



NOAA West Watch: Reporting Regional Environmental Conditions & Impacts in the West

November 1, 2022



Call Agenda

- Project Background (Dan McEvoy)
- Regional Climate and ENSO brief (Dan McEvoy)
- IOOS Nearshore Conditions brief (Jan Newton, Alex Harper, James Behrens)
- Discussion - Environmental conditions and impacts reporting (All)
 - Additional impacts to share?

Project Background

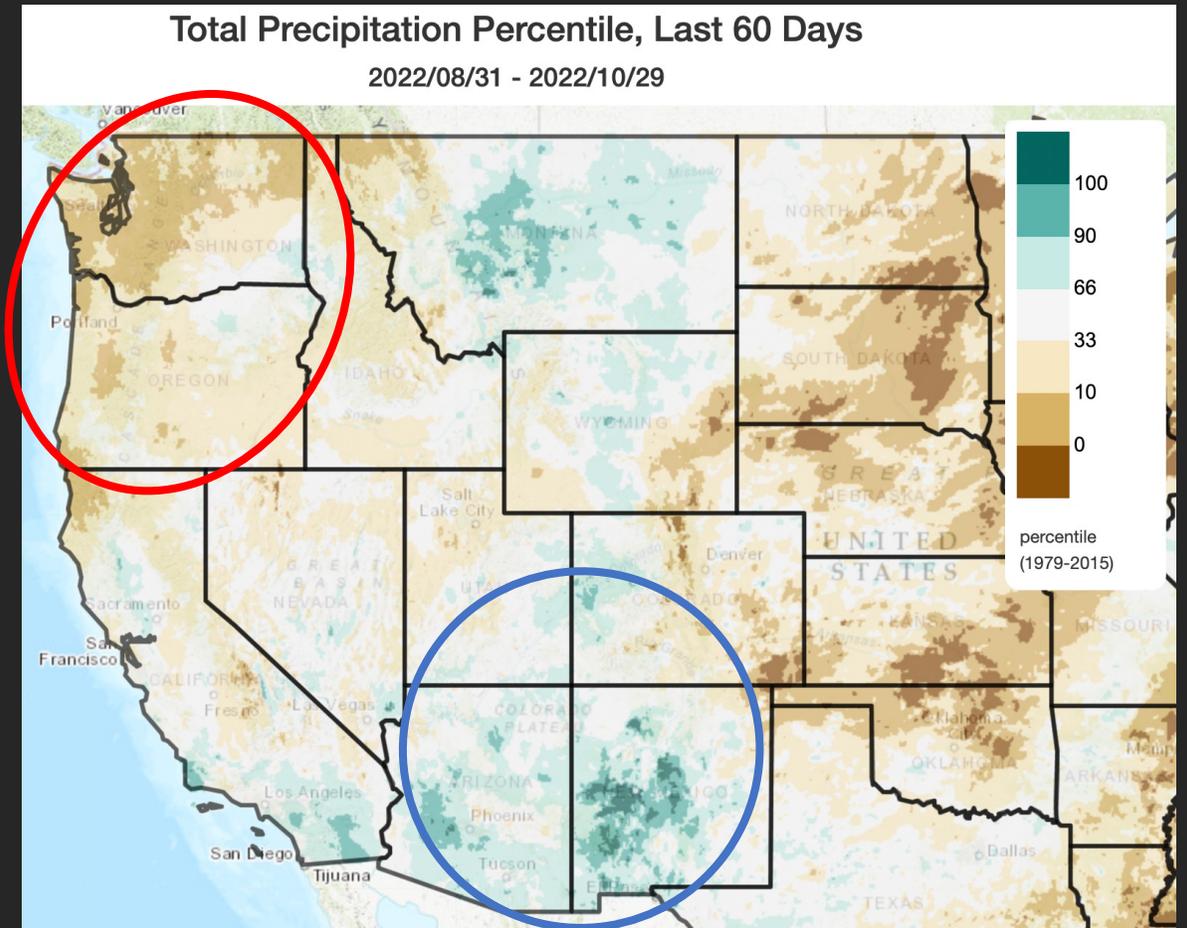
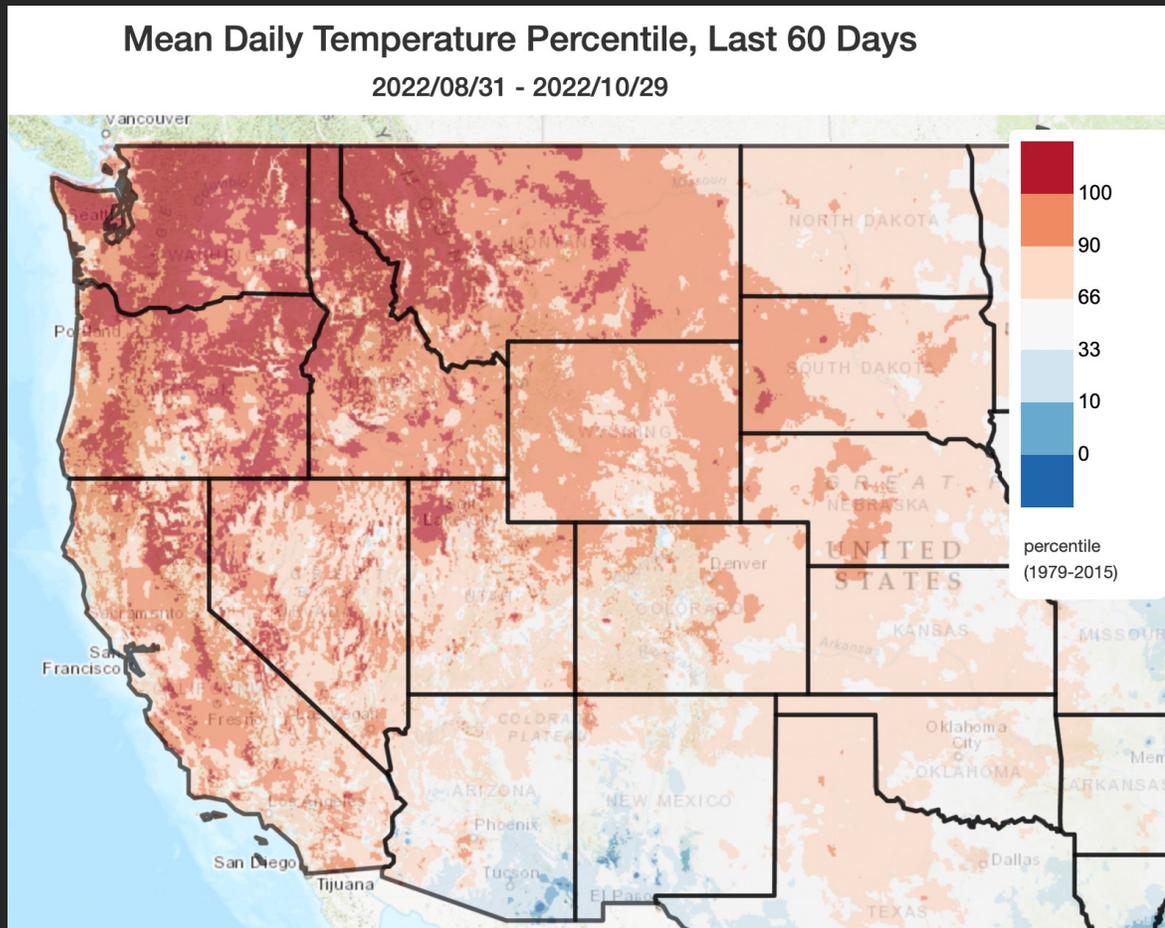
- Run by the Western Regional Climate Center, in partnership with the NOAA Western Regional Collaboration Team (NOAA West)
- Standing contributions from the three Integrated Ocean Observing System Regional Associations.
- Project Goals:
 - Serve as forum for bringing together NOAA staff and partners from across the agency and region to share information about regional scale environmental observations and impacts on human systems.
 - Help facilitate interdisciplinary connections and the exchange of information among agency staff and partners on regional climatic and oceanic conditions, particularly departures from normal.

These webinars are not formal public releases of data.

Hot and dry start to Autumn for some

Aug 31-Oct 29 Temperature Percentile

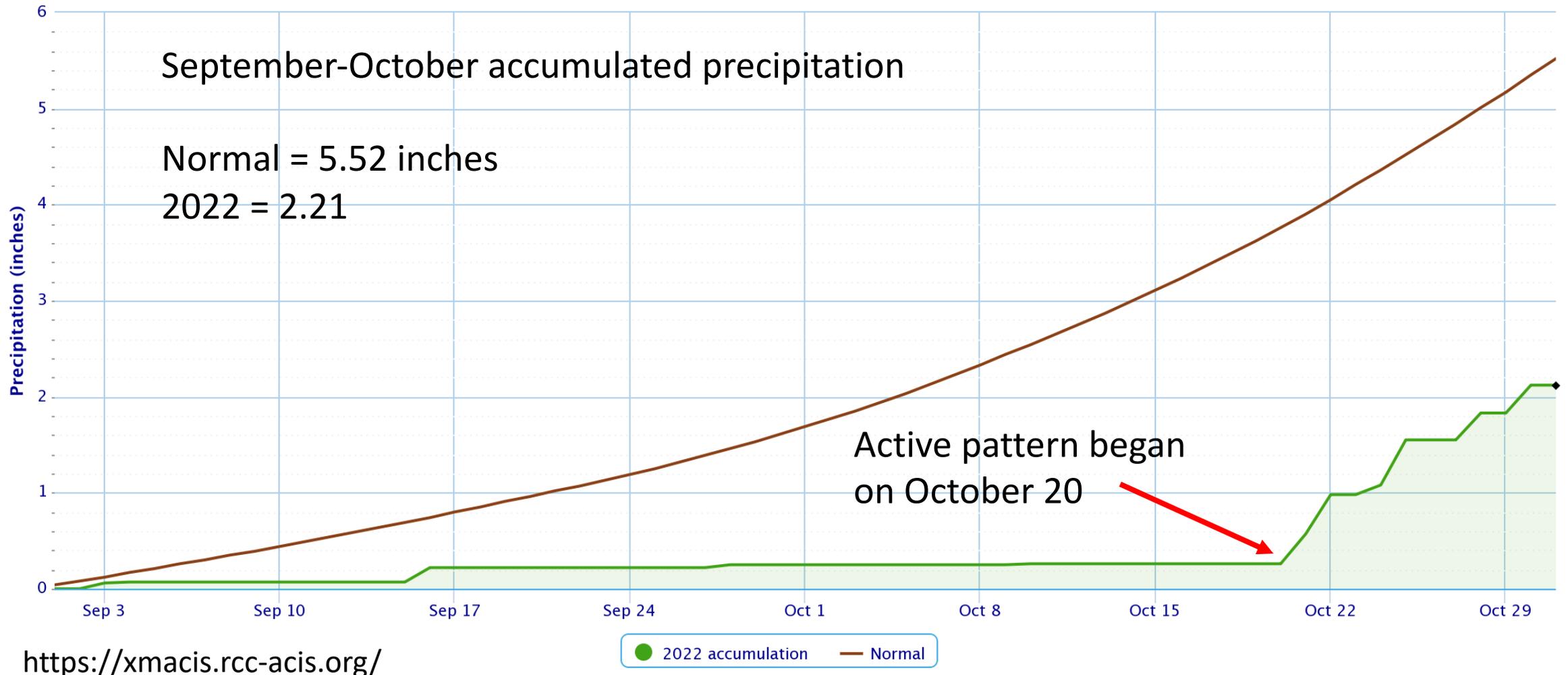
Aug 31-Oct 29 Precipitation Percentile



Delayed start to wet season in Pacific Northwest

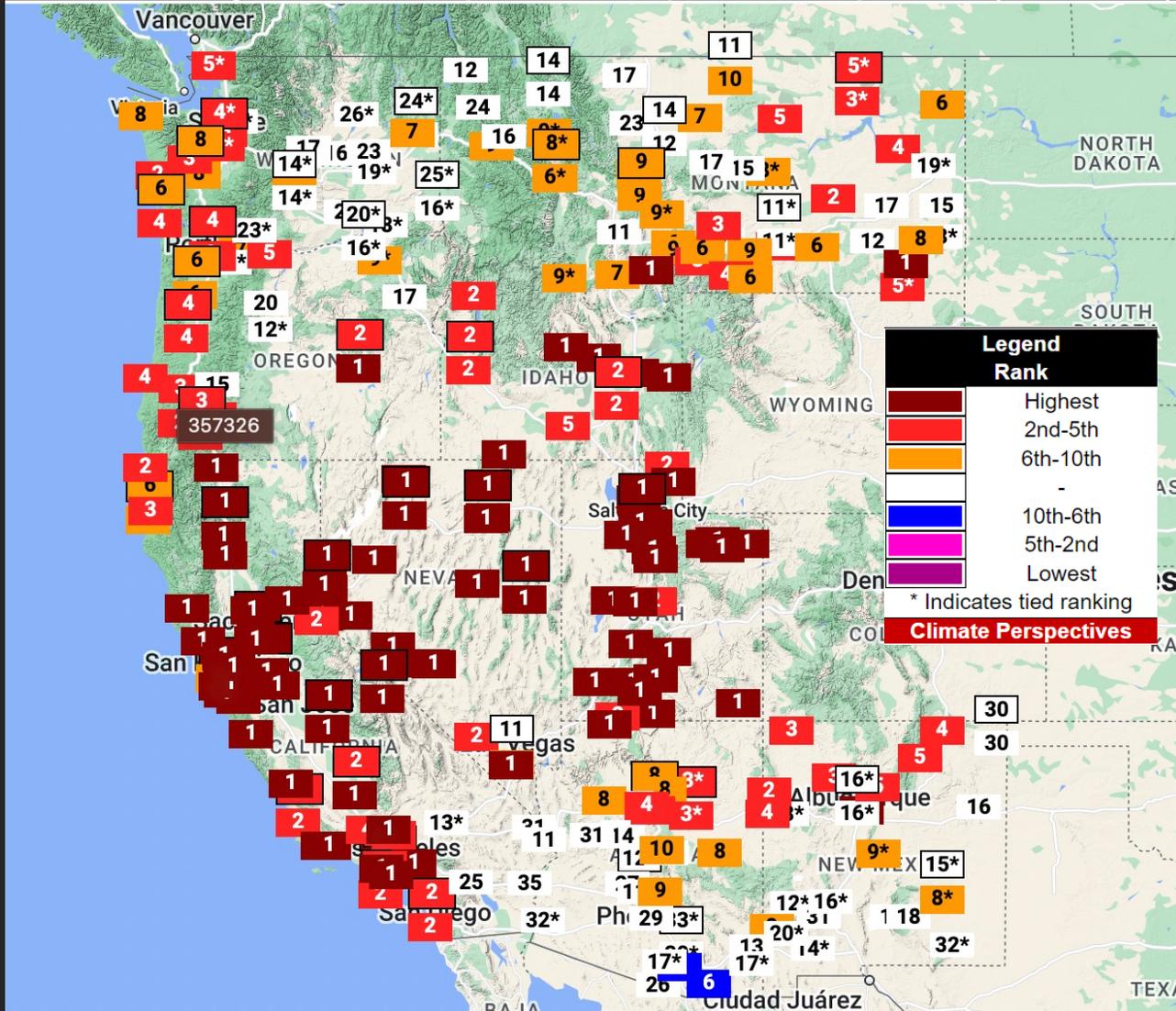
Accumulated Precipitation – SEATTLE TACOMA AIRPORT, WA

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values

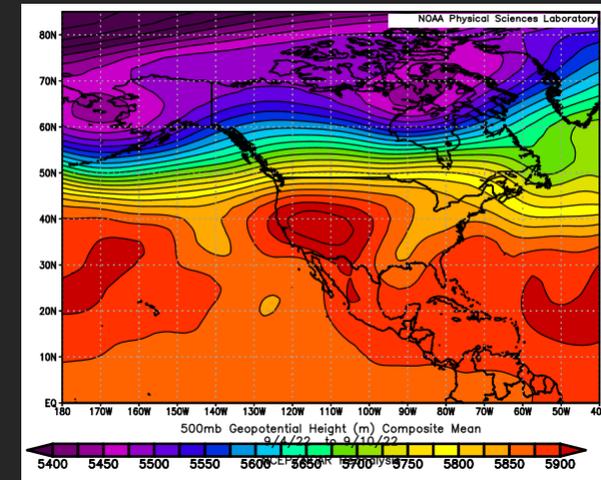


Labor Day week heatwave

Observed Average Maximum Temperature for Sep 4 2022 to Sep 10 2022 (327 stations)

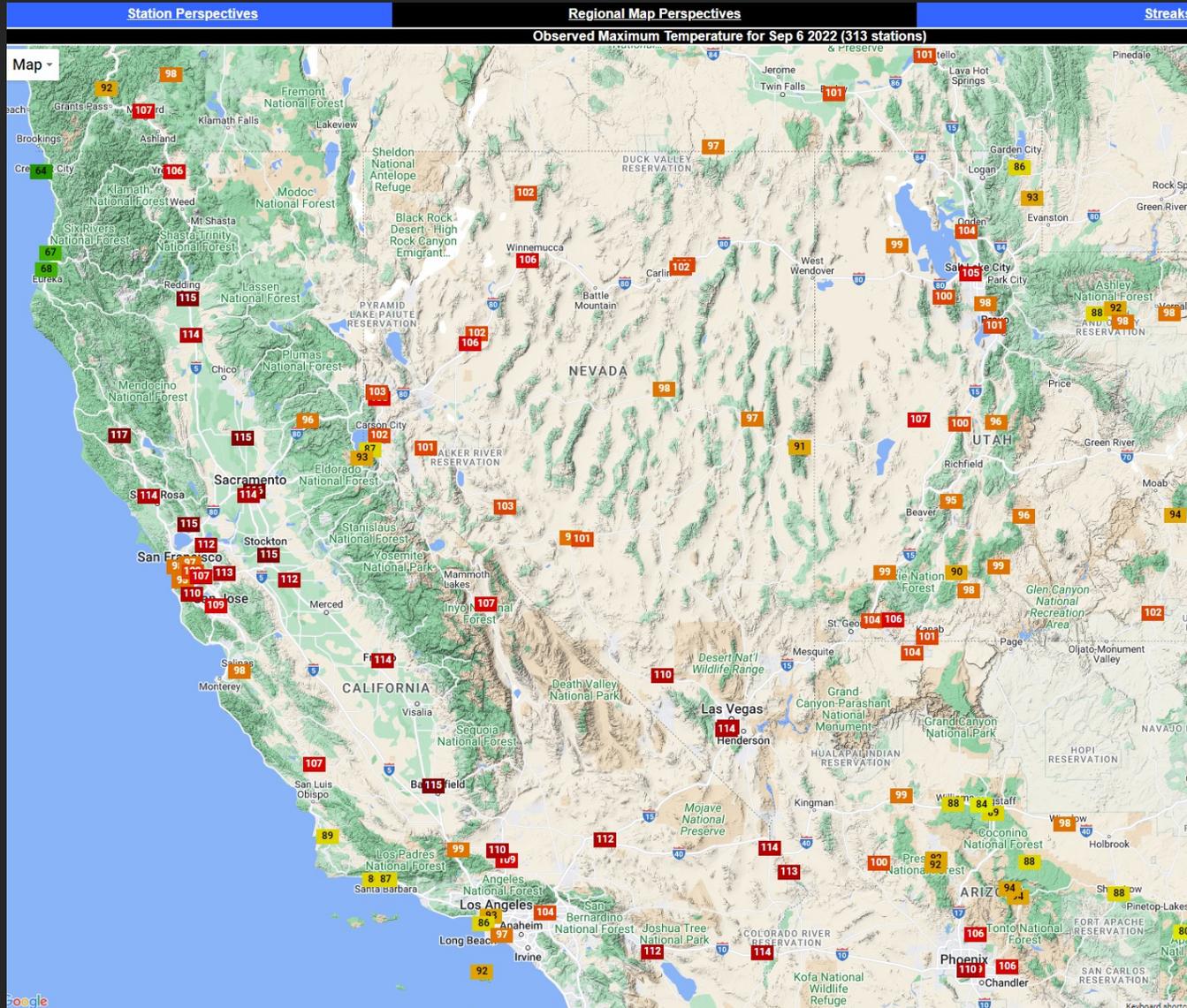


- Strong high pressure over NV/CA
- Prolonged heatwave
- Weekly average anomalies +12 to +18 F above normal
- Very late in year for these extreme temperatures



<https://sercc.oasis.unc.edu/Map.php?region=wrcc>

Labor Day week heatwave



- Maximum temperatures on September 6, 2022
- Ukiah, CA: 117 F
- Sacramento, CA: 116 F
- Medford, OR: 107 F
- Reno, NV: 106 F
- Salt Lake City, UT, 105 F

RECORD HEAT



Reno, NV
106°F

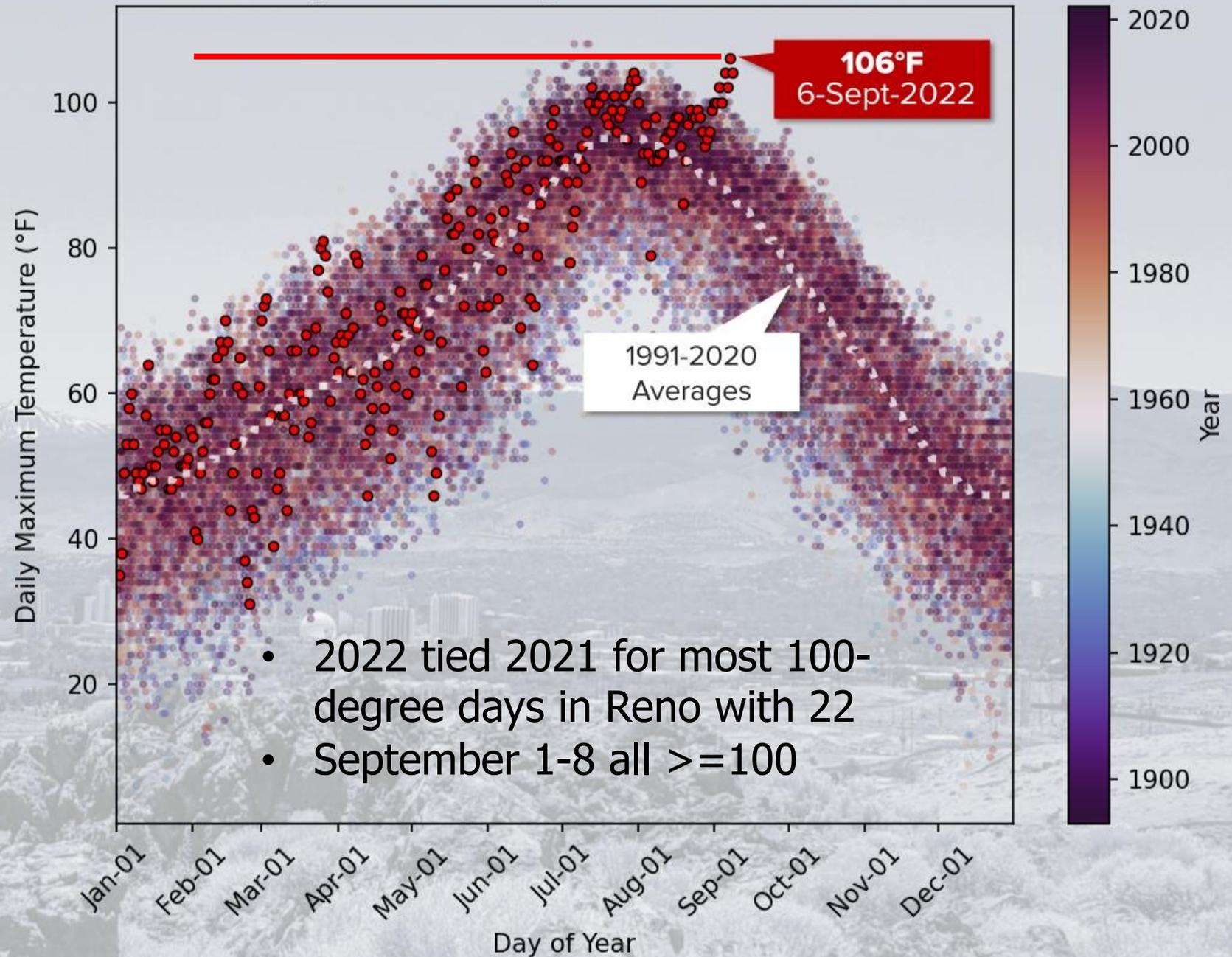
Tuesday, September 6th, 2022

Reno (KRNO) high of 106°F was the second highest temperature since records began, tying with July 4, 2007. The highest temperature ever recorded at KRNO was 108°F in July 2002, 2007.



