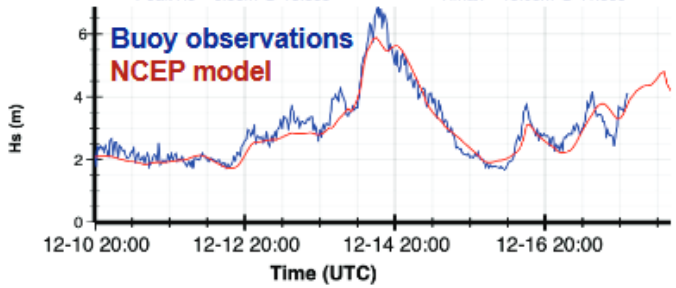
SCRIPPS INSTITUTION OF OCEANOGRAPHY
UC San Diego

CDIP
cdip.ucsd.edu

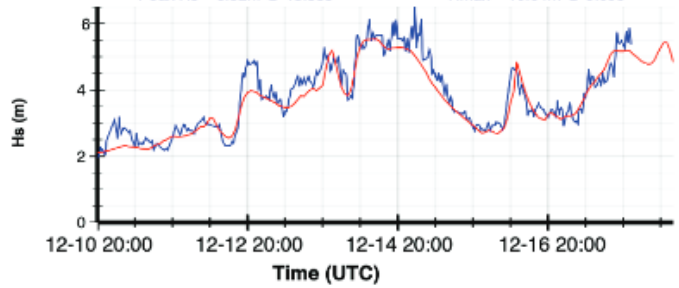


- Extratropical storm activity in the East Pacific continues to generate elevated winter wave conditions.
- CDIP stations in Northern California and Oregon recorded wave heights near their expected annual maxima, exceeding the operational forecast by 1-2 m.
- Combined with King Tides and a storm surge of ~1 m measured at NOAA gauges, significant coastal inundation reported along the Oregon and Washington coast.

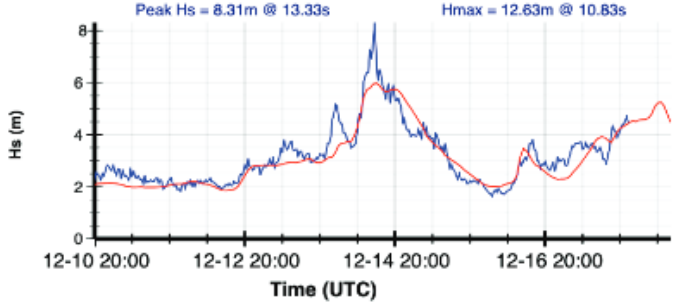
036 : GRAYS HARBOR, WA
Peak Hs = 6.88m @ 13.33s Hmax = 13.05m @ 11.53s



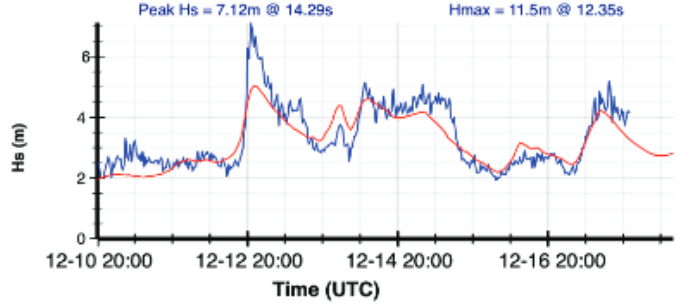
139 : UMPQUA OFFSHORE, OR
Peak Hs = 6.52m @ 13.33s Hmax = 10.64m @ 9.69s



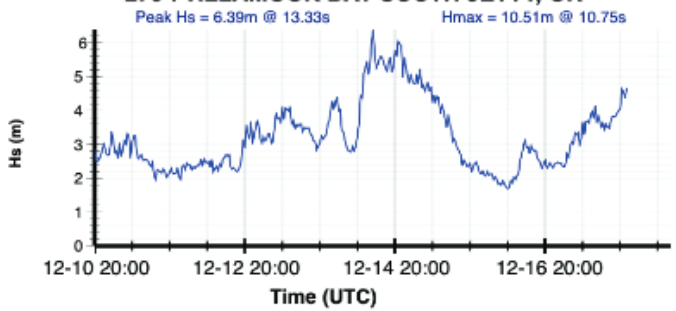
162 : CLATSOP SPIT, OR
Peak Hs = 8.31m @ 13.33s Hmax = 12.63m @ 10.83s