[weather.gov/Reno](https://www.weather.gov/Reno)
National Weather Service • Reno, NV

Reno, NV Max Temperatures 1893-2022



2022 Fire Season Update

Year-to-date statistics

2022 (1/1/22-10/27/22)

Fires: 59,441

Acres: 7,210,454

10-year average Year-to-Date

2012-2021

Fires: 48,193

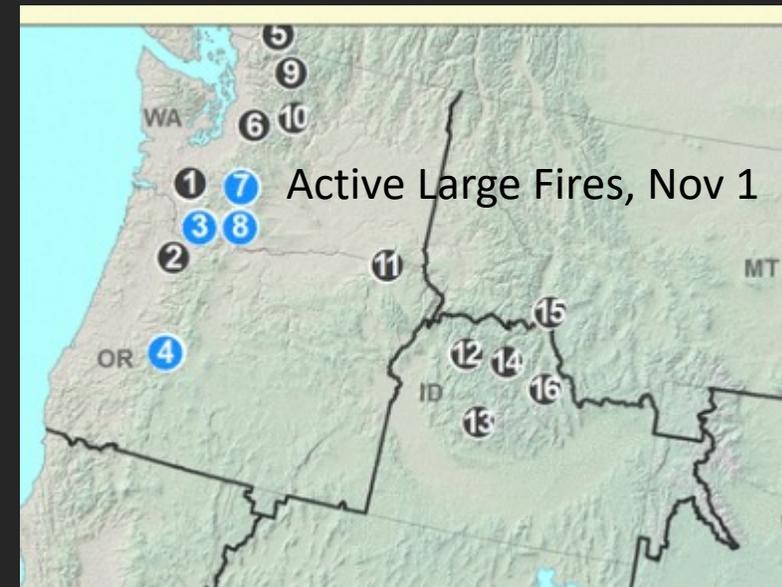
Acres: 6,736,603

States currently reporting large fires:

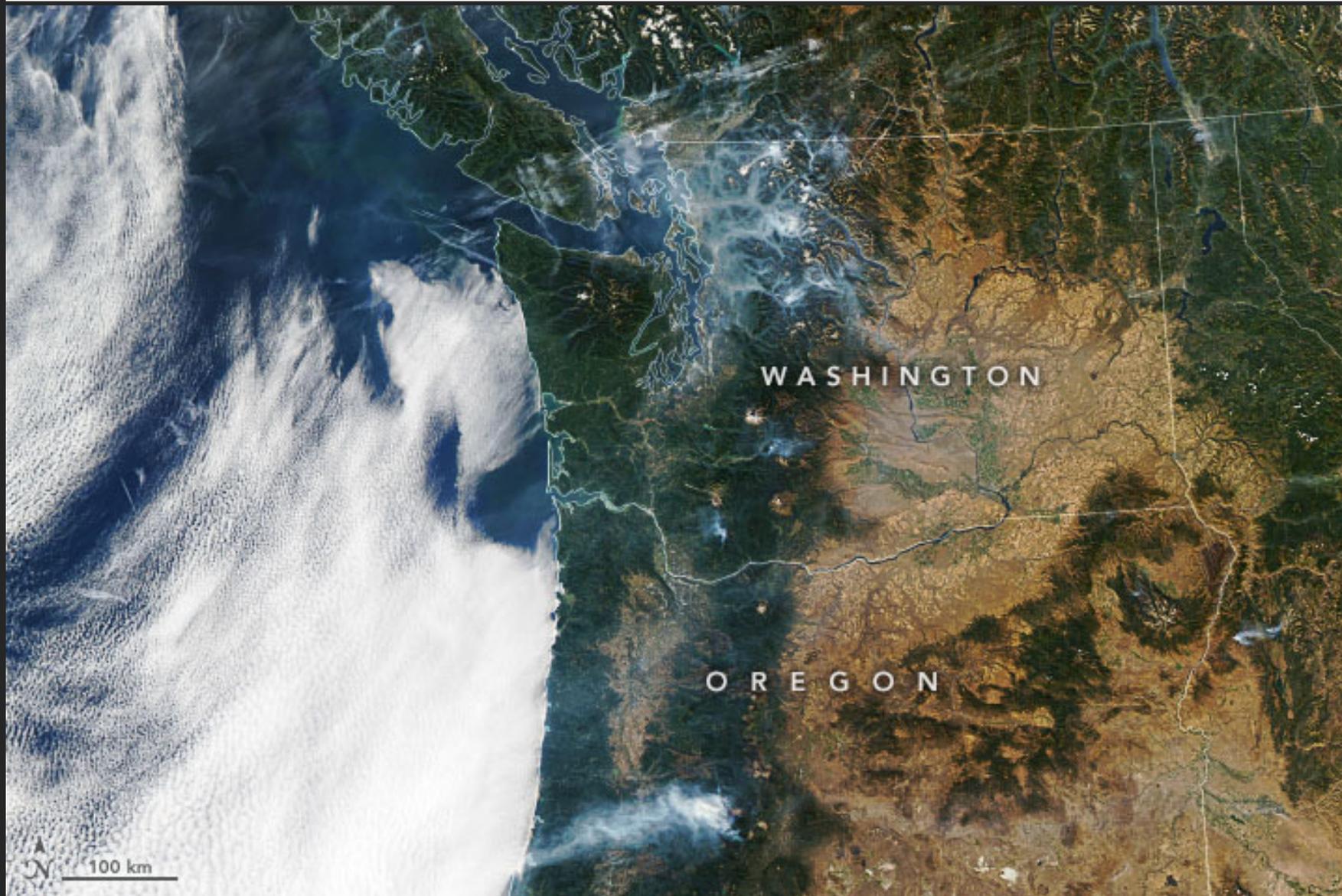
- Washington (10)
- Idaho (4)
- Oklahoma (4)
- Kentucky (3)
- Oregon (2)
- Montana (1)
- Indiana (1)

- Active fires persist in the PNW even with the onset of the wet season in late October

<https://www.nifc.gov/fire-information/nfn>



2022 Fire Season Update



October 9, 2022

earthobservatory.nasa.gov

2022 Fire Season Update

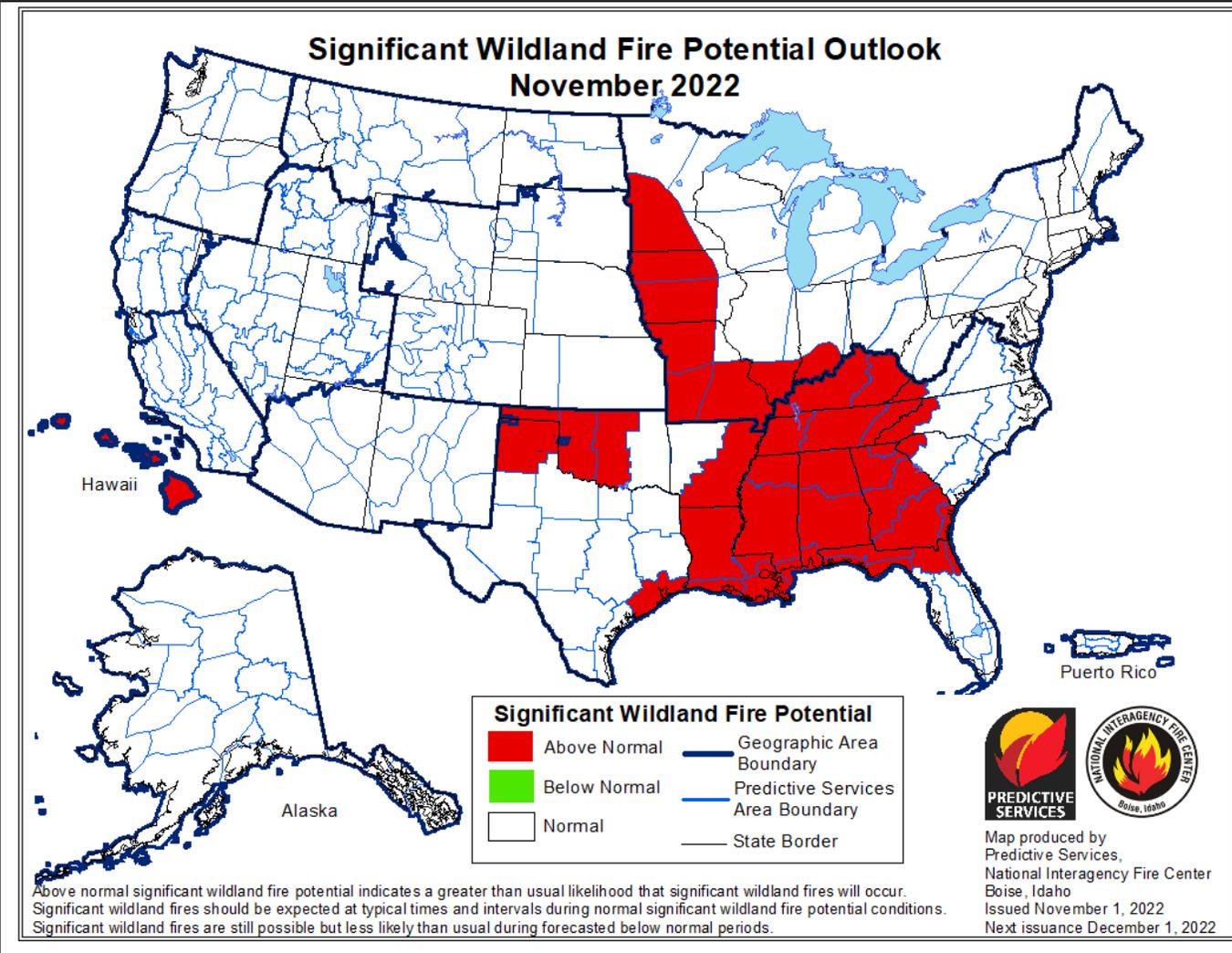


October 9, 2022

Central Oregon
Cascades

earthobservatory.nasa.gov

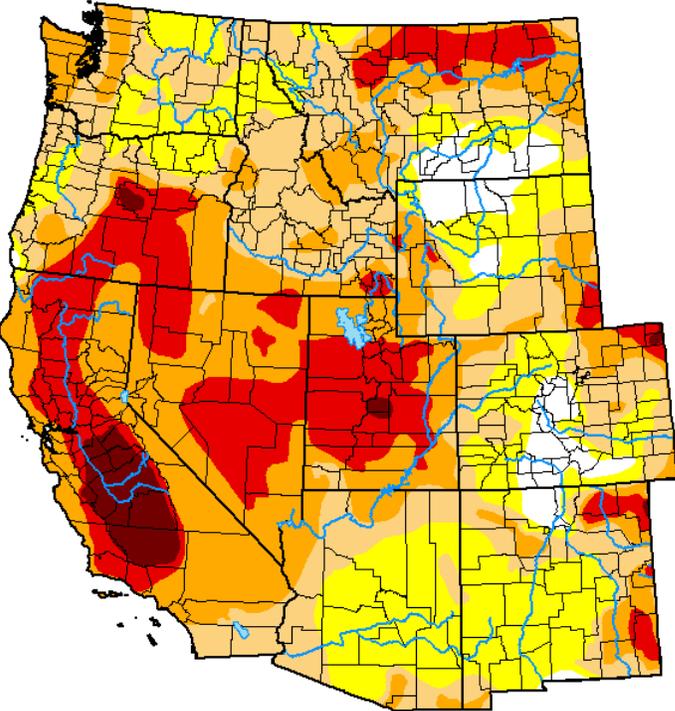
Significant Wildland Fire Potential Outlook



- Note that white is “Normal” potential
- Southern coastal California can still experience late autumn/winter fires that would be driven by continued dryness and downslope wind events (like Santa Ana)

Current Drought Snapshot

U.S. Drought Monitor Western U.S.



October 25, 2022
(Released Thursday, Oct. 27, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	4.56	95.44	73.49	47.80	19.55	2.53
Last Week 10-18-2022	5.02	94.98	73.03	47.38	19.38	2.62
3 Months Ago 07-26-2022	16.72	83.28	72.69	55.74	29.12	6.51
Start of Calendar Year 01-04-2022	3.68	96.32	89.29	64.90	23.85	3.94
Start of Water Year 09-27-2022	3.89	96.11	73.90	47.71	19.37	2.63
One Year Ago 10-26-2021	2.16	97.84	90.73	74.61	47.11	15.31

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

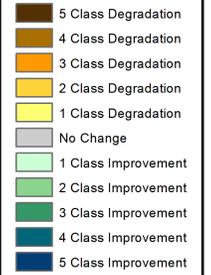
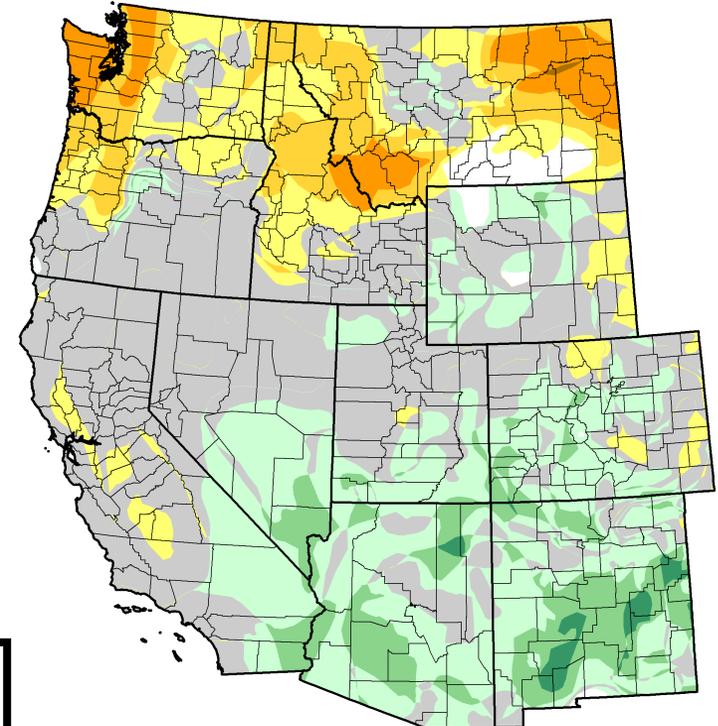
Author:

Adam Hartman
NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - Western U.S. 12 Week



droughtmonitor.unl.edu

A good monsoon has improved *short-term drought* in parts of the Southwest, **but Colorado River water supply remains critically low.**

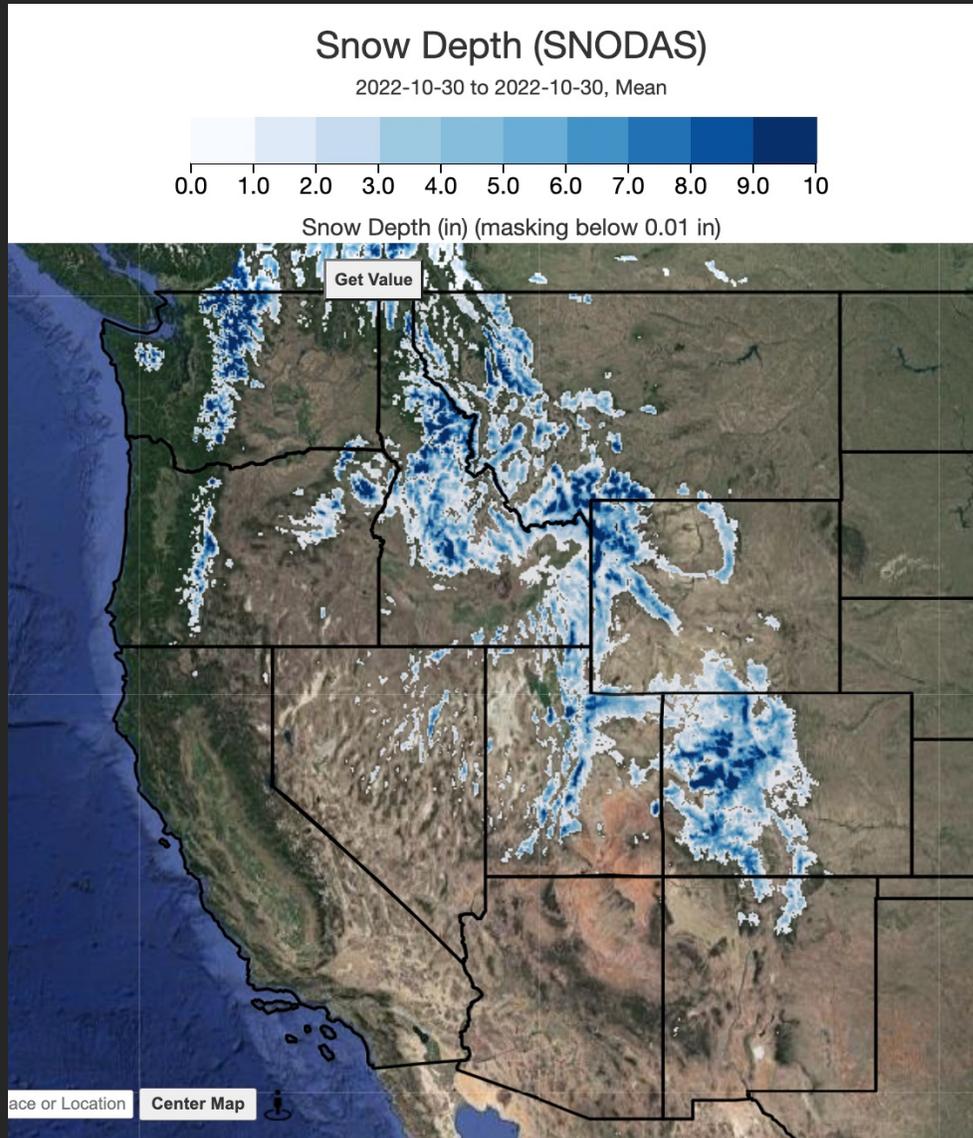
Current Drought Snapshot

	PERCENT FULL	Content 1000 ac-ft (kaf)	Elev. (Feet above mean sea level)	7-Day Release (CFS)
CURRENT STORAGE				
LAKE POWELL	25%	5,834	3,529.94	7,800
* LAKE MEAD	28%	7,422	1,046.36	3,100
LAKE MOHAVE	80%	1,447	633.50	9,000
LAKE HAVASU	96%	596	448.81	5,400
TOTAL SYSTEM CONTENTS **	33%	19,465		
As of 10/23/2022				
SYSTEM CONTENT LAST YEAR	38%	22,613		

UNREGULATED INFLOW INTO LAKE POWELL - OCTOBER MID-MONTH FORECAST DATED 10/19/2022

	MILLION ACRE-FEET	% of Normal
PRELIMINARY OBSERVED WATER YEAR 2022	6.084	63%
OBSERVED APRIL-JULY 2022	3.751	59%
SEPTEMBER OBSERVED INFLOW	0.245	71%
OCTOBER INFLOW FORECAST	0.400	88%
	Upper Colorado Basin	Salt/Verde Basin
WATER YEAR 2023 PRECIP TO DATE ²	83% (1.4")	366% (2.7")

Snowpack beginning to build across the West

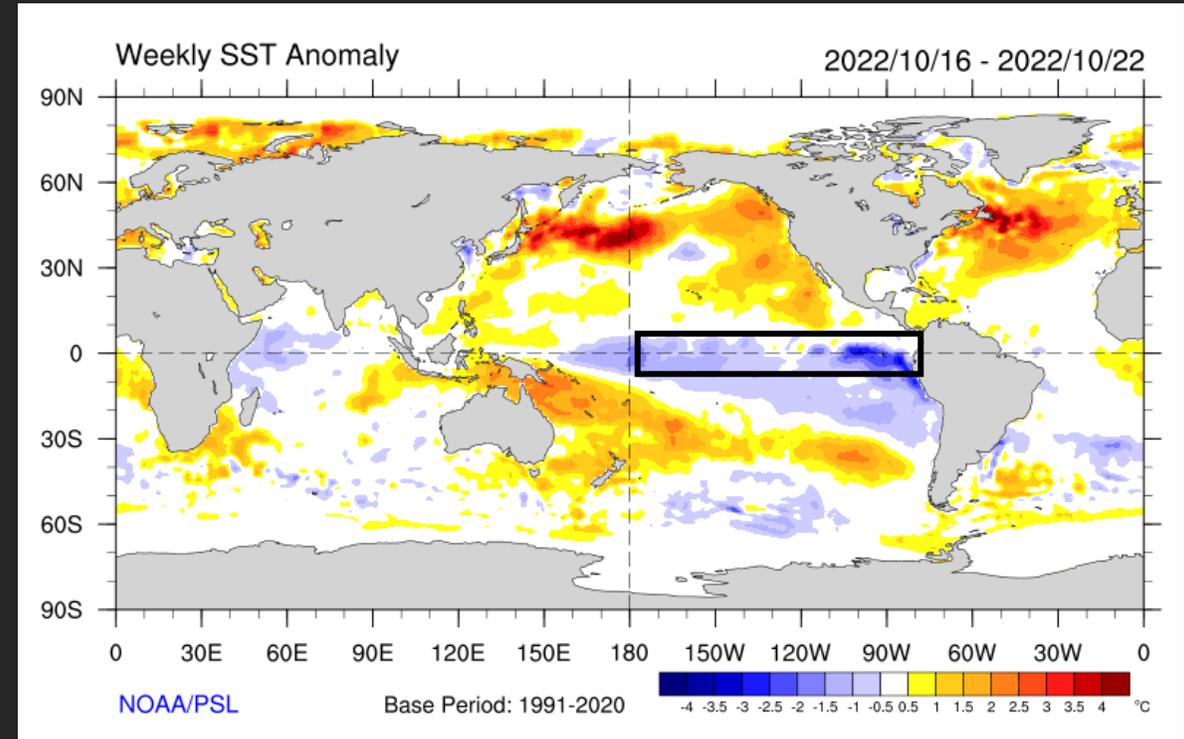


- Recent storms have brought the first significant snowfall to mountains areas across the West
- Sierra Nevada one region with no snow yet but that should be changing over the next week

ENSO Update

<https://psl.noaa.gov/map/clim/sst.shtml>

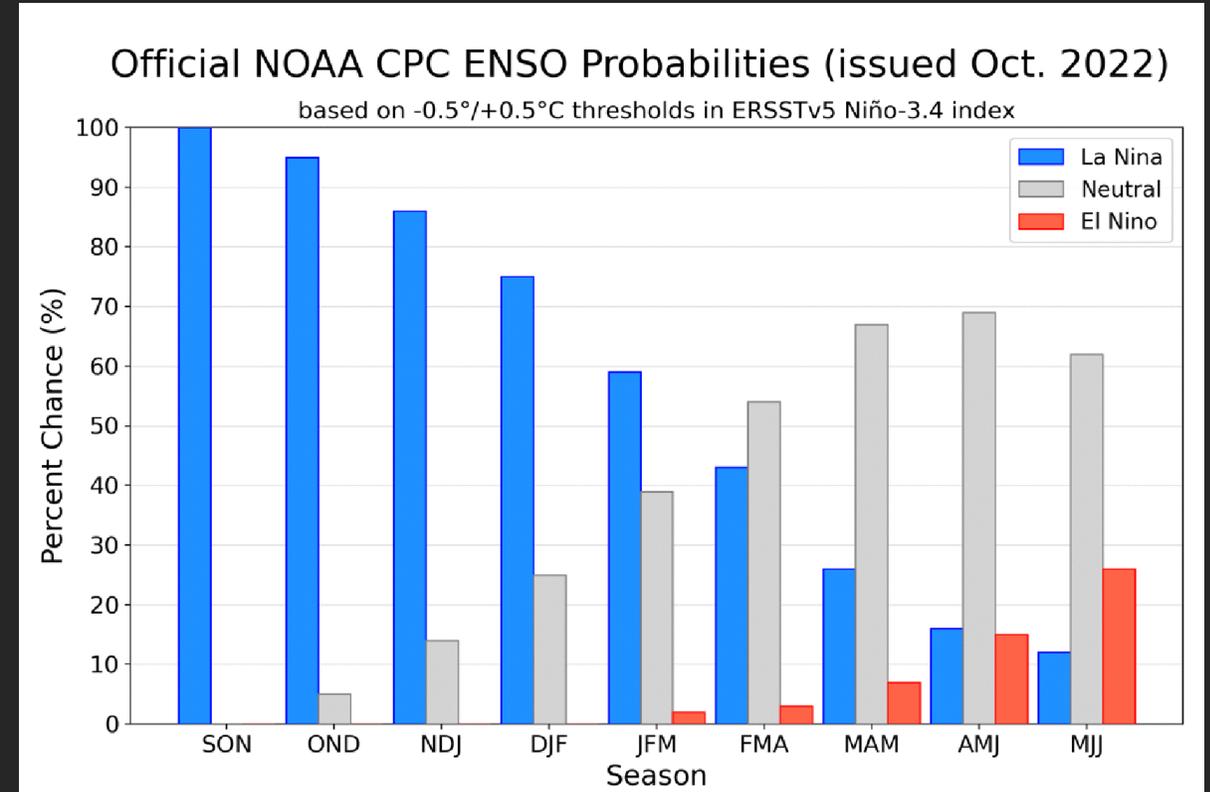
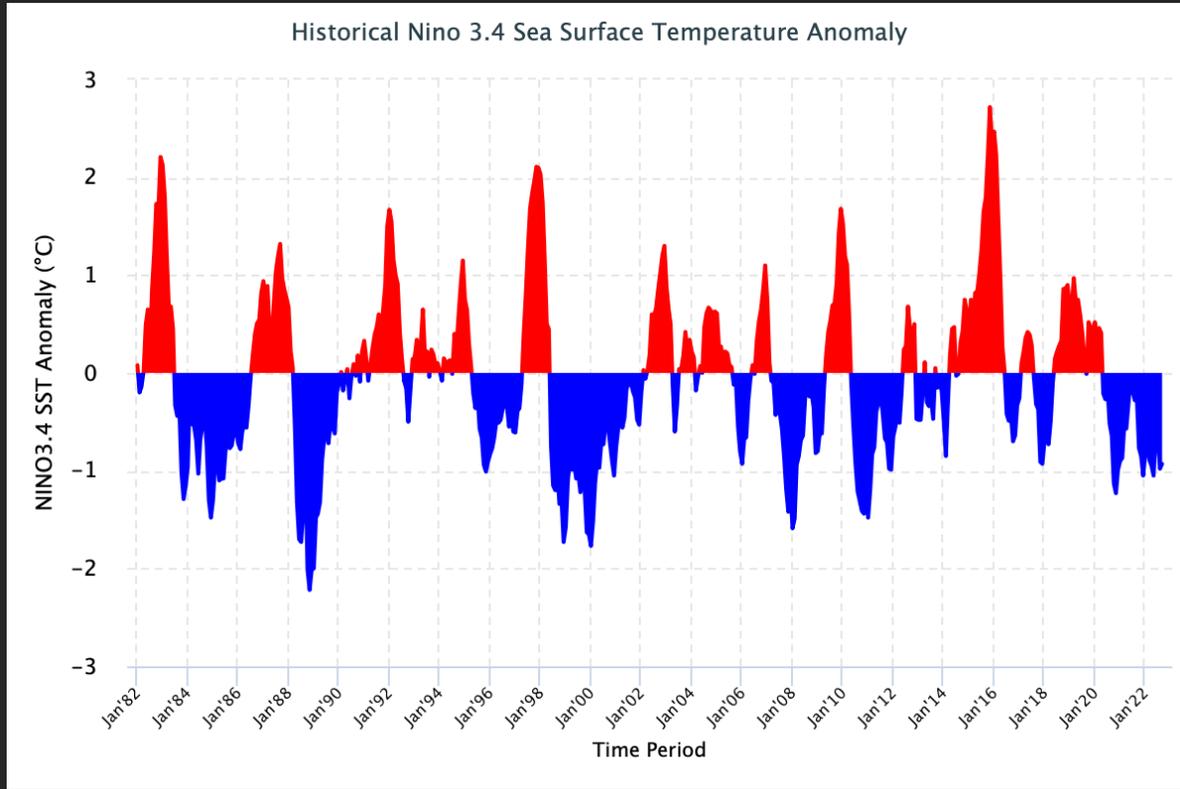
- ENSO Alert System Status: **La Niña Advisory**
- La Niña is present.
- Equatorial sea surface temperatures (SSTs) are below average across most of the Pacific Ocean.
- The tropical Pacific atmosphere is consistent with La Niña conditions.



- There is a 75% chance of La Niña during the Northern Hemisphere winter (December-February) 2022-23, with a 54% chance for ENSO-neutral in February-April 2023.

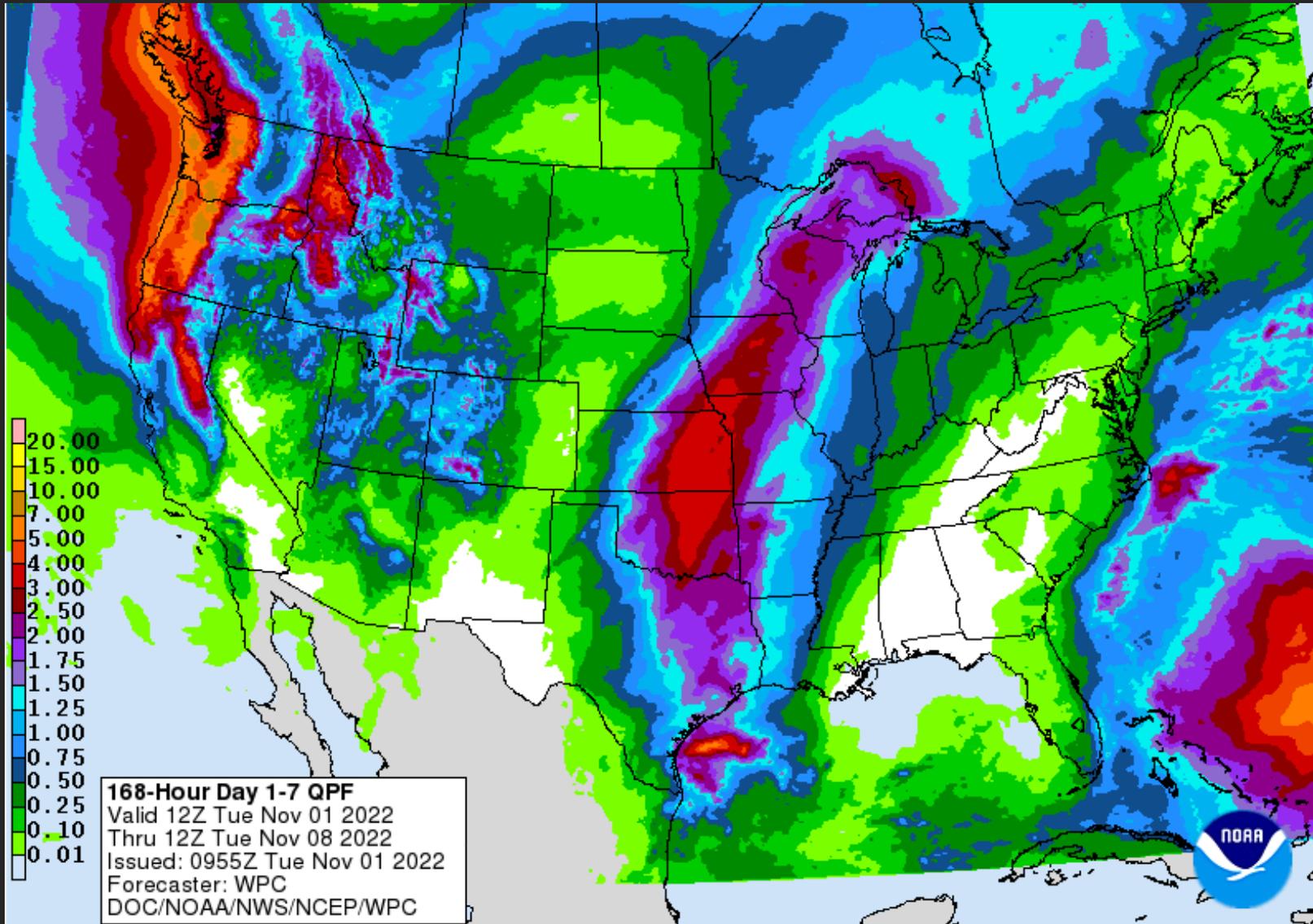
Source: Climate Prediction Center

ENSO—La Niña Conditions Persist



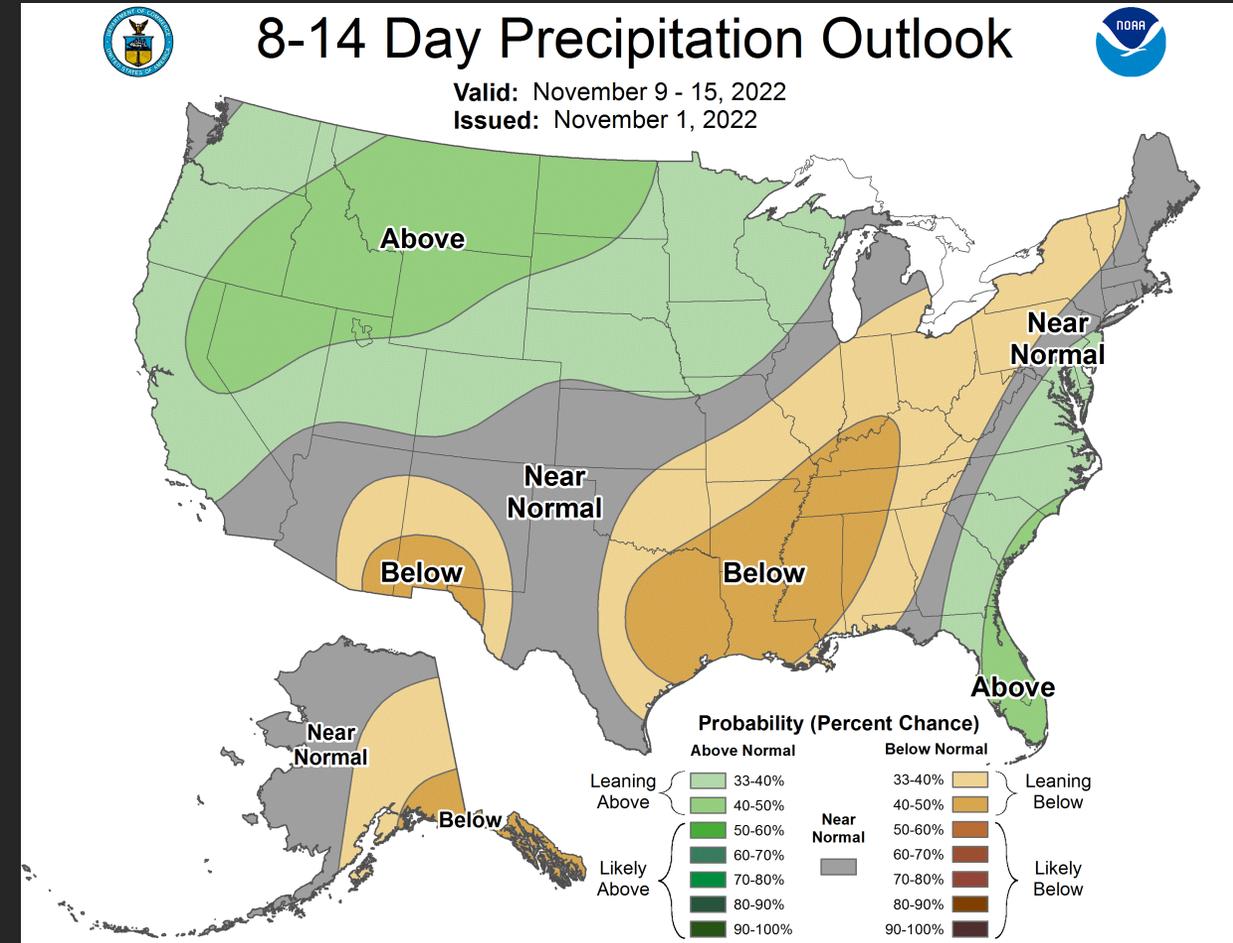
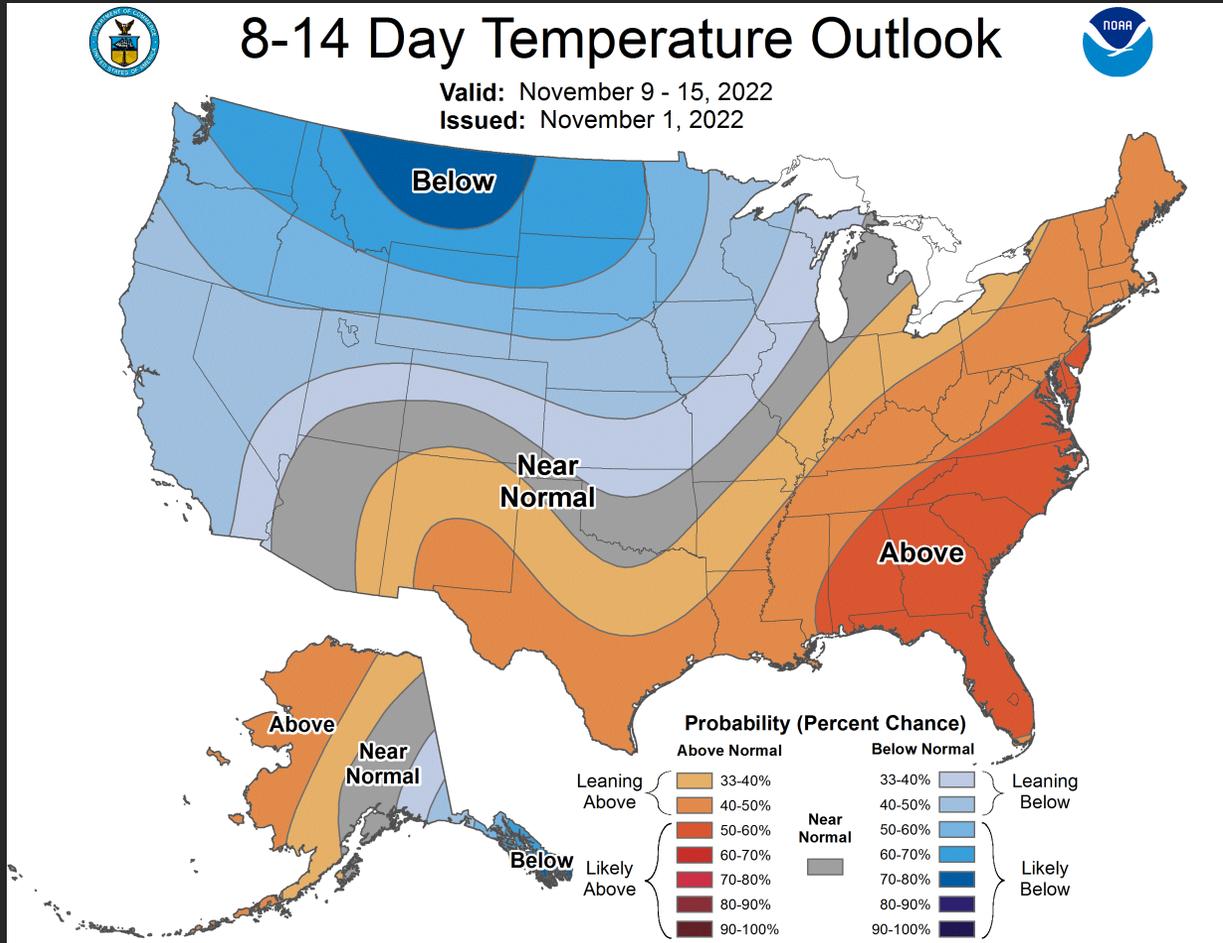
- La Niña conditions still present with below average SSTs in the eastern equatorial Pacific
- La Niña likely to continue through autumn and winter

WPC 7-day Precipitation Forecast

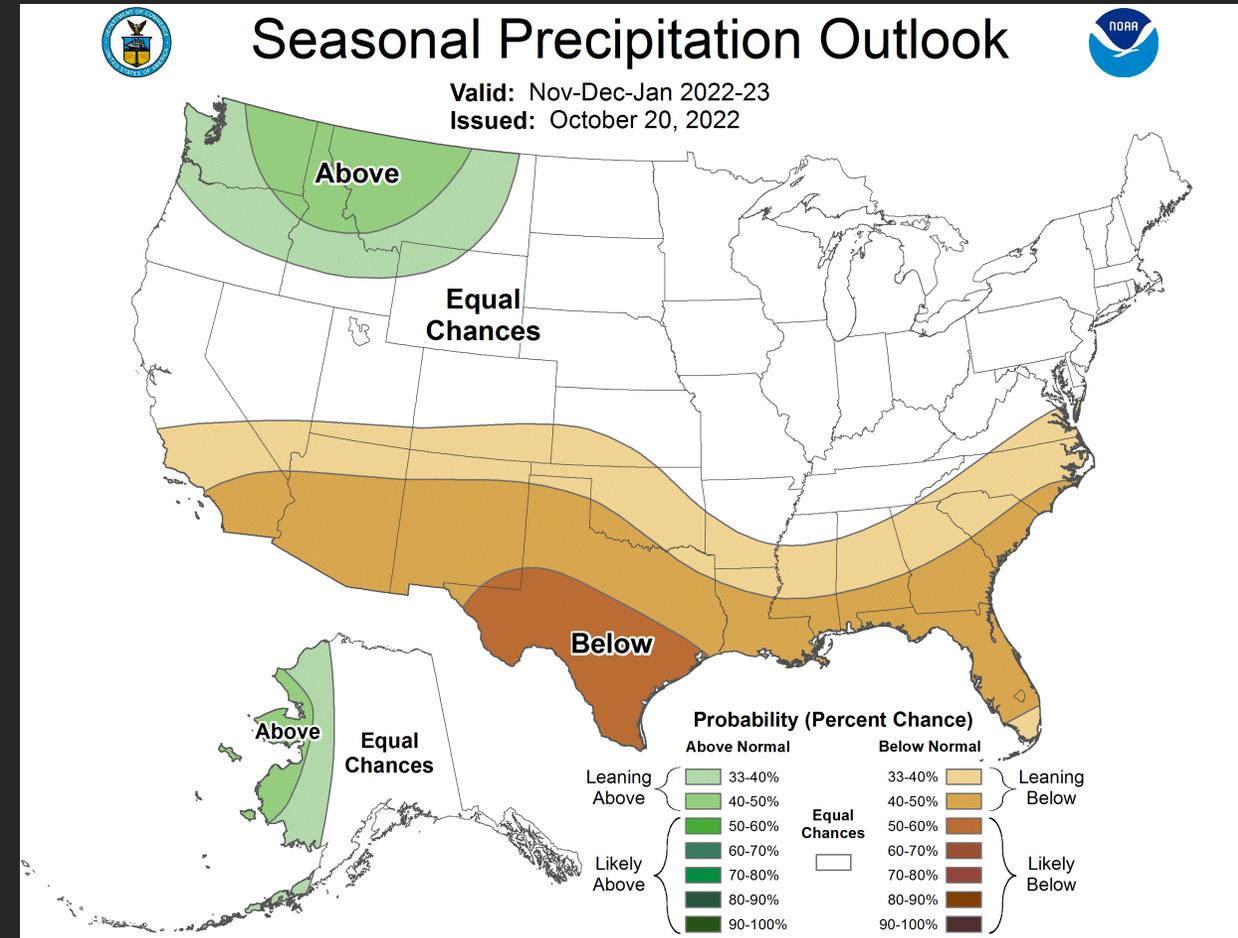
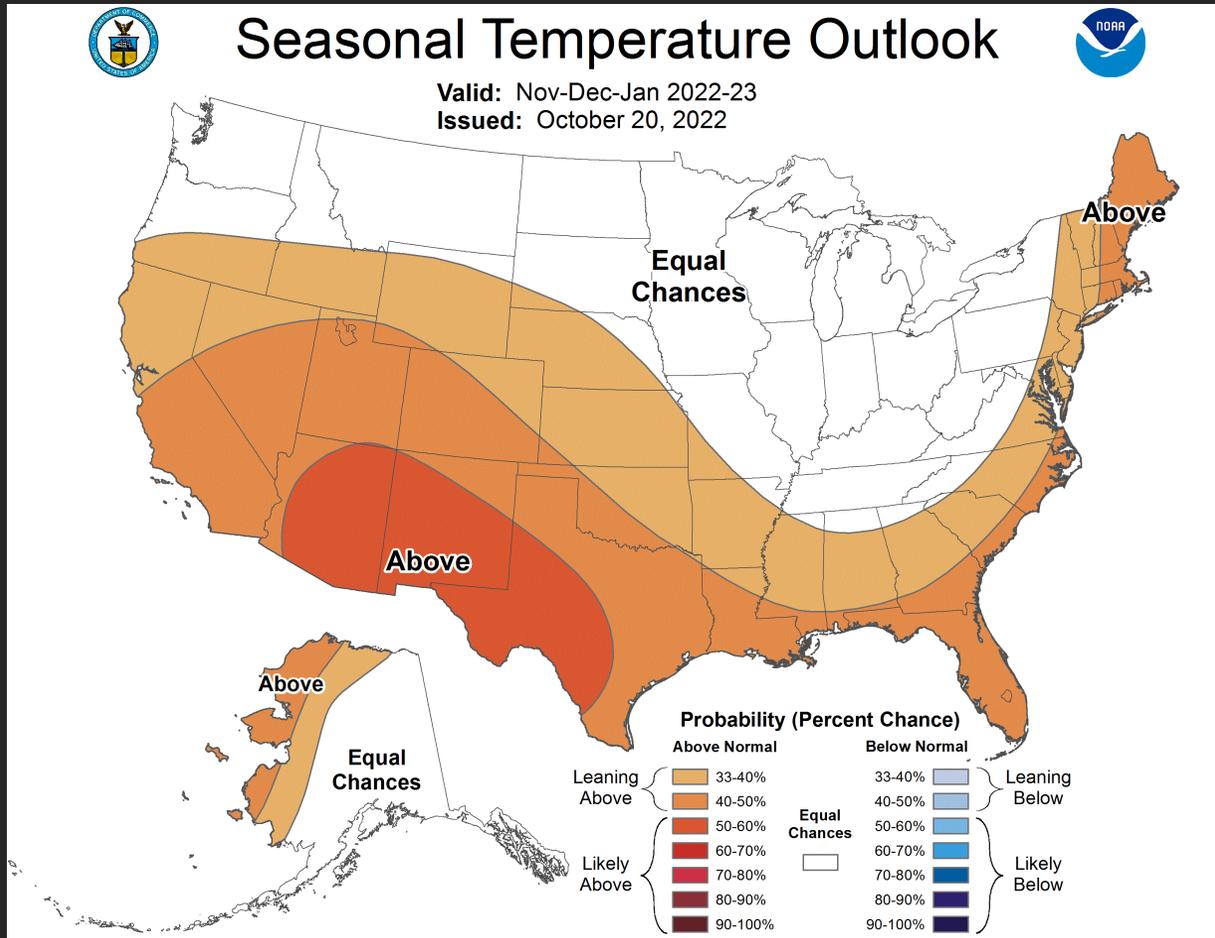


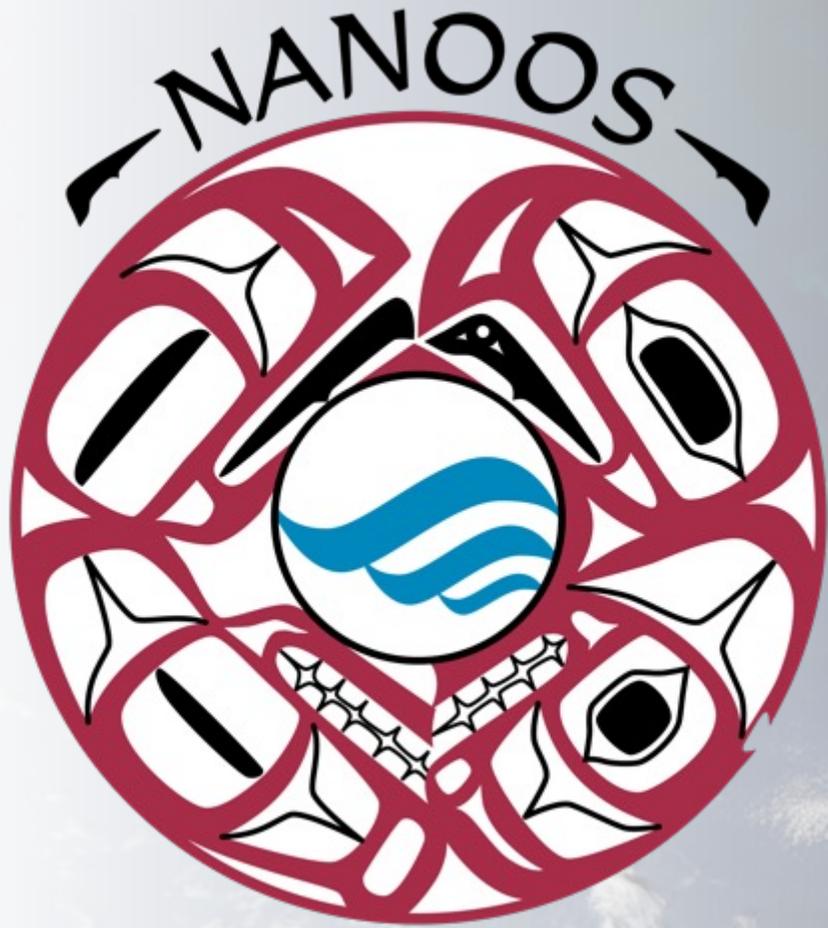
- A wet and colder pattern is looking more likely for much of the West over the next week