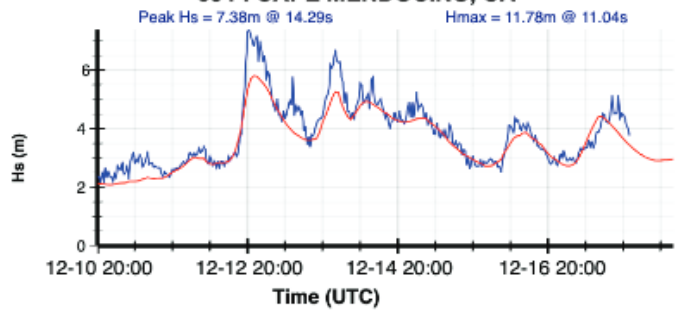
168 : HUMBOLDT BAY NORTH SPIT, CA
Peak Hs = 7.12m @ 14.29s Hmax = 11.5m @ 12.35s



270 : TILLAMOOK BAY SOUTH JETTY, OR
Peak Hs = 6.39m @ 13.33s Hmax = 10.51m @ 10.75s

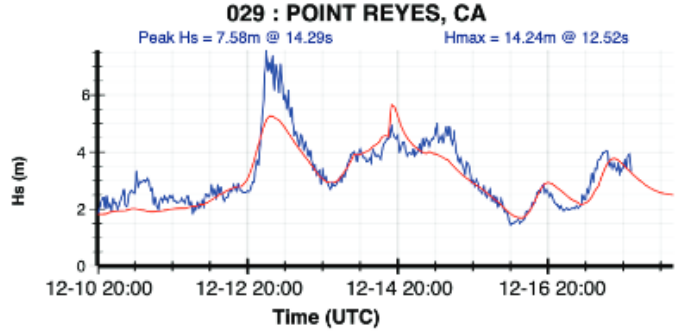


094 : CAPE MENDOCINO, CA
Peak Hs = 7.38m @ 14.29s Hmax = 11.78m @ 11.04s



278 : NEWPORT PWS SOUTH, OR
Peak Hs = 6.29m @ 13.33s Hmax = 10.87m @ 10.82s

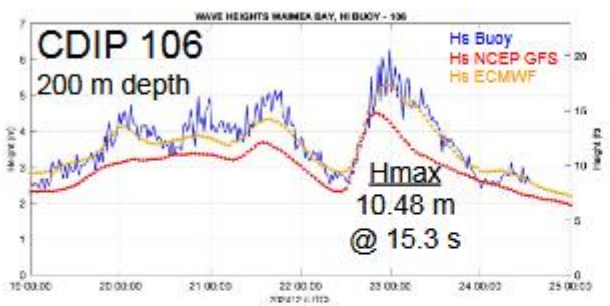
029 : POINT REYES, CA
Peak Hs = 7.58m @ 14.29s Hmax = 14.24m @ 12.52s

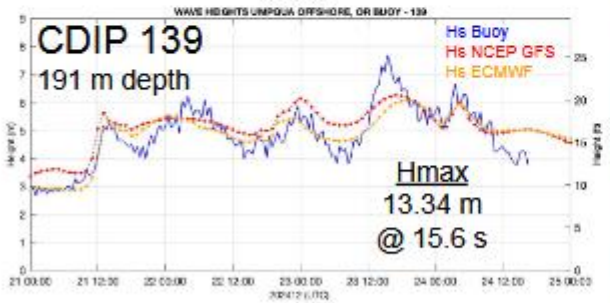


This storm season has been unusually intense this year, with multiple major storm tracks including a bomb cyclone generating a historical pressure drop and 13-meter waves.