8-14 Day Temperature and Precipitation Outlook



Nov-Jan Temperature and Precipitation Outlook



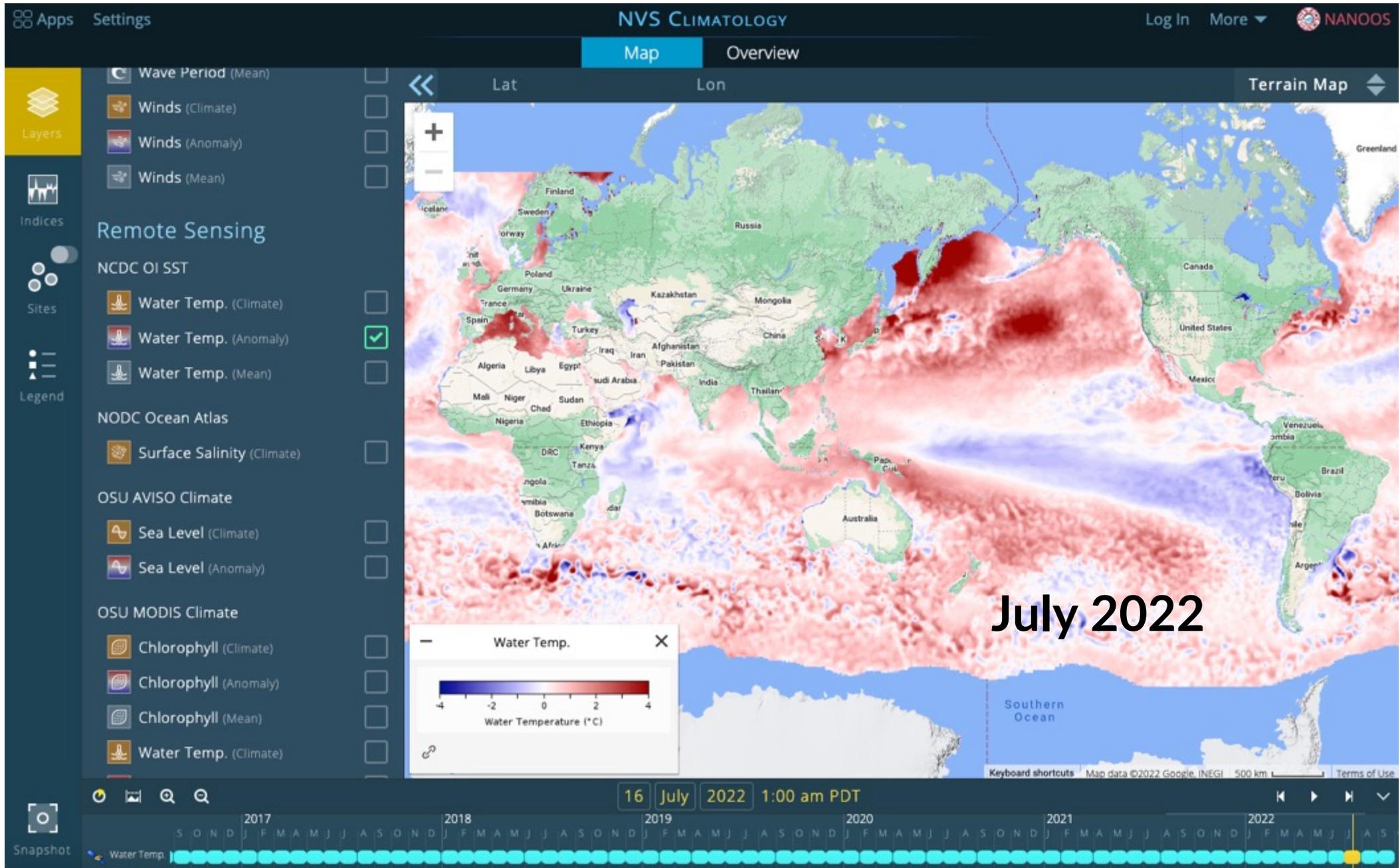


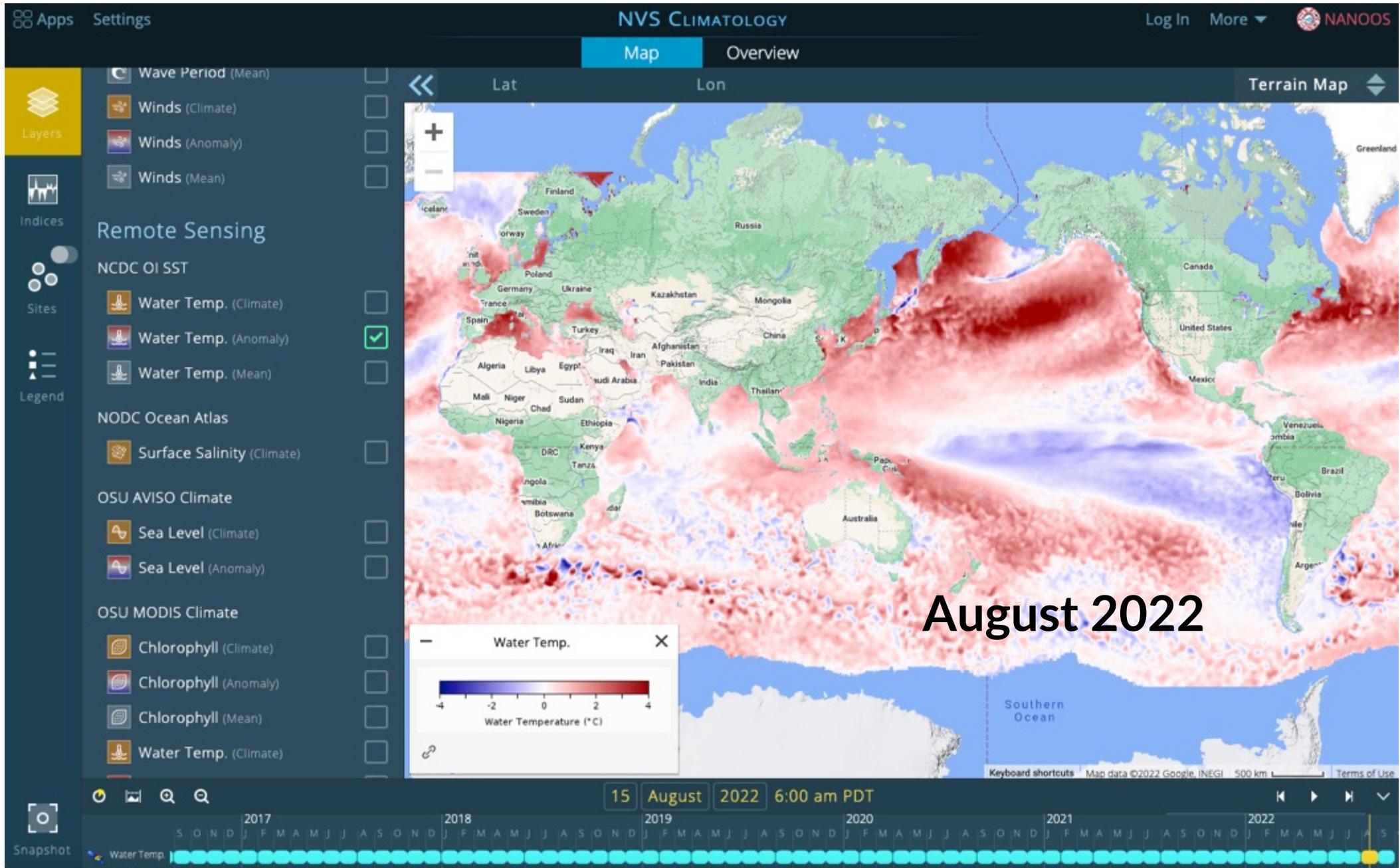
NOAA West Watch Update *1 November 2022*

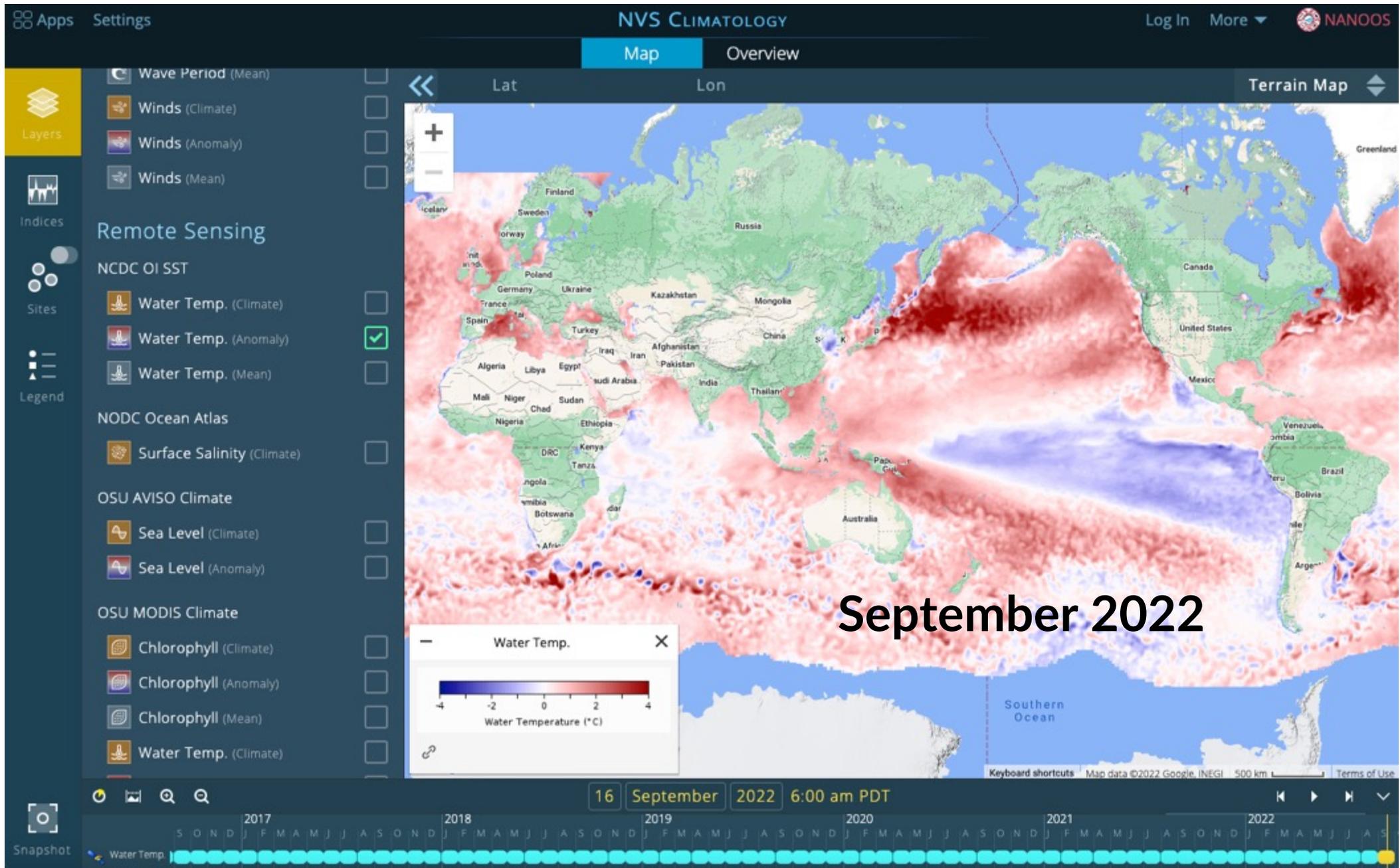
Jan Newton, NANOOS Executive Director

www.nanoos.org









MARINE HEATWAVES

International Working Group

Controls

2022-10-17

Animate

Map layer ▾

Map data ▾

Background ▾

Coordinates ▾

✓ I Moderate

✓ II Strong

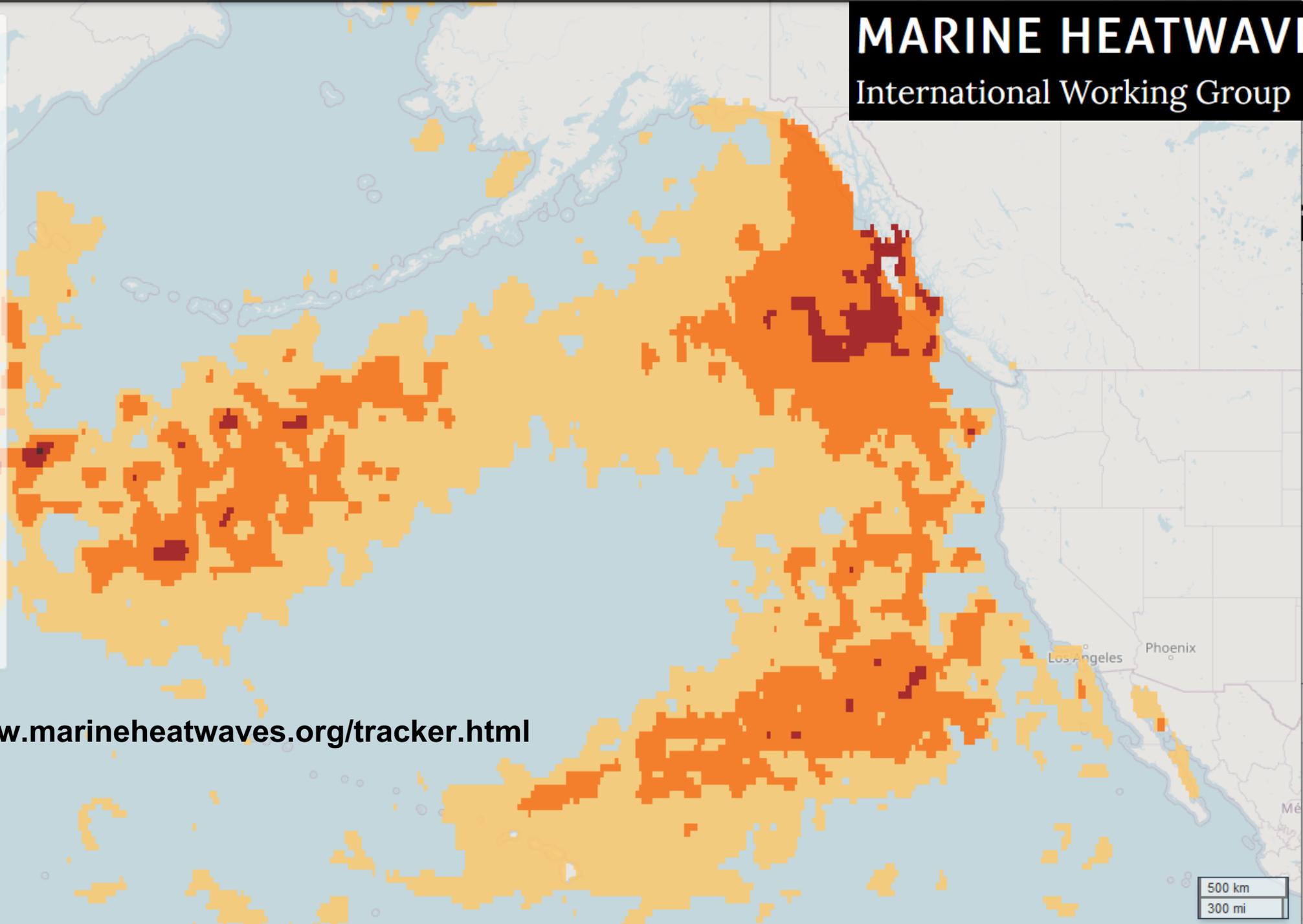
✓ III Severe

✓ IV Extreme

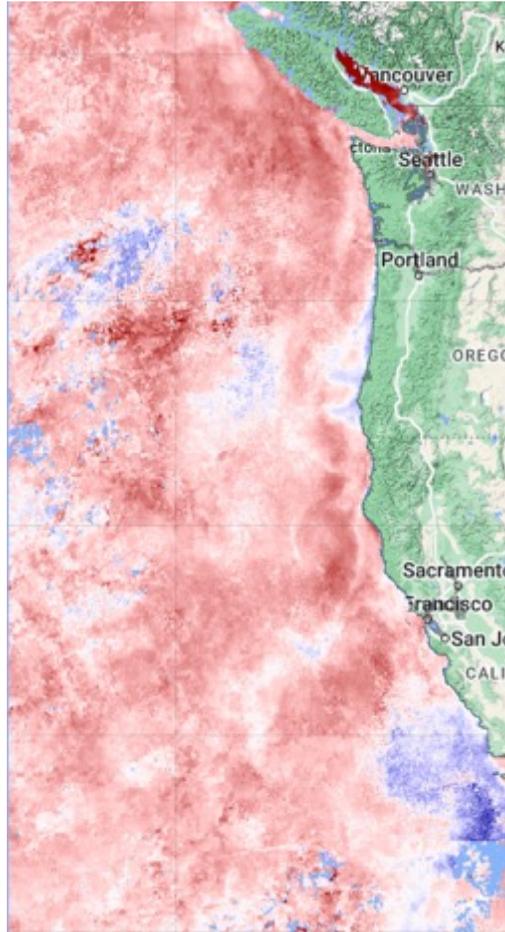
Plot pixel

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

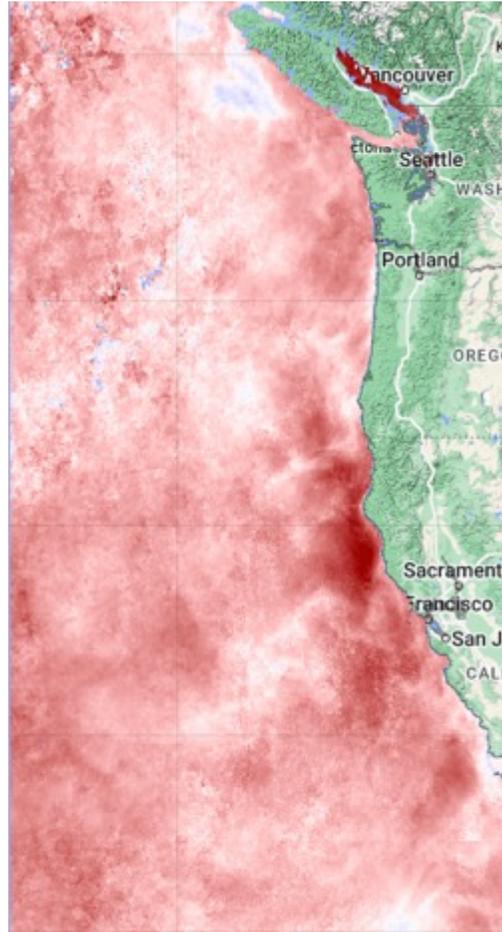
500 km
300 mi



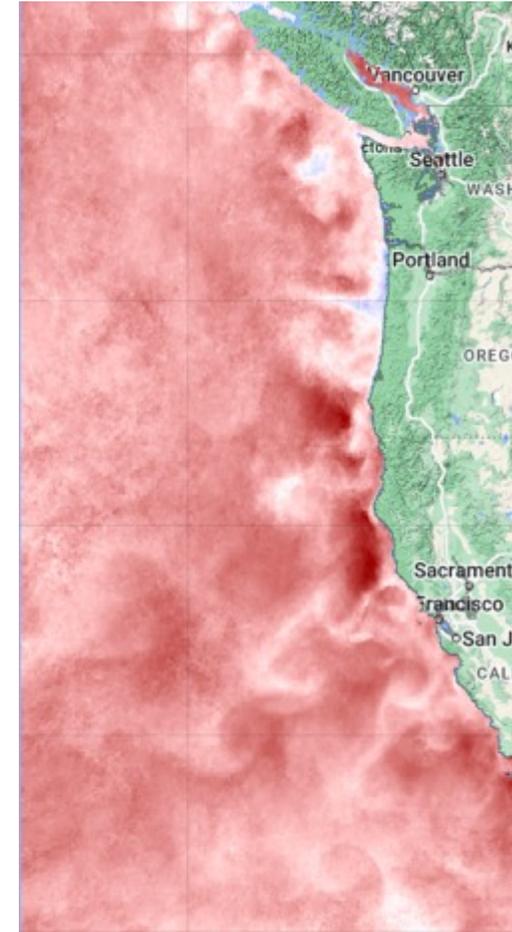
July 2022



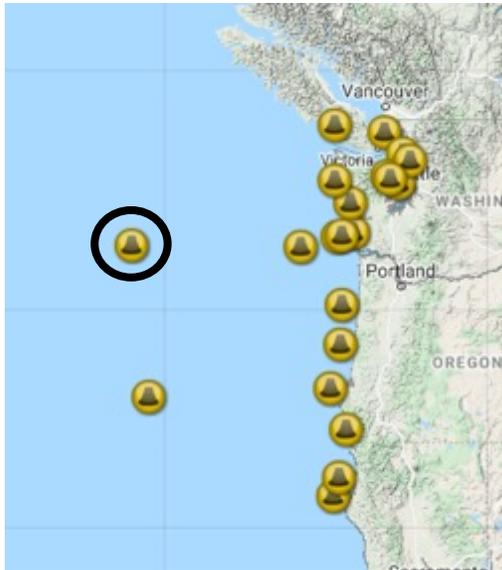
August 2022



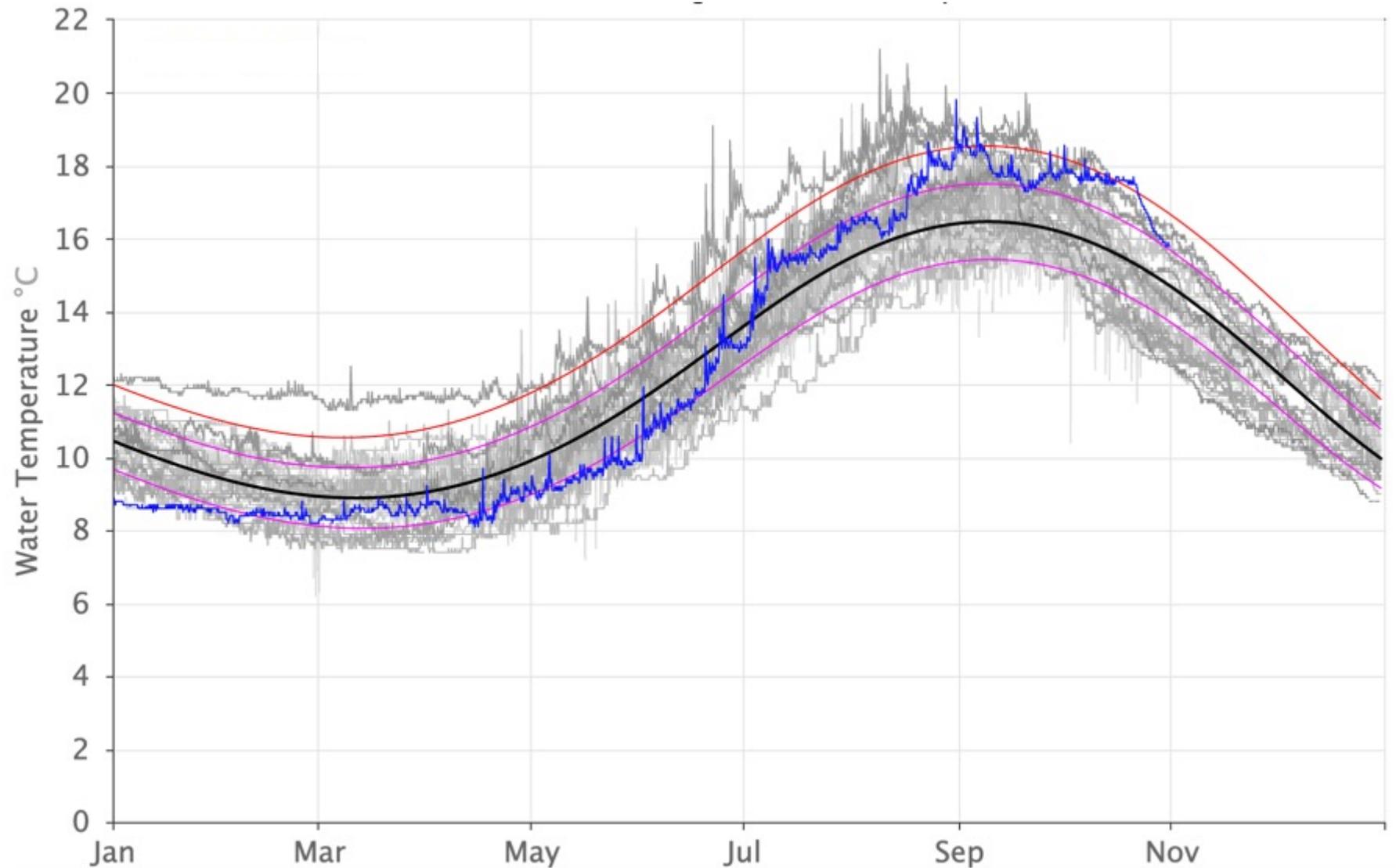
September 2022



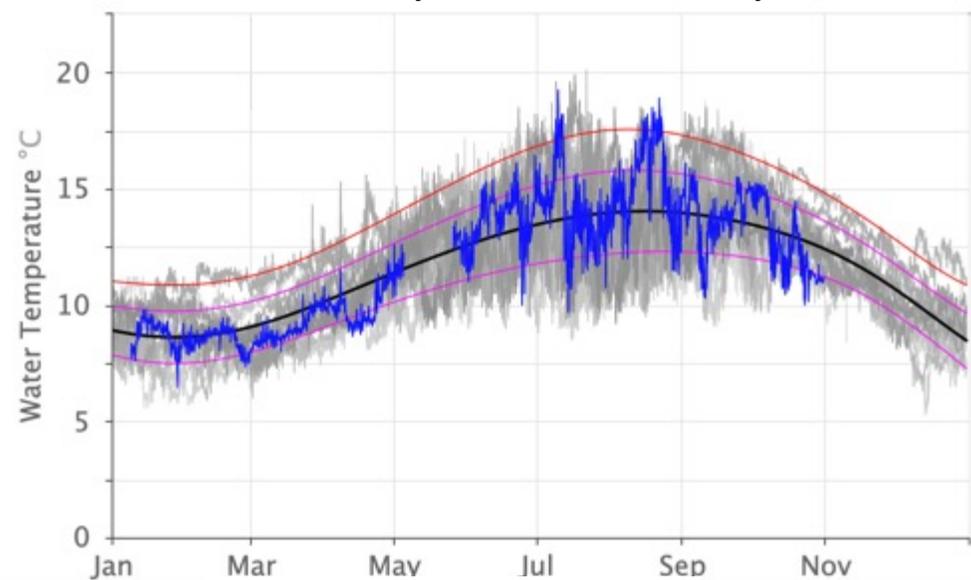
NDBC Washington



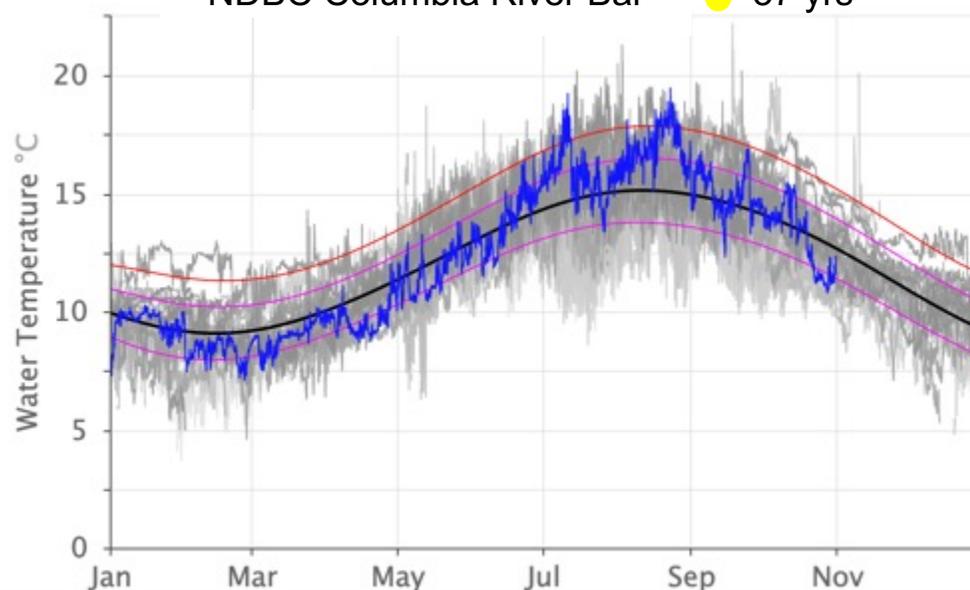
- Seasonal Cycle
n=45 Yrs
- -1 STD
- +1 STD
- +2 STD
- 2022



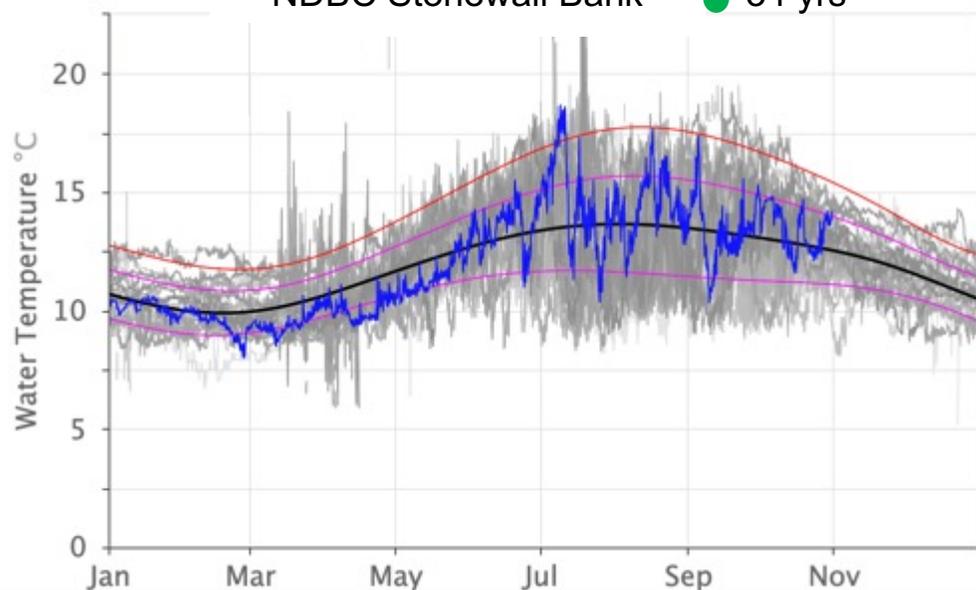
CDIP Grays Harbor ● 17 yrs



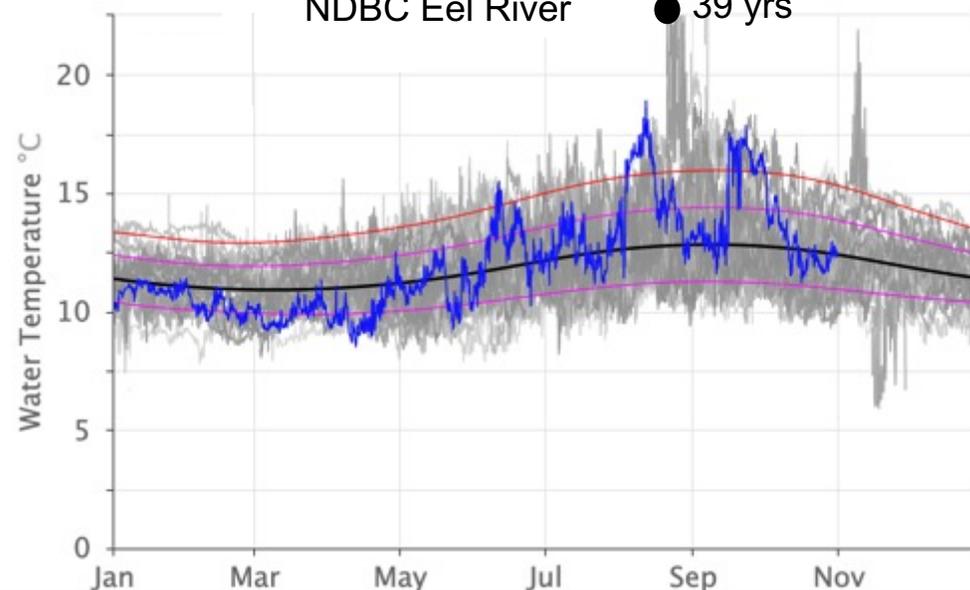
NDBC Columbia River Bar ● 37 yrs



NDBC Stonewall Bank ● 34 yrs



NDBC Eel River ● 39 yrs



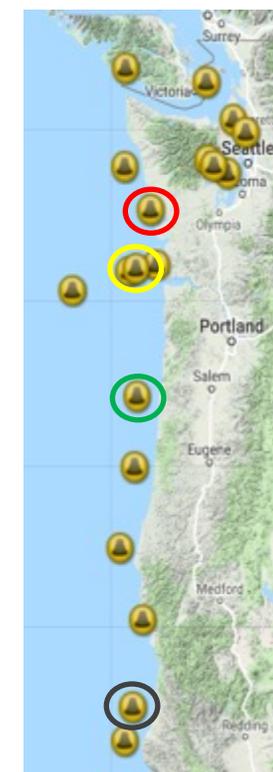
■ Seasonal Cycle

■ -1 STD

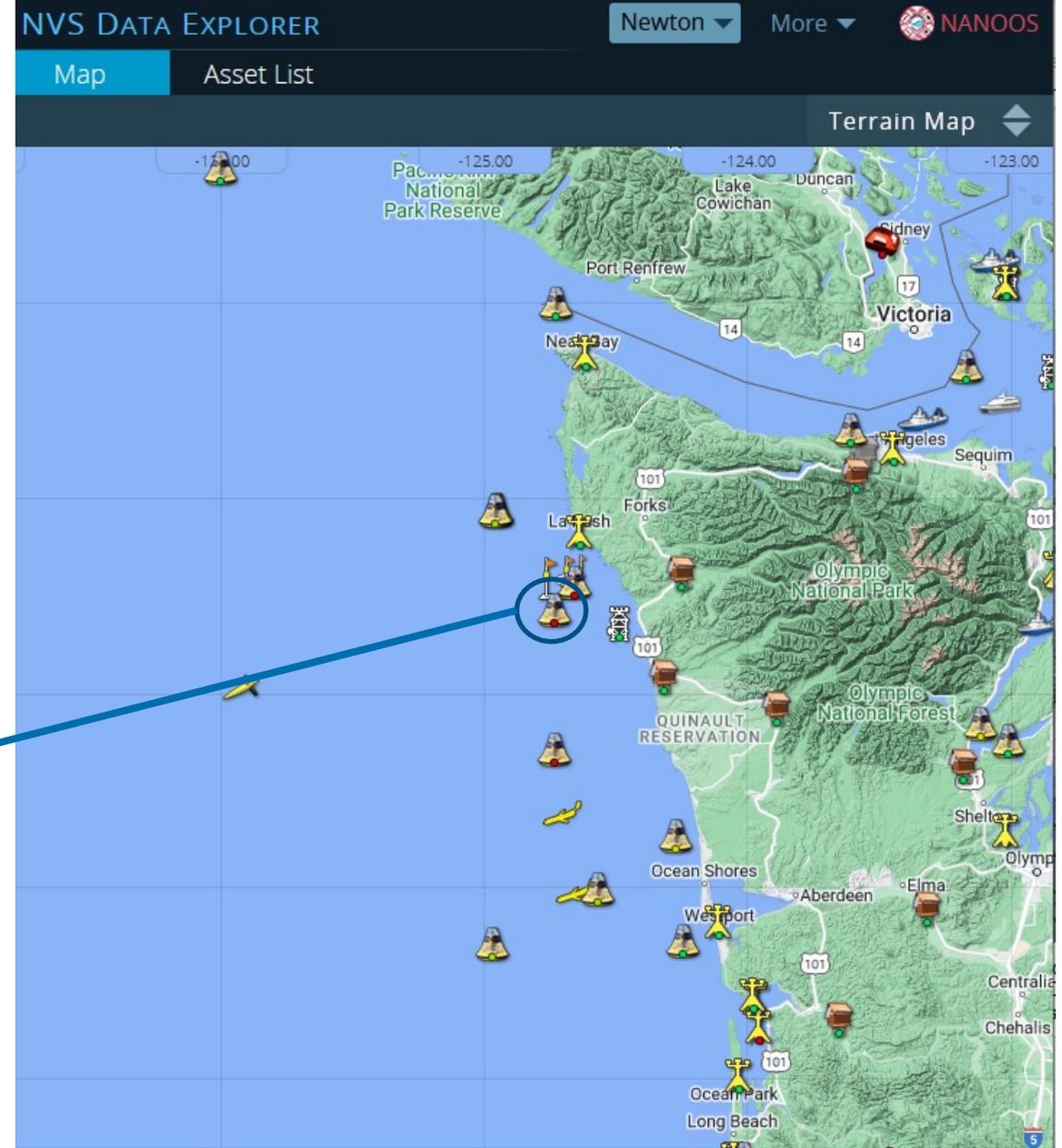
■ +1 STD

■ +2 STD

■ 2022

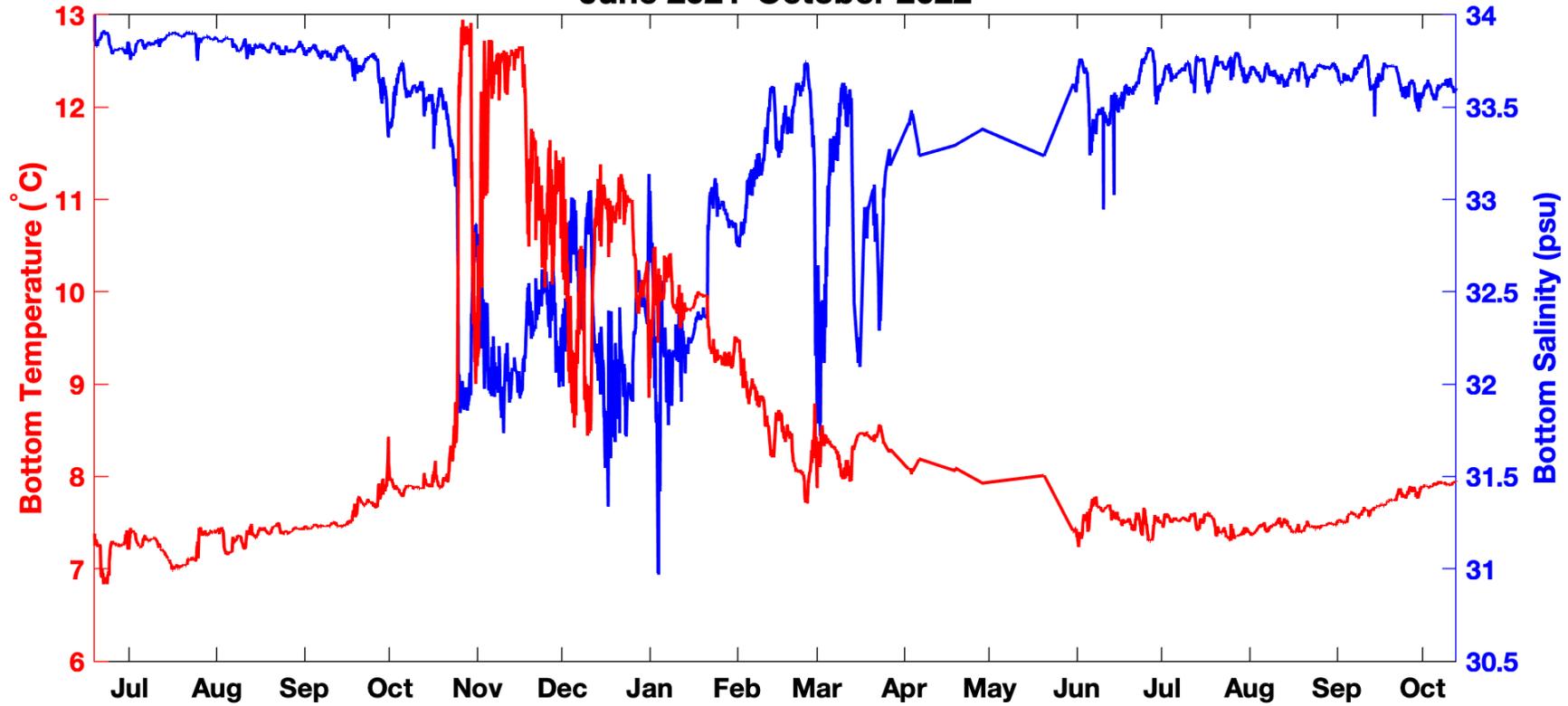


Quileute Indian Tribe Lander

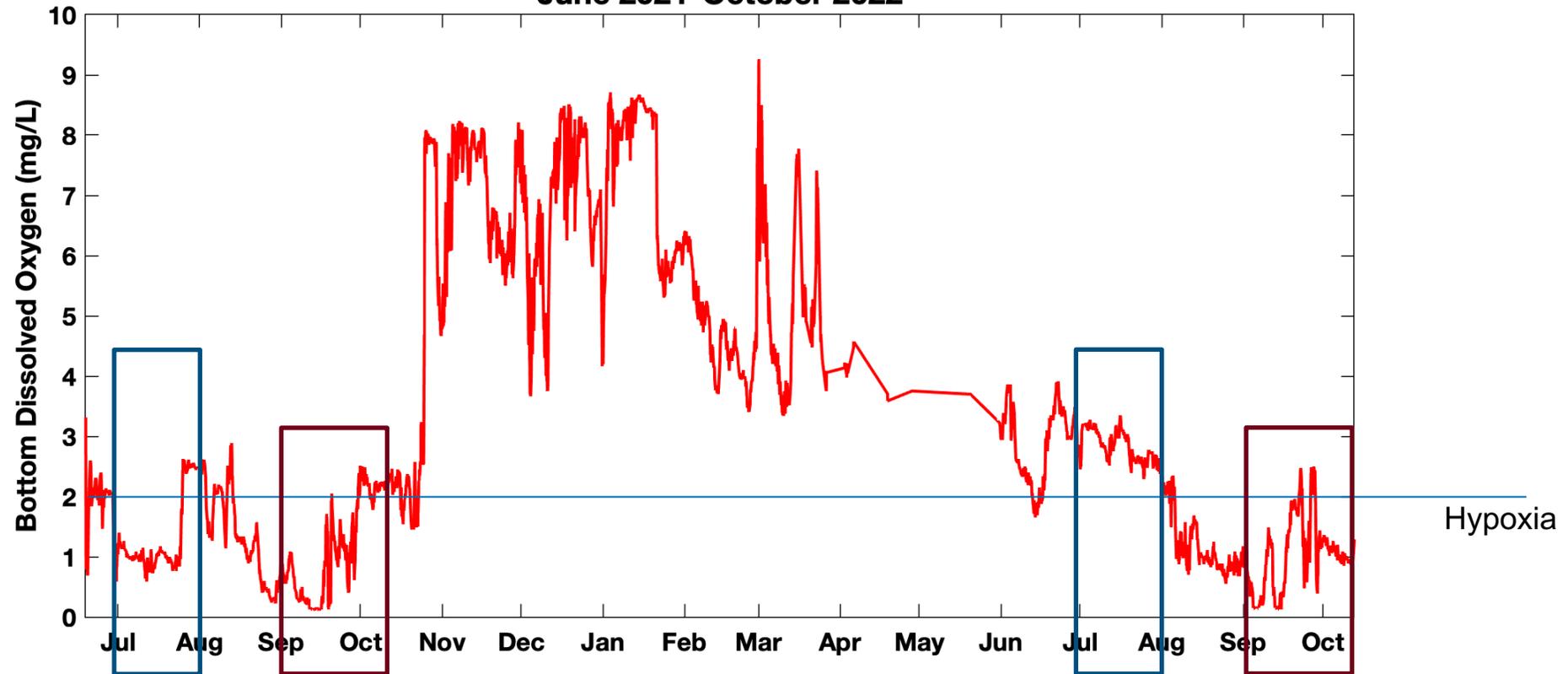


The Quileute Indian Tribe, UW-APL, and NANOOS collaborated on a project to improve responsiveness to and understanding of WA shelf hypoxia events, particularly in relation to the Quileute Treaty Dungeness crab fishery. Funds were made available to the tribe through the Fishery Disaster Relief Program for Tribal Fisheries under the Bi-partisan Budget Act of 2018 in response to a crab fishery disaster in 2015.

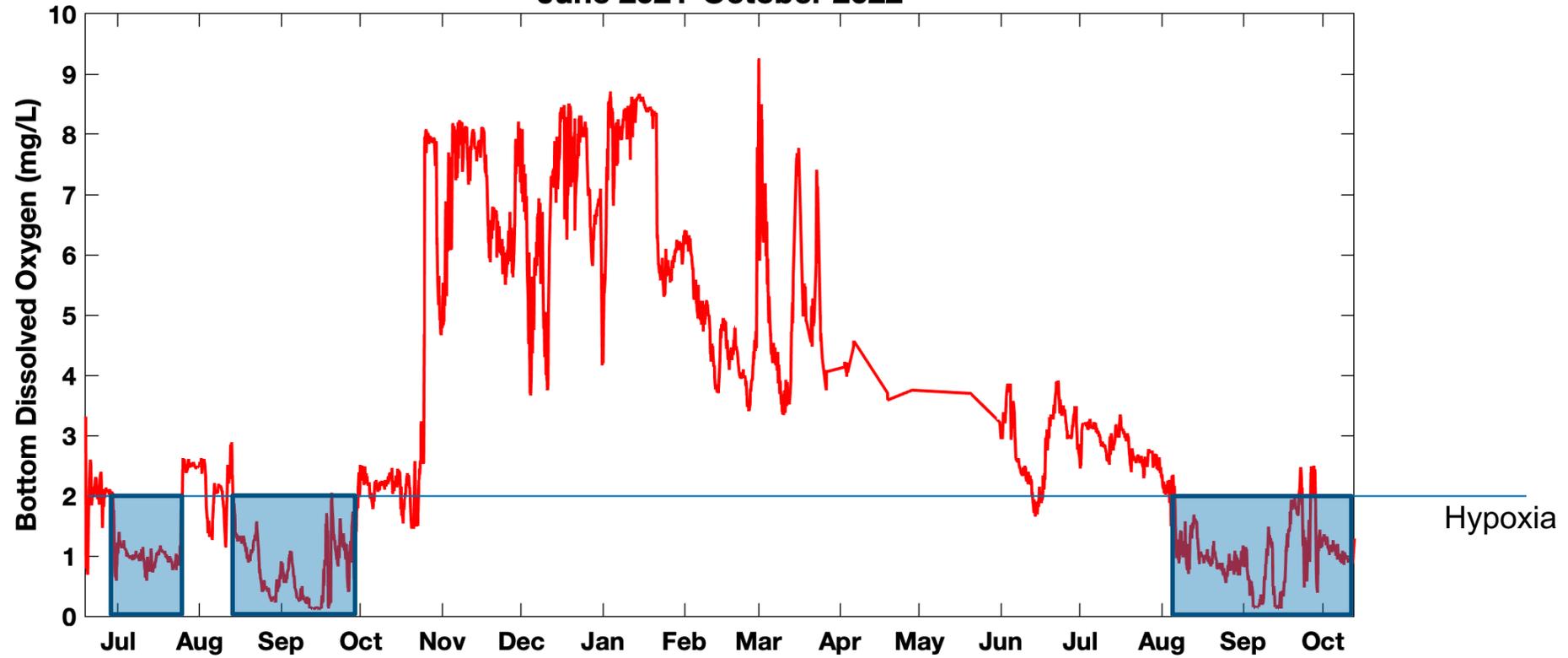
**Quileute Lander Temperature (red) and Salinity (blue) 1 meter off bottom @ 70 m depth
June 2021-October 2022**



**Quileute Lander Dissolved Oxygen 1 meter off bottom @ 70 m depth
June 2021-October 2022**



**Quileute Lander Dissolved Oxygen 1 meter off bottom @ 70 m depth
June 2021-October 2022**



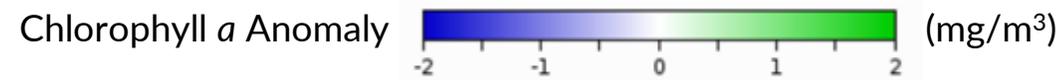
July 2022



August 2022



September 2022





To summarize:

Temperature

- La Niña signature continues at equatorial Pacific
- Heat anomaly in N Pacific persists; marine heat wave category II-III (strong – severe)
- Coastal WA & OR warm anomalies during July-October; near coast with more fluctuation

Hypoxia watch

- La Push WA hypoxia August – September

Chlorophyll-Phytoplankton

- Ocean color indicates lower than average biomass along the west coast, with pockets of higher



www.nanoos.org

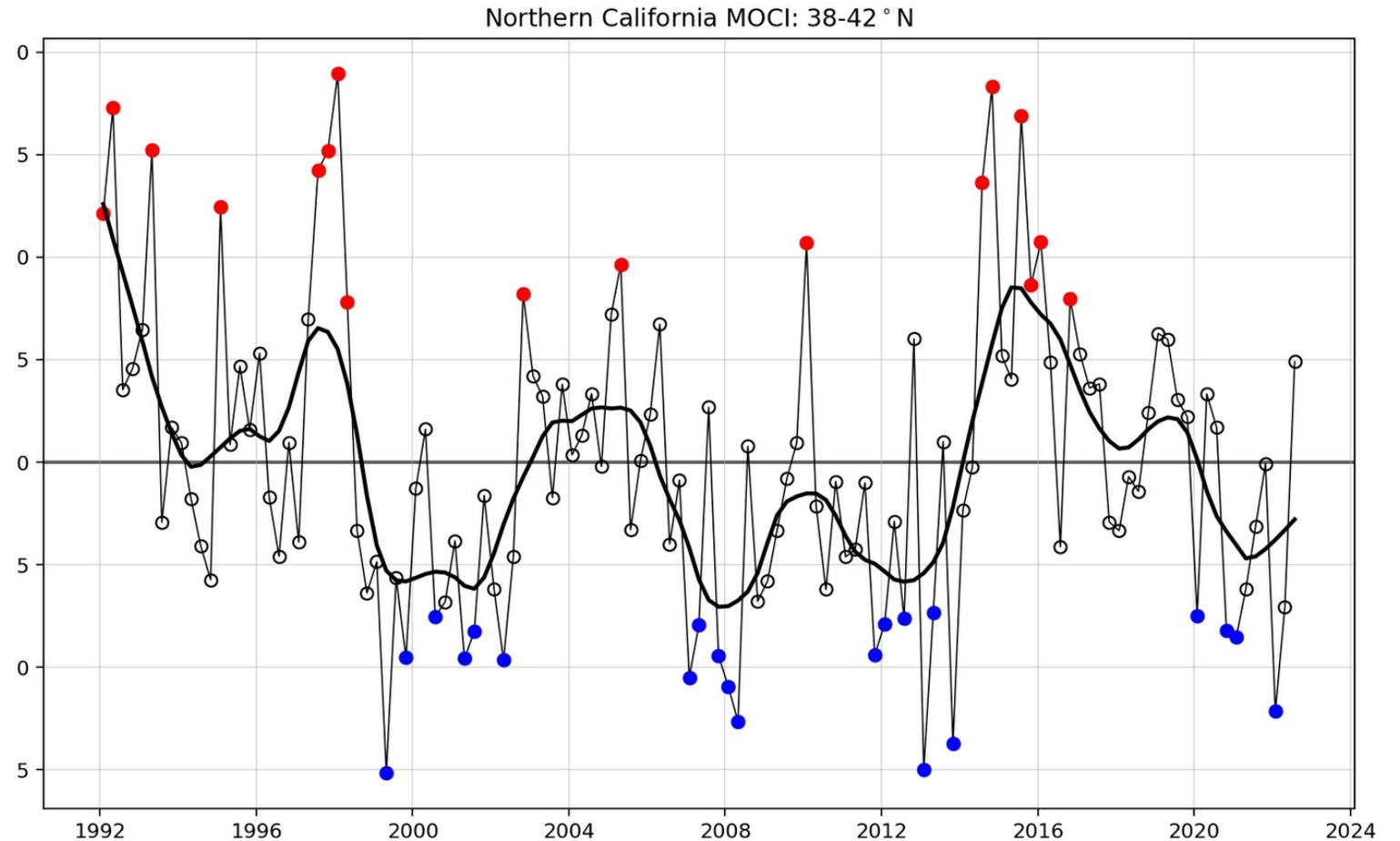
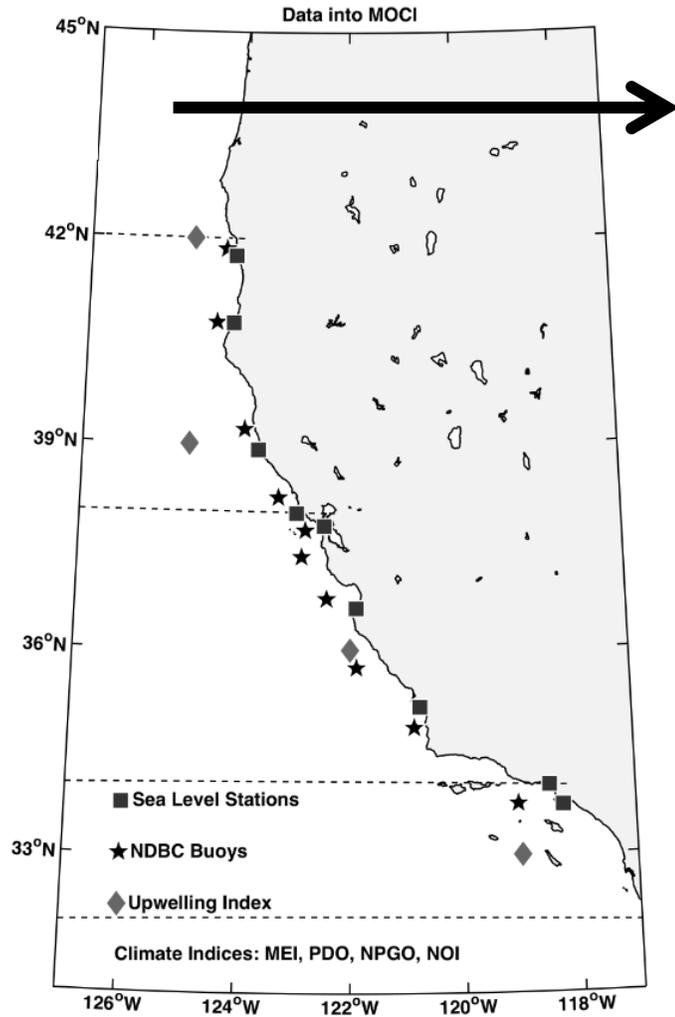
janevnton@uw.edu



The Central and Northern California Ocean Observing System: System: West Watch Update