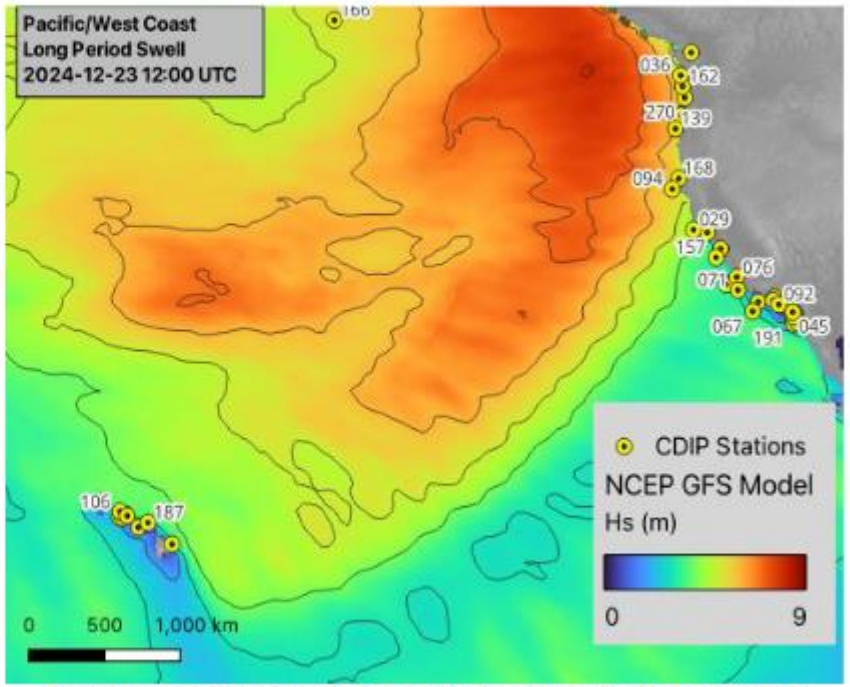
CDIP
coastal data information program
cdip.ucsd.edu

US Army Corps of Engineers





CDIP Wave Observations:
Pacific Coast Long Period Swell
December 22 - 24, 2024



- An intense extratropical cyclone in the North Pacific generated historically powerful swell at the longest wind-generated wave periods, Tp ≥ 25 seconds.

Thank You Coast Guards!

This storm season has been unusually intense this year, with multiple major storm tracks including a bomb cyclone generating a historical pressure drop and 13 meter waves. This has been particularly hard on our in-situ assets off the coast. We are indebted to the US and Canadian Coast Guards and the Makah Tribe for their roles in helping us recover valuable assets affected by storm action. The CRITFC/CMOP Plume buoy moved a couple km in November, and then another 1 km during the bomb cyclone. The US Coast Guard volunteered to recover the buoy in order to remove it from its new potentially hazardous location close to a shipping channel. The Coast Guard Cutter Elm successfully recovered the buoy mid-December, and it is now home at the new CMOP Field Office in Astoria, Oregon.

Farther north, the UW/APL Cha'ba buoy withstood the bomb cyclone but broke loose afterwards. Fortunately it drifted into the Strait of Juan de Fuca, where the Neah Bay Coast Guard helped tow it closer to shore. The Makah Tribe's F/V Alyeska then plucked it out of the water with all of its equipment intact.

Lastly, one of the two Quileute Tribe's Backyard Buoys spotter buoys went adrift during the bomb cyclone and wandered for a while. Fortunately, the Canadian Coast Guard Cutter Sir Wilfred Grenfel was able to recover the buoy off the coast of Vancouver Island and it has been retrieved.

To summarize:

Coastal conditions

- La Niña advisory.
- Fall (Sep-Nov) MHW dissipated; offshore WA coastal buoy relatively normal temperature. Temperature anomaly variation at nearshore coastal buoys, but nothing exceptional.
- No hypoxia issues

Puget Sound

- Warmer and saltier than average across all basins, cooler than average and fresher than average surface water in Hood Canal in January. Puget Sound retentive of heat and saltier signal from past.
- Oxygen anomaly mixed between basins; minor hypoxia in Hood Canal into December, no fall fish kills.

Chlorophyll & HABs

- Satellite data show offshore blooms October and December; blooms within Salish Sea throughout fall.
- HAB species have been present off and on, but in small numbers.

Waves

- Big wave events throughout October-December due to storms.

www.nanoos.org

janewton@uw.edu
rjcarini@uw.edu