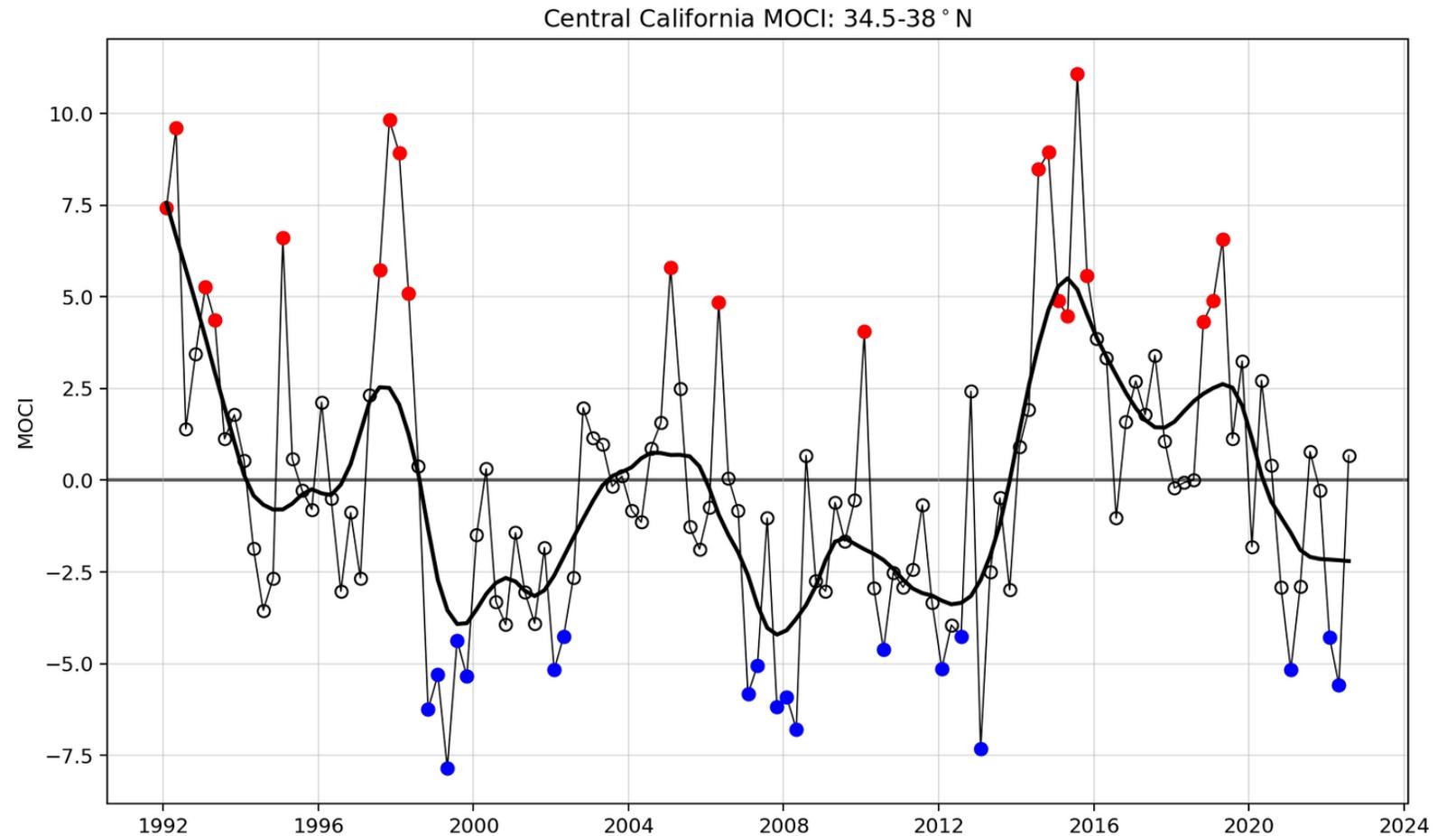
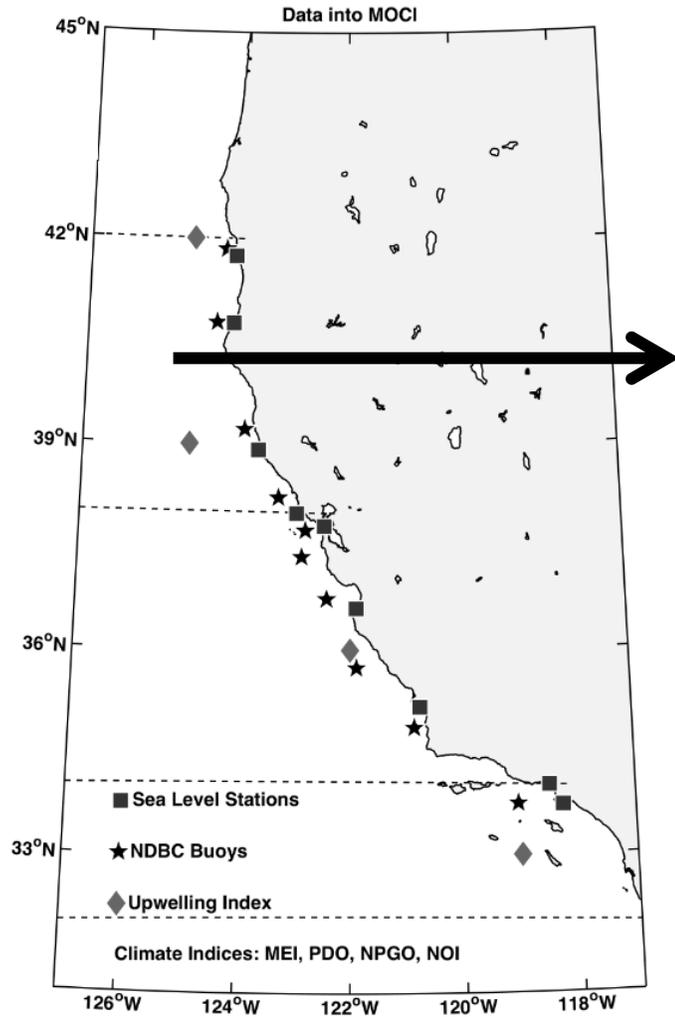
aharper@mbari.org





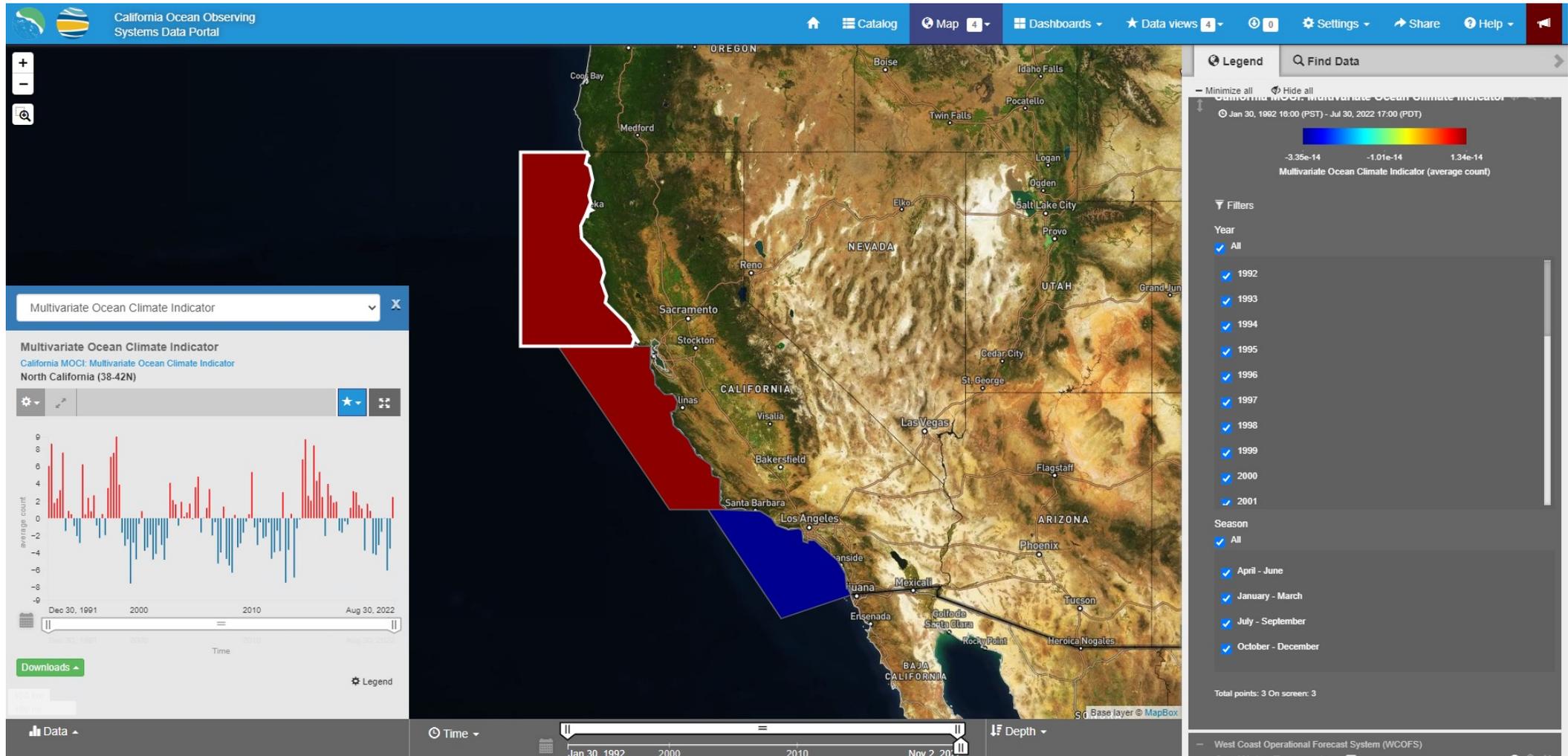
García-Reyes M, Sydeman WJ. (2017). *California Multivariate Ocean Climate Indicator (MOCI) and marine ecosystem dynamics*. *Ecological Indicators*, 72, 521-529.

Multivariate Ocean Climate Index (MOCI)

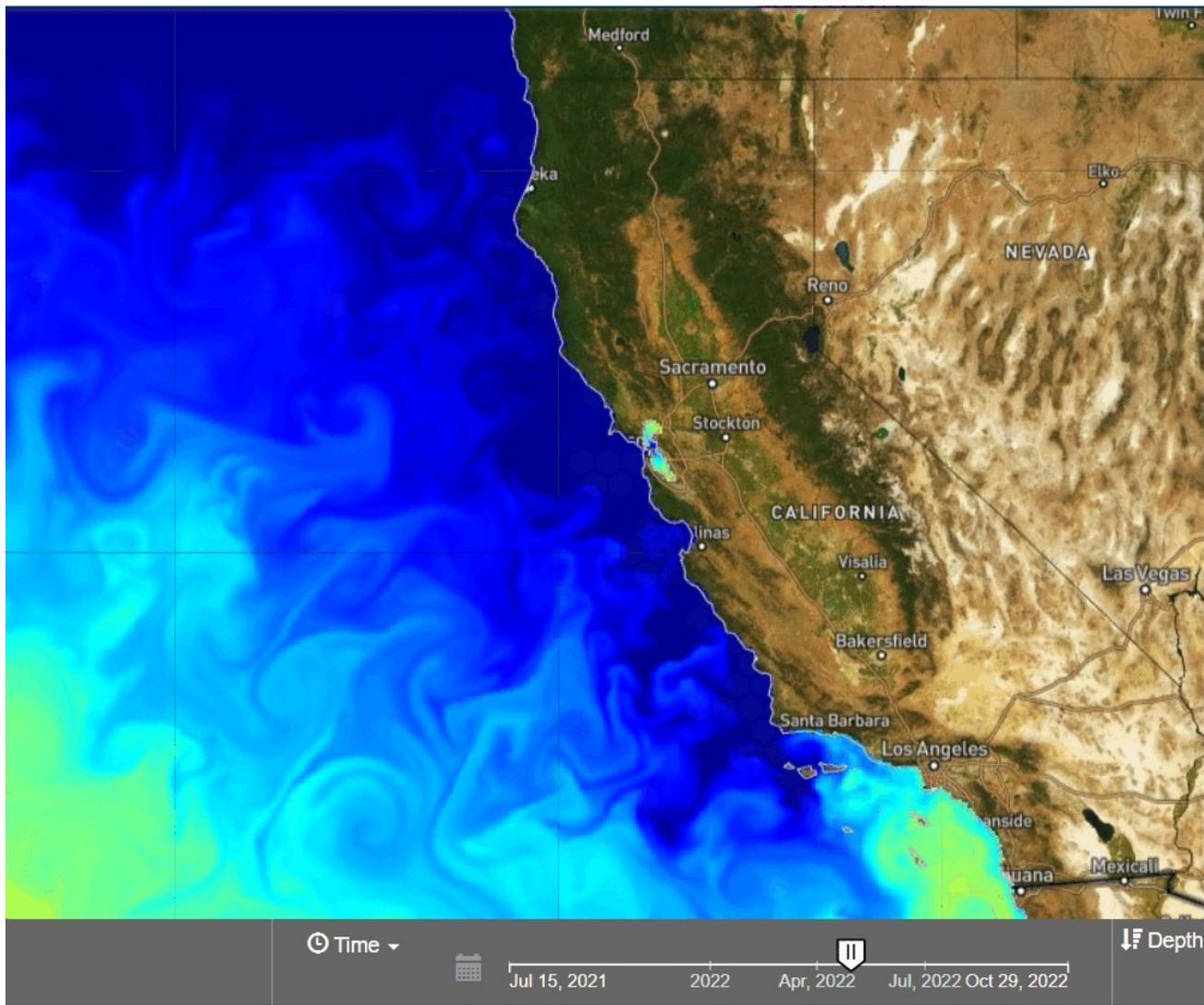


García-Reyes M, Sydeman WJ. (2017). *California Multivariate Ocean Climate Indicator (MOCI) and marine ecosystem dynamics*. *Ecological Indicators*, 72, 521-529.

MOCI Now Accessible via the Cal OOS Portal



WCOFS – Last 180 days



West Coast Operational Forecast System (WCOFS)

Sea Water Temperature ▾

🕒 Oct 29, 2022 14:00 (PDT)

📏 0 m

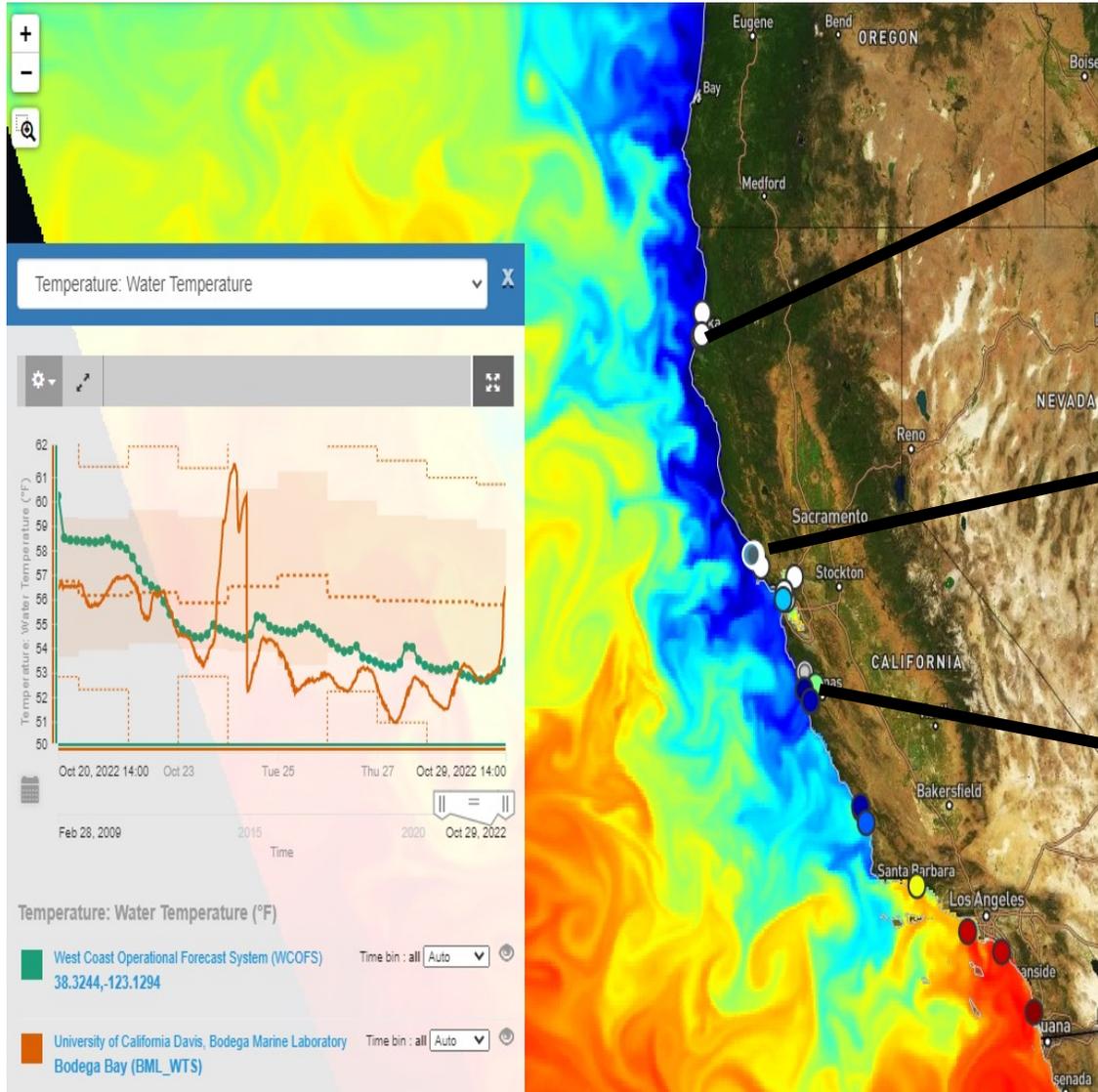


52 62 71

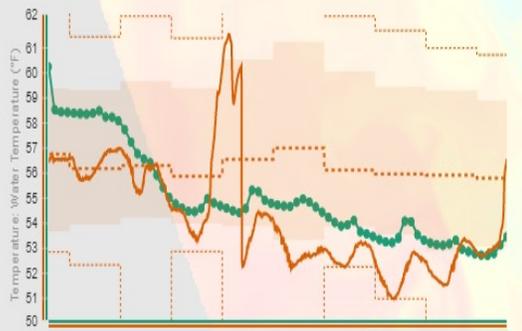
Water Temperature (°F)

Selected Depth (m):

0 ▾

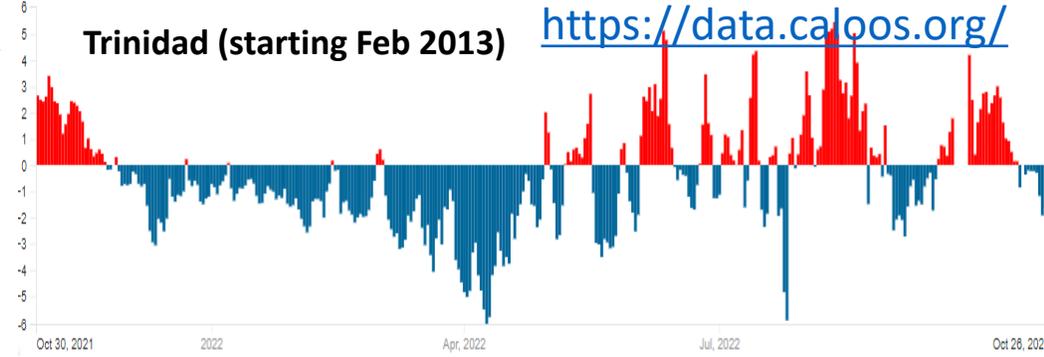


Temperature: Water Temperature



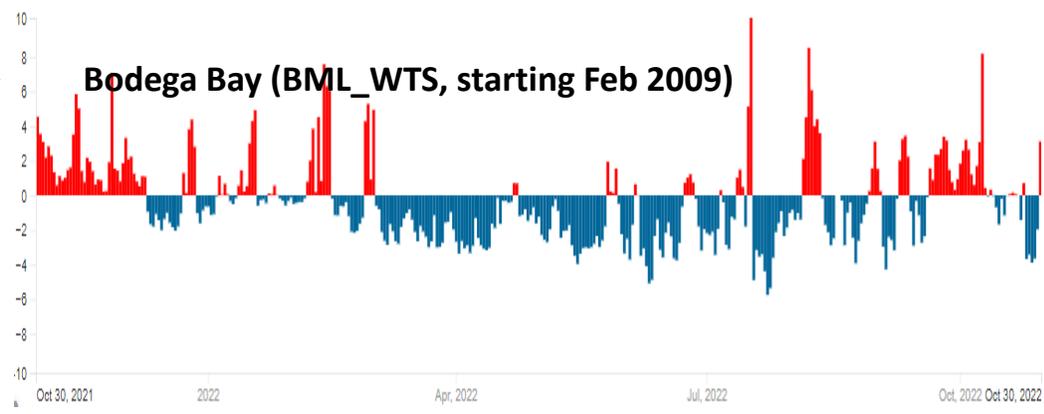
Oct 20, 2022 14:00 Oct 23 Tue 25 Thu 27 Oct 29, 2022 14:00
Feb 28, 2009 2015 Time 2020 Oct 29, 2022

Temperature: Water Temperature (°F)
West Coast Operational Forecast System (WCOFS) 38.3244, -123.1294
University of California Davis, Bodega Marine Laboratory Bodega Bay (BML_WTS)

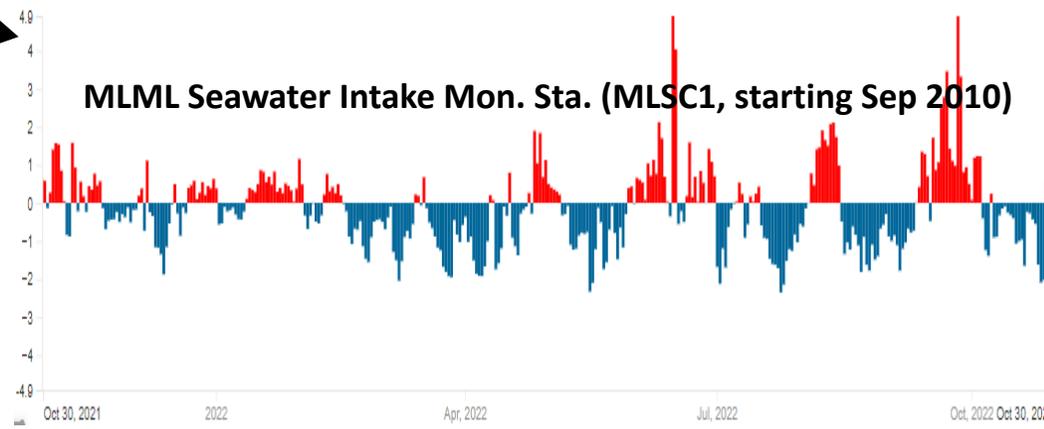


Trinidad (starting Feb 2013)

<https://data.caloos.org/>

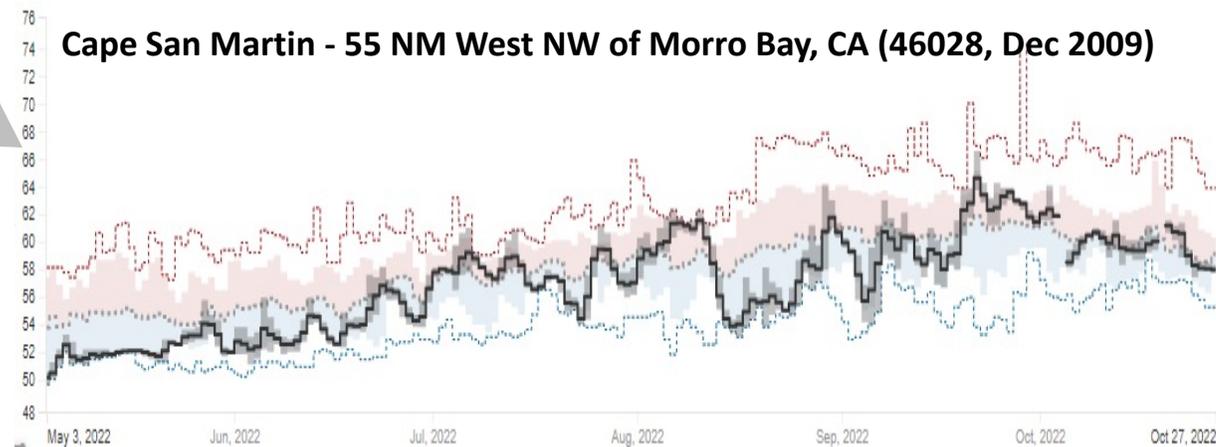
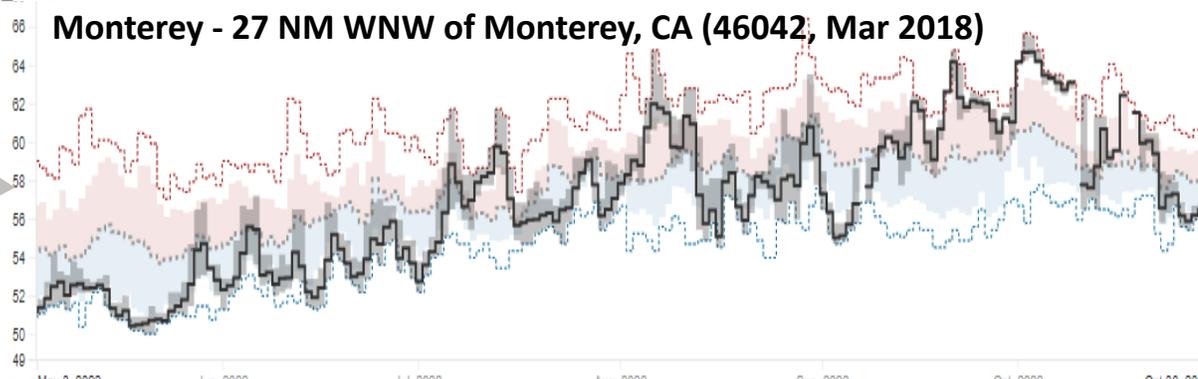
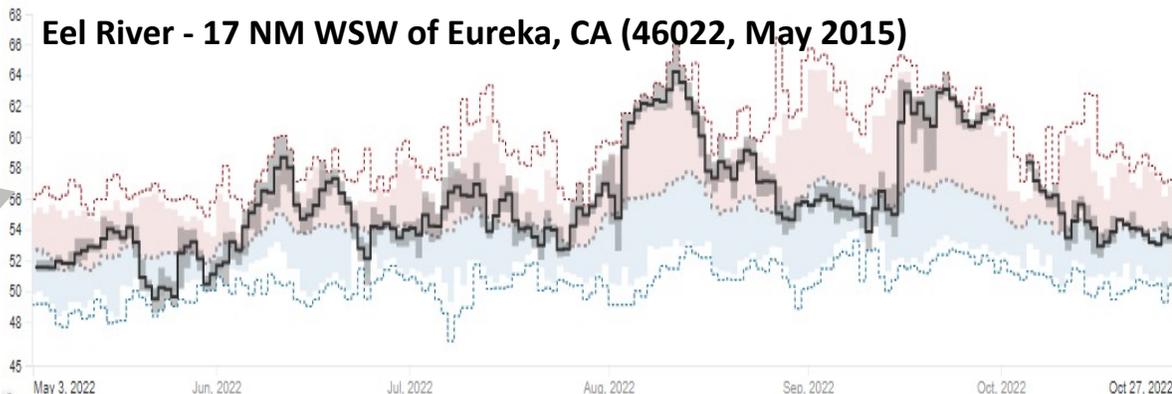
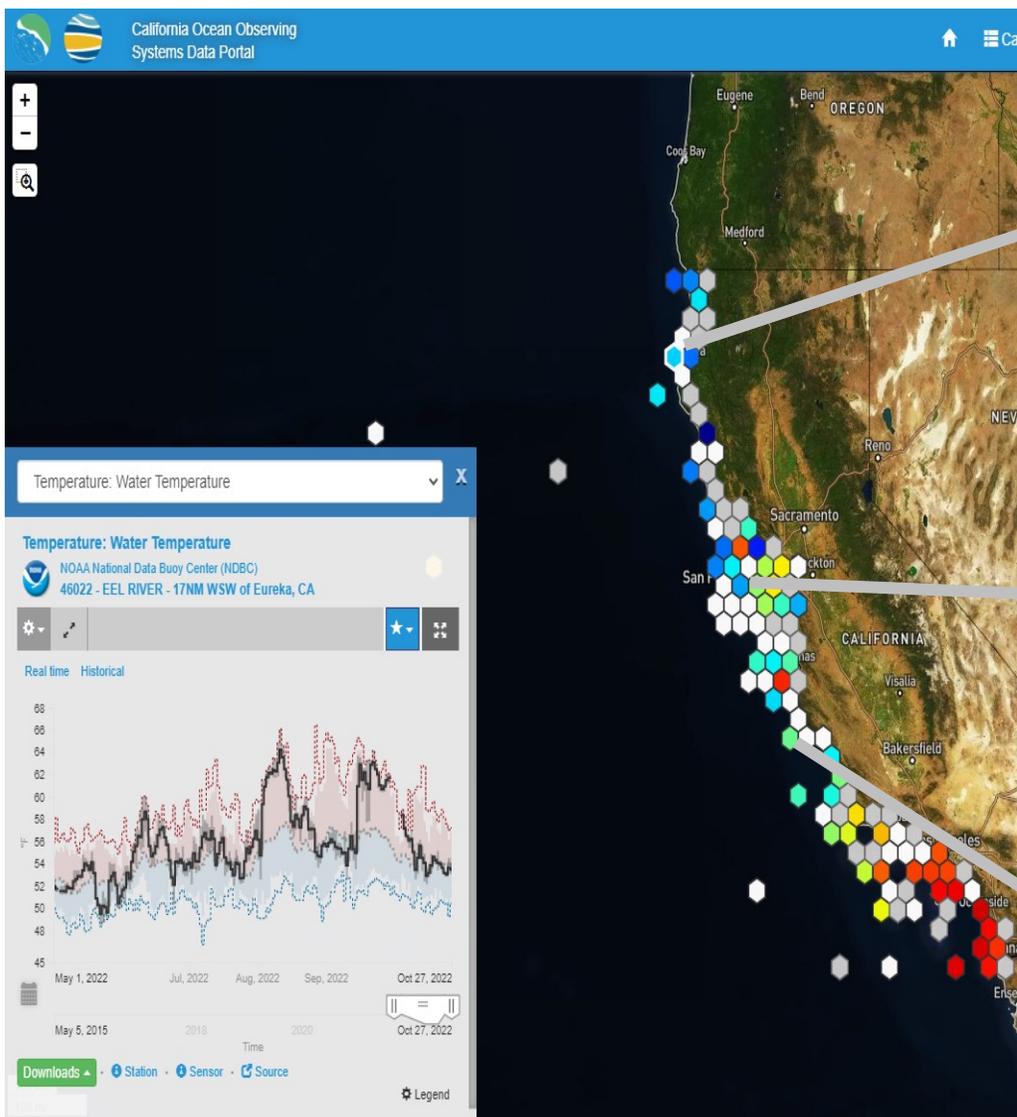


Bodega Bay (BML_WTS, starting Feb 2009)



MLML Seawater Intake Mon. Sta. (MLSC1, starting Sep 2010)

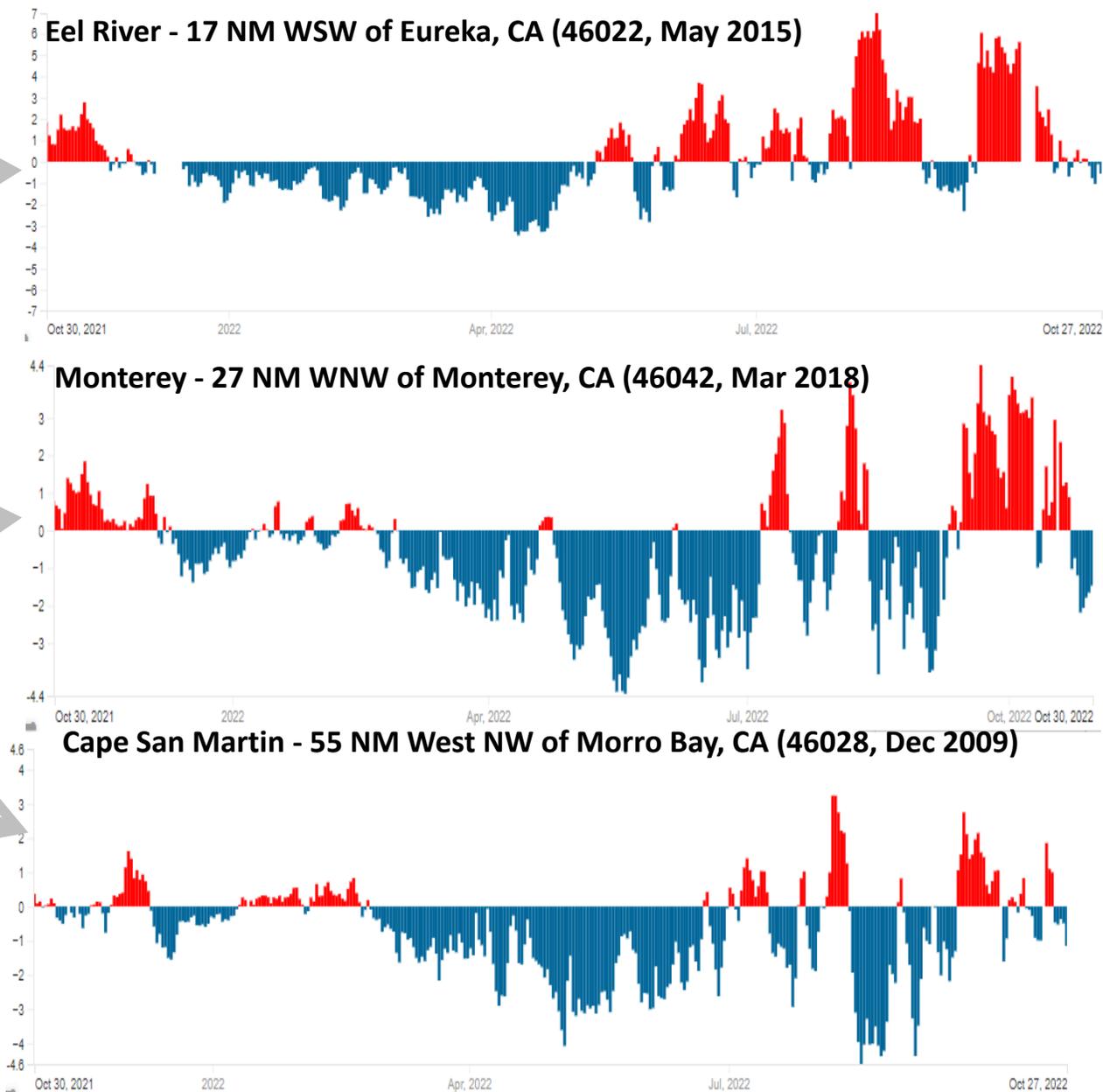
NDBC Sea Surface Temp – Last 180 days



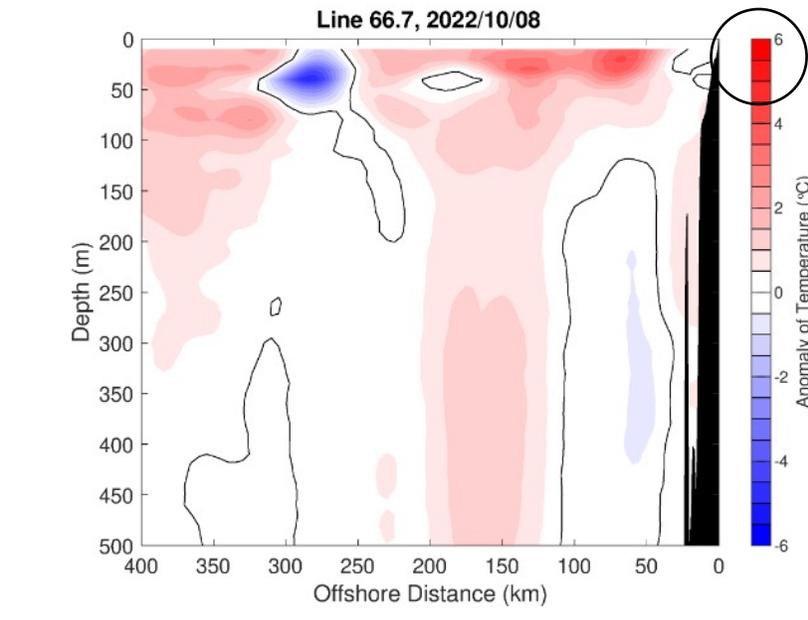
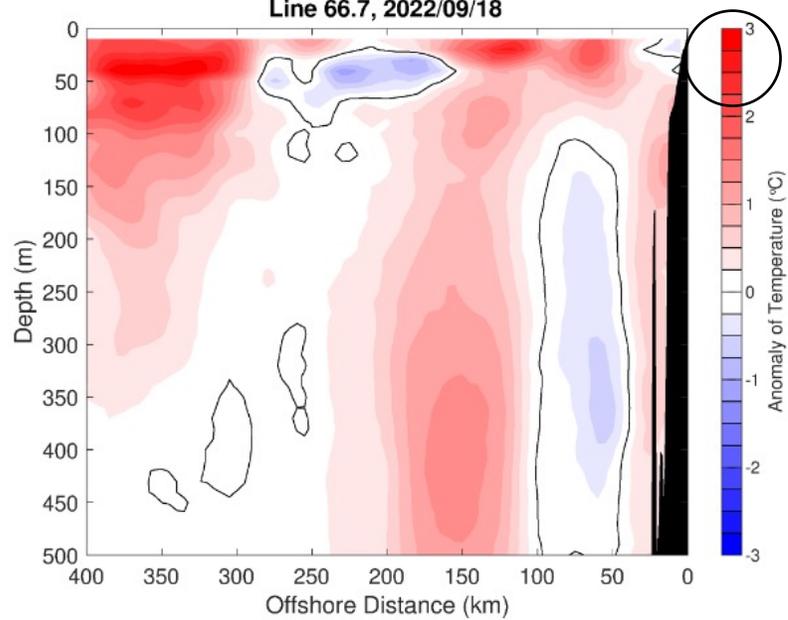
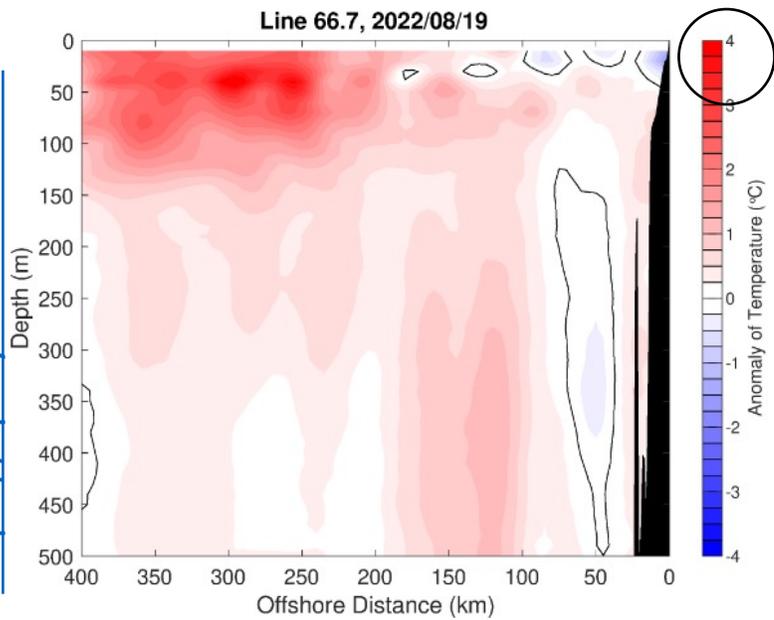
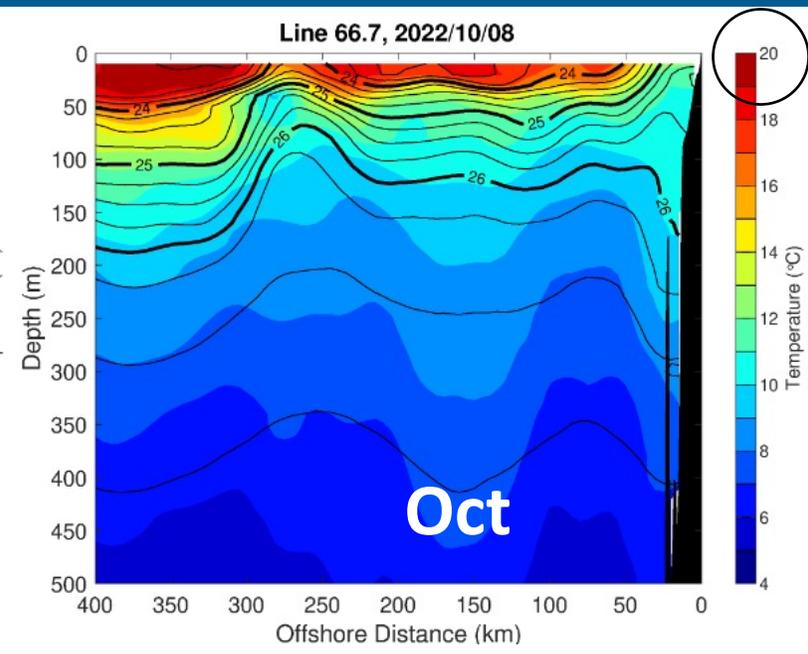
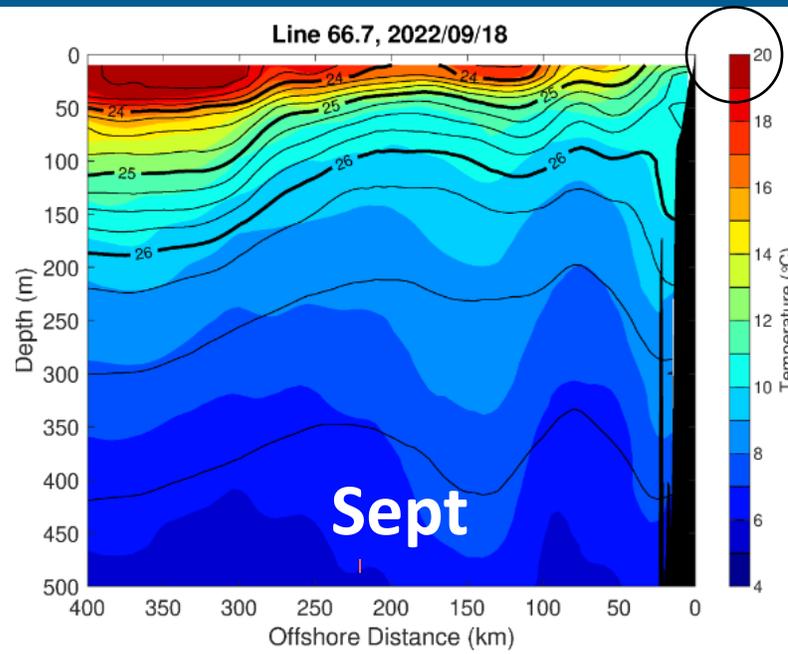
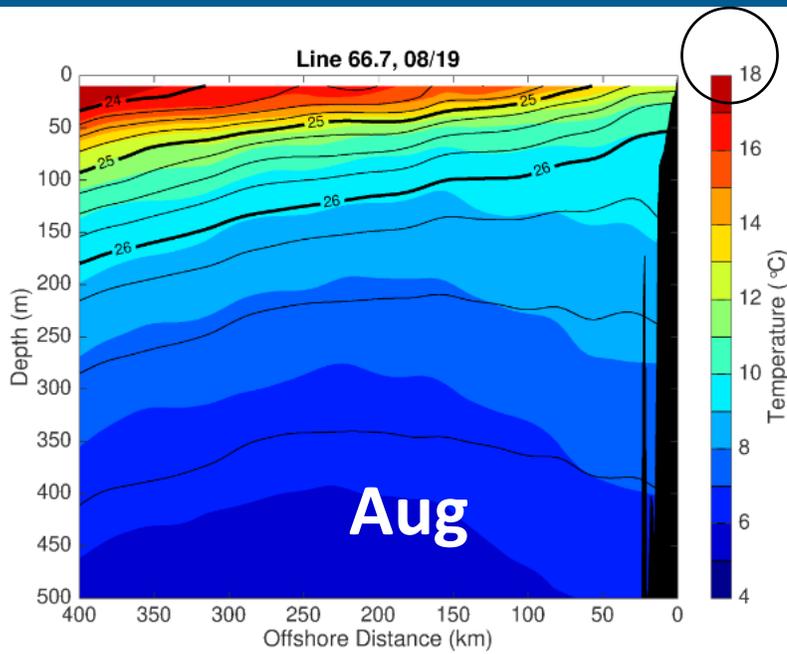
NDBC Sea Surface Temp Anomaly – 360 days



<https://data.caloos.org/>



Gliders – Monterey Bay Temps

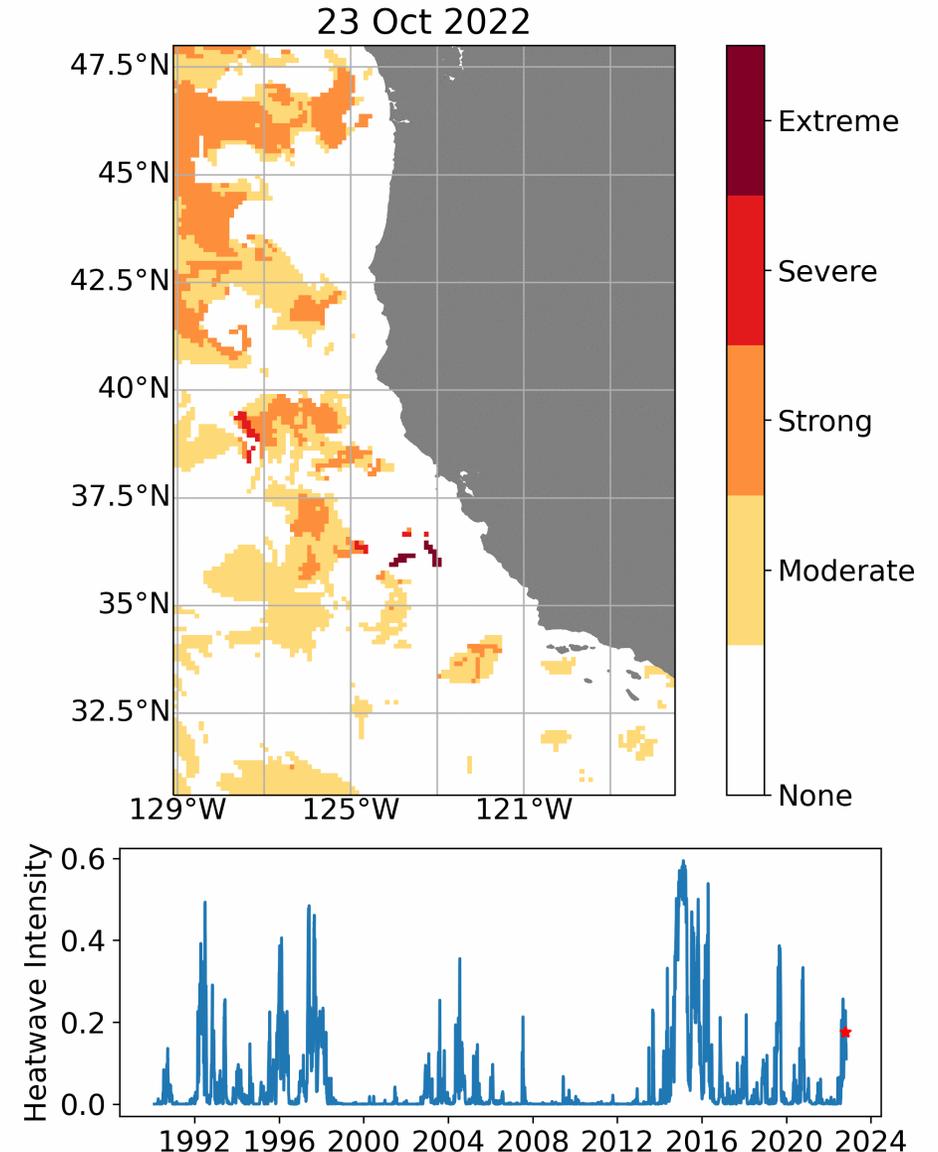


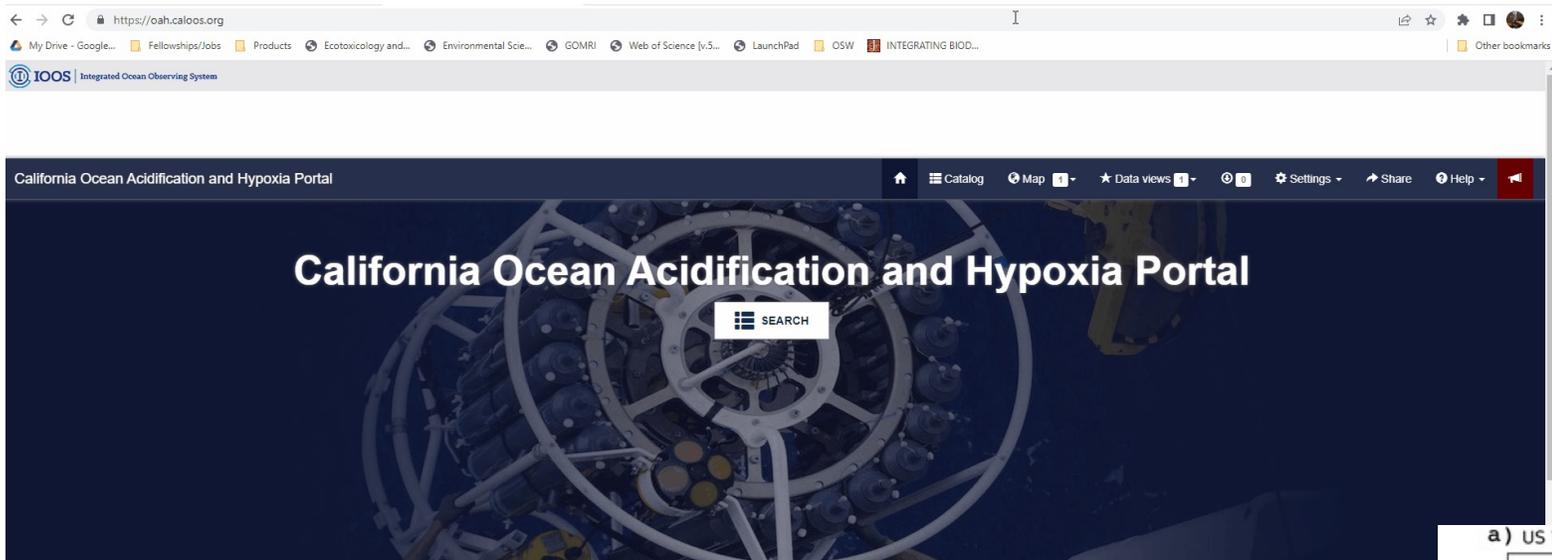
Heatwave Classification

- Computed using SST from WCOFS with the climatology from the UCSC ROMS reanalysis run.
- Daily time series of SST at each 10 km grid point is run through the marine heatwave code and an estimate of whether it is none, moderate, strong, severe or extreme is computed. These are plotted on a map for each time step.
- SST was used instead of satellite data as it optimally interpolates what would be gaps in potential satellite data and we also have a 3 day forecast.

• ... *Tools for a climate-ready Blue Economy*

- Hobday, A.J. et al. (2016), A hierarchical approach to defining marine heatwaves, *Progress in Oceanography*, 141, pp. 227-238, doi: 10.1016/j.pcean.2015.12.014





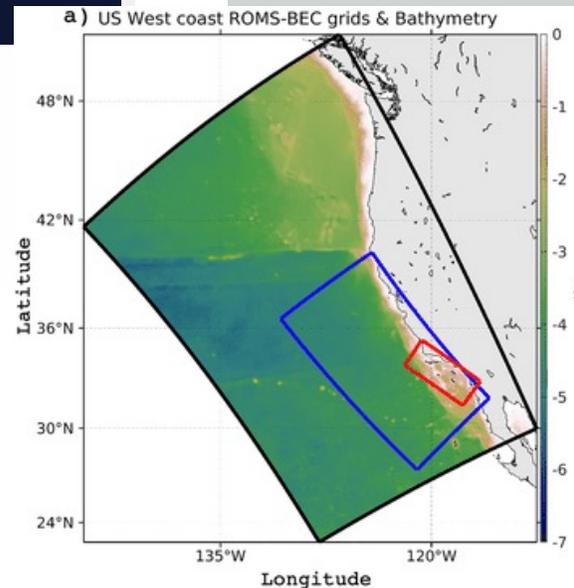
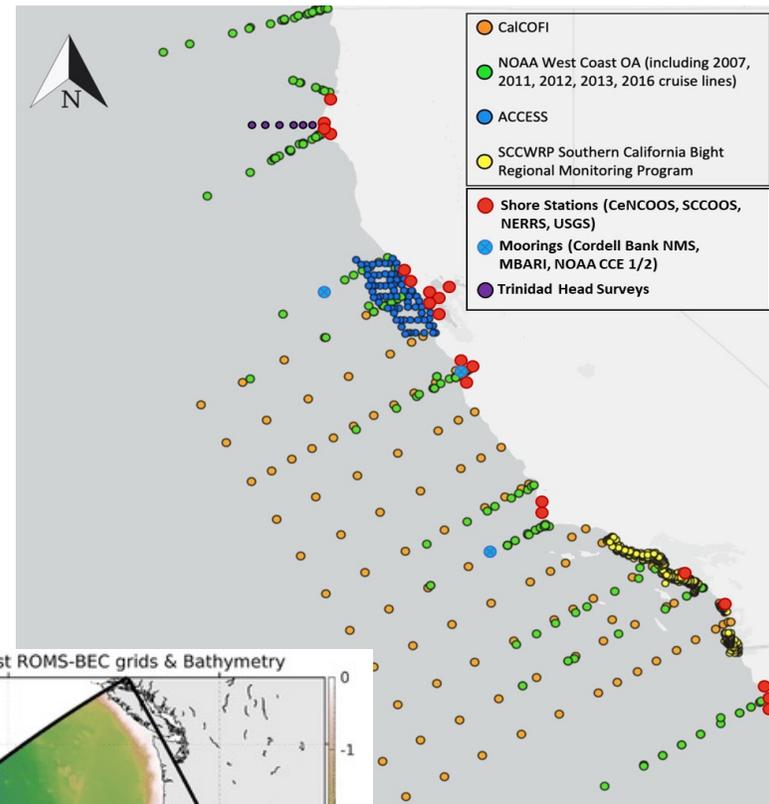
The California OAH Portal is a centralized information center serving relevant, timely, and reliable OAH information to managers, researchers, industry, and other marine stakeholders. This new information hub is designed to support the automated generation of data-driven products to solve user needs within the region. The Portal integrates standardized, quality controlled data from diverse sources and platforms, incorporate existing data layers from models and satellites, and collaborate with state and West Coast partners to serve additional data streams and curated synthesis products. We serve automated and interoperable data and synthesis products that incorporate the most current data to generate indicators of status and trends. Data and information products will be downloadable and shareable for a variety of uses.

[Explore map](#) [Catalog](#)

Dashboards

Ocean Acidification and Hypoxia

Aquaculture areas



San Francisco Chronicle

NEWS

1st lease sale to be held for offshore wind on West Coast

JENNIFER McDERMOTT, Associated Press
Oct. 18, 2022 | Updated: Oct. 18, 2022 8:58 a.m.



1 of 6
Guests tour one of the turbines of America's first offshore wind farm, owned by the Danish company, Orsted, off the coast of Block Island, R.I., as part of a wind power conference, Monday, Oct. 17, 2022. Hundreds of offshore wind developers and experts gathered in Rhode Island to talk about the future of clean energy—how to grow the offshore wind industry and address shared challenges.
David Goldman/AP



No Thanksgiving crab: California officials delay start of 2022 Dungeness season

Move made to protect migrating whales from fishing lines



HALF MOON BAY, CALIFORNIA — NOVEMBER 15: Dungeness crab nest in a container as they are weighed during the opening day of commercial Dungeness crab season at Pillar Point Harbor in Half Moon Bay, Calif., on Thursday, Nov. 15, 2016. (Ray Chavez/Bay Area News Group)

By LINDA ZAVORAL |
PUBLISHED: October 30, 2022 at 7:20 a.m. | UPDATED: October 30, 2022 at 7:26 a.m.



California tribes will manage, protect state coastal areas

Five tribes on California's coast are moving forward in their efforts to protect marine ecosystems as part of the Tribal Marine Stewards Network

By SOPHIE AUSTIN Associated Press/Report for America
October 9, 2022, 5:54 AM

Share



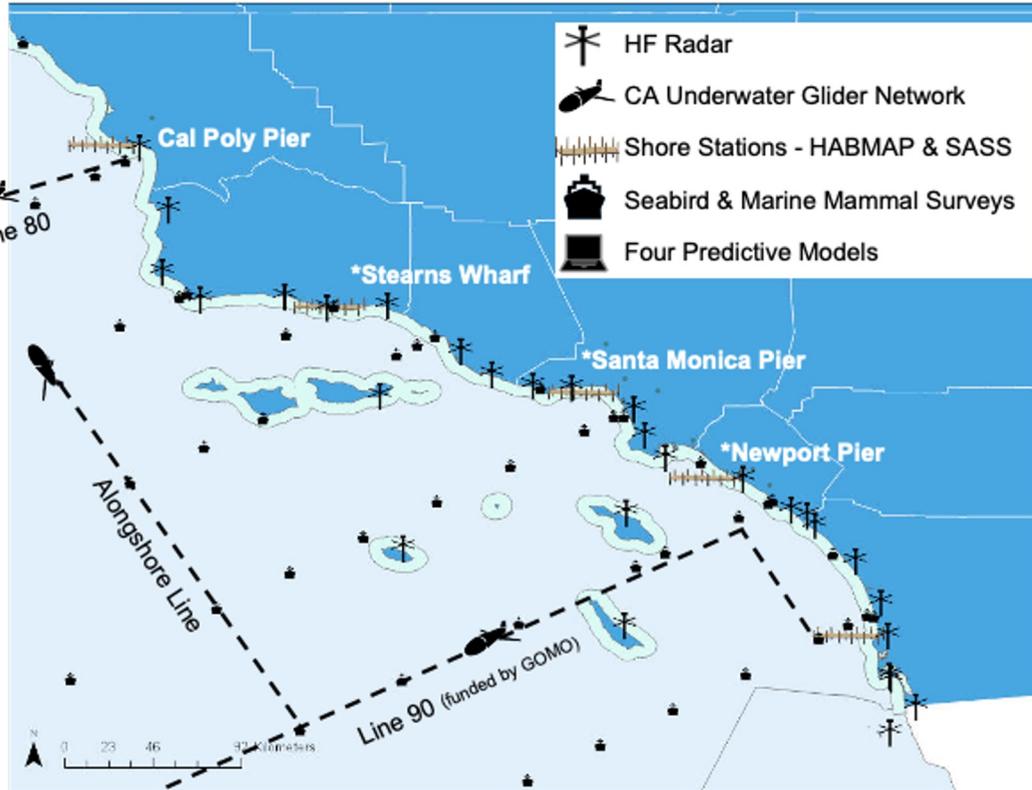
FILE - Sea lions are shown on the northwest coast of San Miguel Island, Calif., on Tuesday, Jan. 6, 2009. The California Ocean Protection Council voted Thursday, Oct. 6, 2022, to provide \$3.6 million to support the Tribal Marine Stewards Network, a collabora... [Show more](#)
The Associated Press



aharper@mbari.org

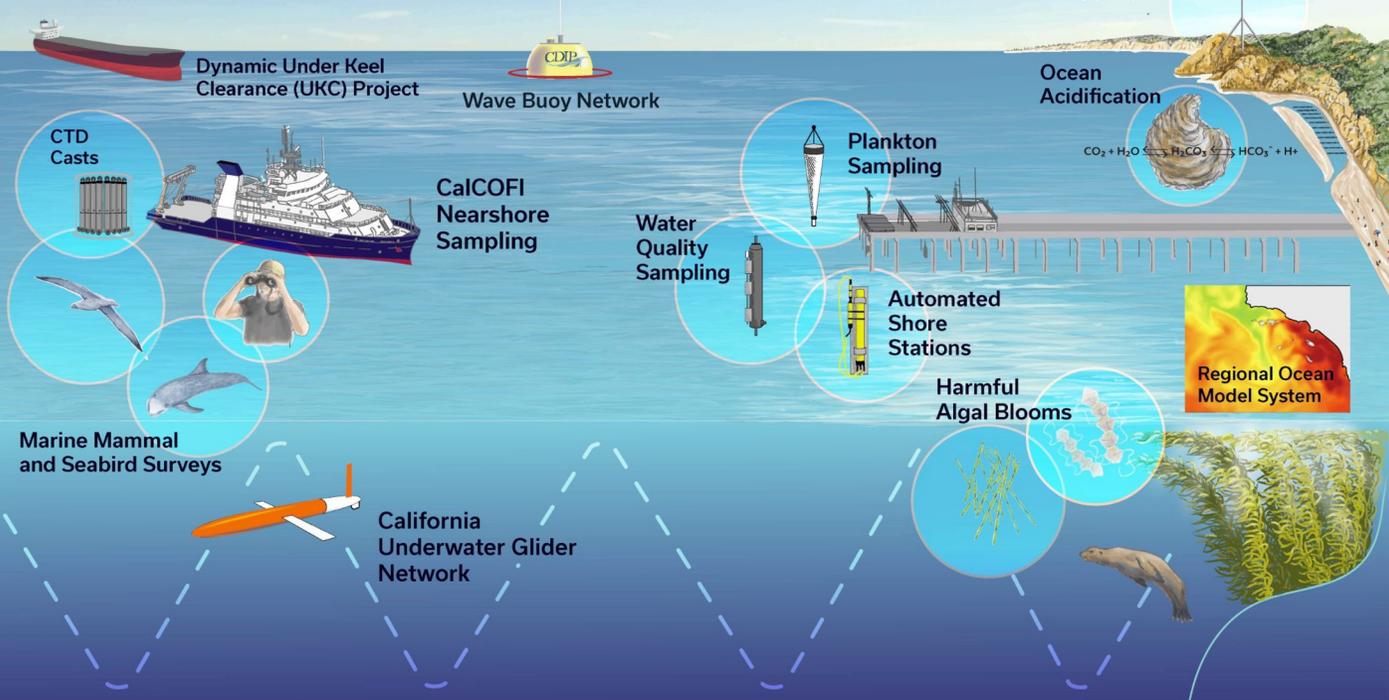


SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM



Southern California Coastal Ocean Observing System

SCCOOS is a Science-Based Decision Support System



NOAA West Watch Update: Southern California

Clarissa Anderson and James Behrens

01-Nov 2022

Coastal Data Information Program (CDIP)



West Coast wave activity

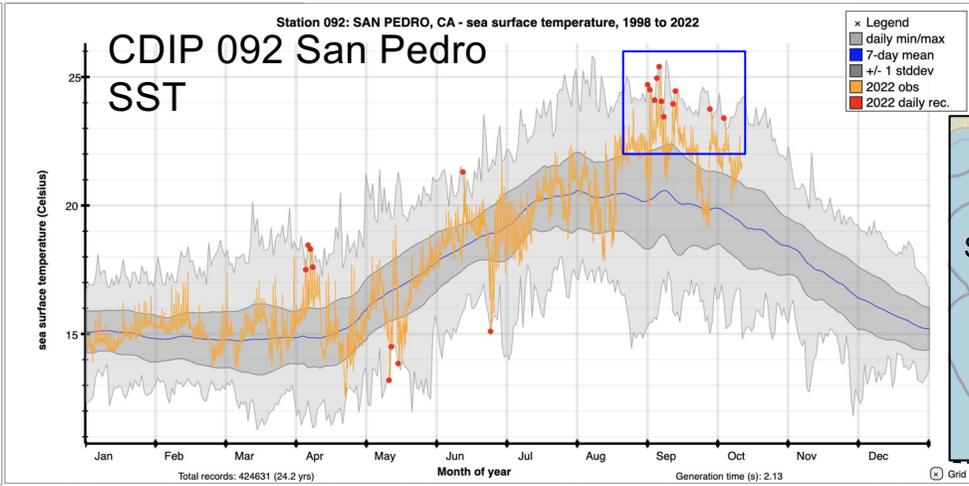
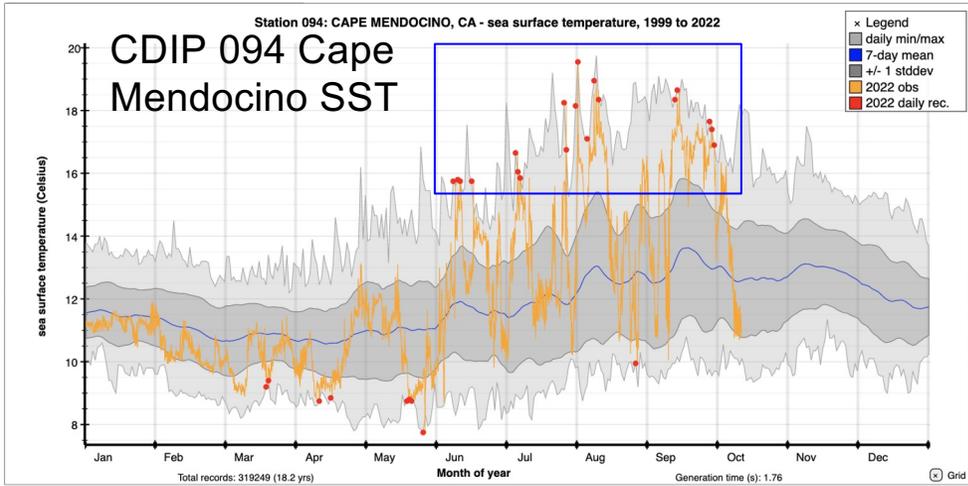
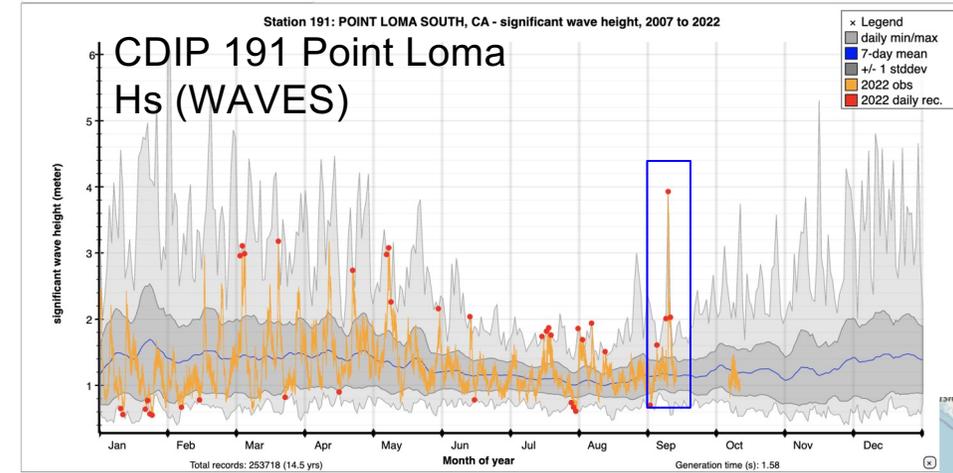
- Hurricane Kay generated strong wave activity in SoCal
- Intense northward alongshore current following the storm

West Coast sea surface temperatures (SST)

- Anomalously warm at some northern sites and SoCal Bight

New Monitoring Stations

- CDIP 262 Leucadia Nearshore, CA
- CDIP 264 Red Beach Nearshore, CA

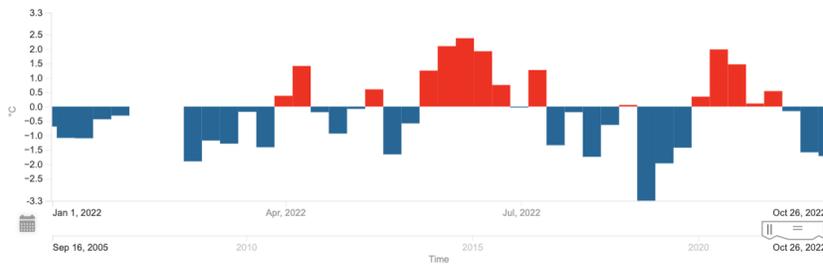


SCCOOS Automated Shore Stations

Sea Surface Temperature Anomalies

- SCCOOS shore stations ~ 17 years of data
- Nearshore temps warmed in August, followed by a brief Fall cooling and then another recent uptick
- WCOFS-simulated temperature to 500m captures warming of the mixed layer over the summer season, with little impact from the brief cooling in October.

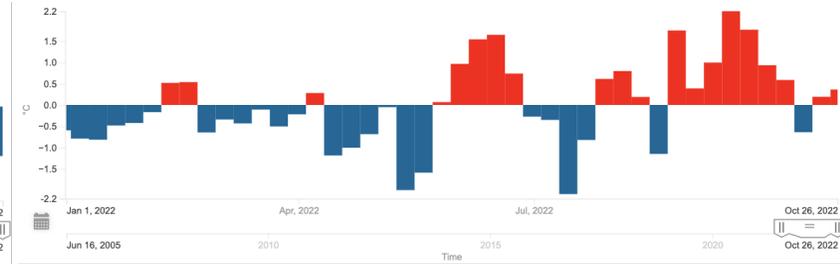
Stearns Wharf



Jan

Nov

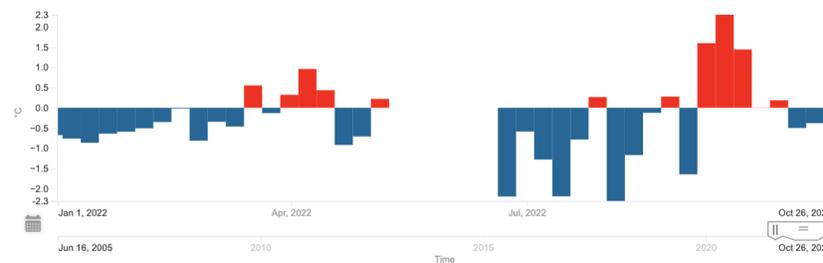
Santa Monica Pier



Jan

Nov

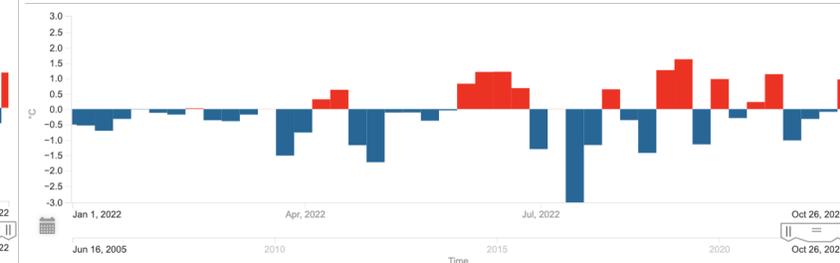
Newport Beach Pier



Jan

Nov

Scripps Pier



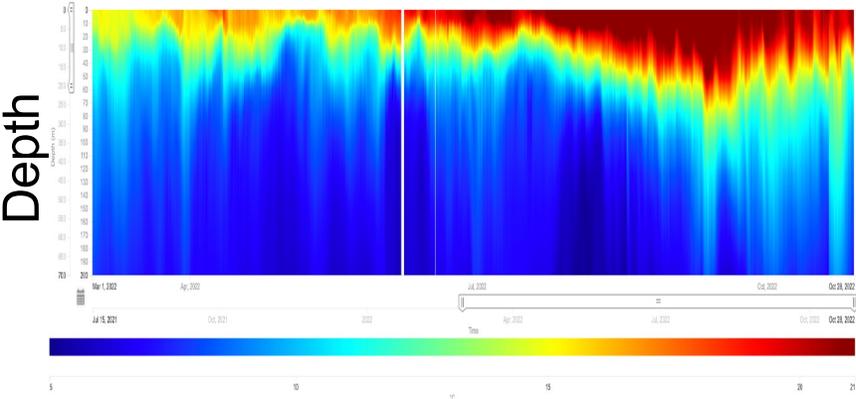
Jan

Nov

Sea Water Temperature

West Coast Operational Forecast System (WCOFS)

32.8519,-117.4562



Mar

Nov

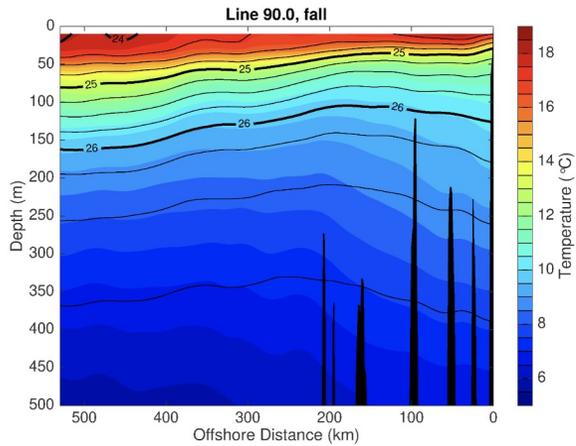
Jul

<https://data.caloos.org/>

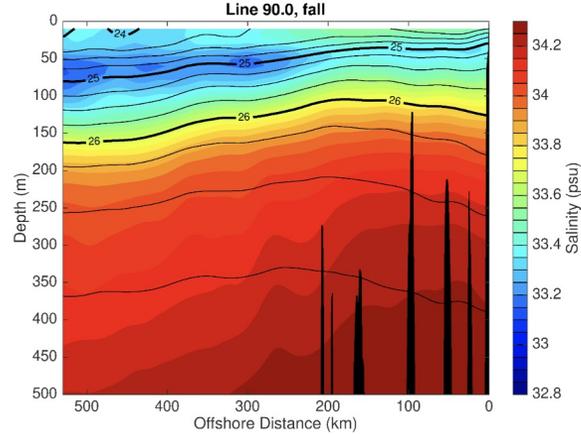
California Underwater Glider Network



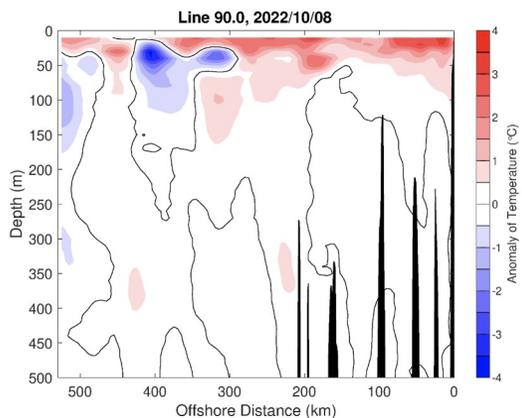
D. Rudnick, SIO



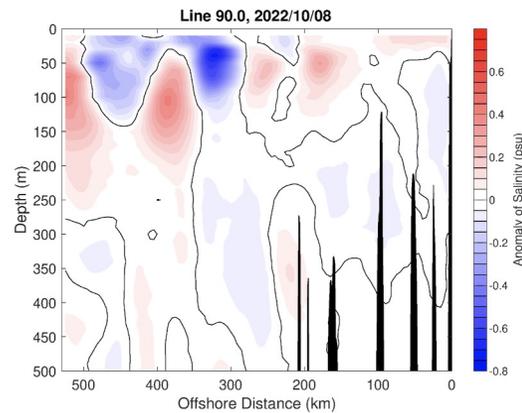
CalCOFI Line 90 (Dana Pt)
Temperature
Seasonal Climatology
as of 10/12/22



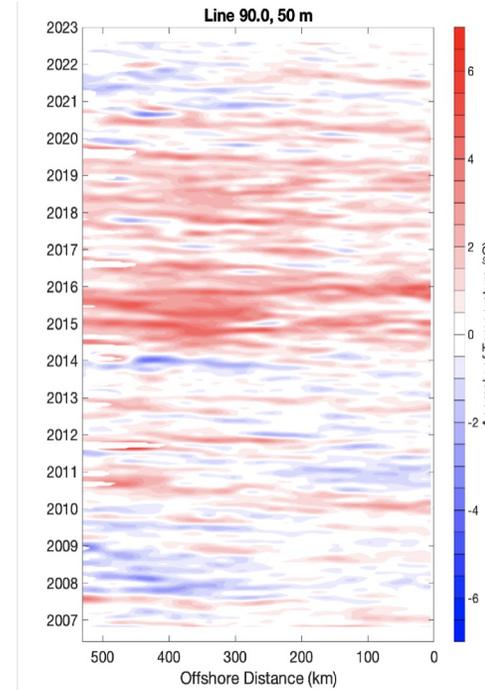
CalCOFI Line 90 (Dana Pt)
Salinity
Seasonal Climatology
as of 10/12/22



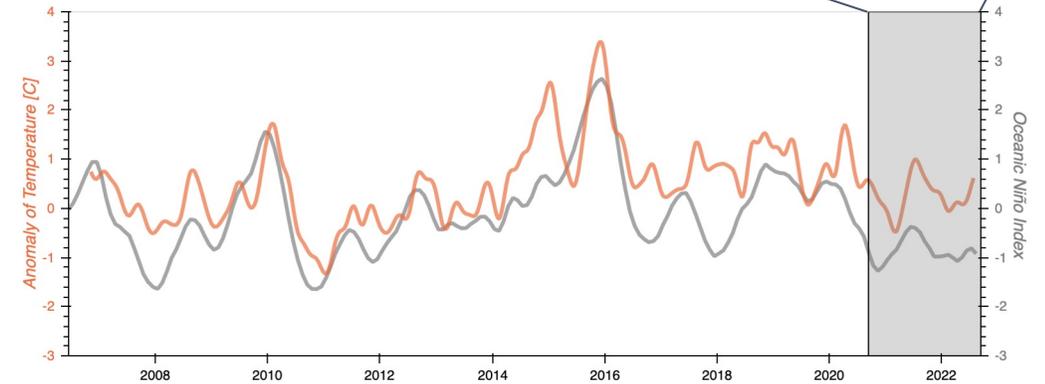
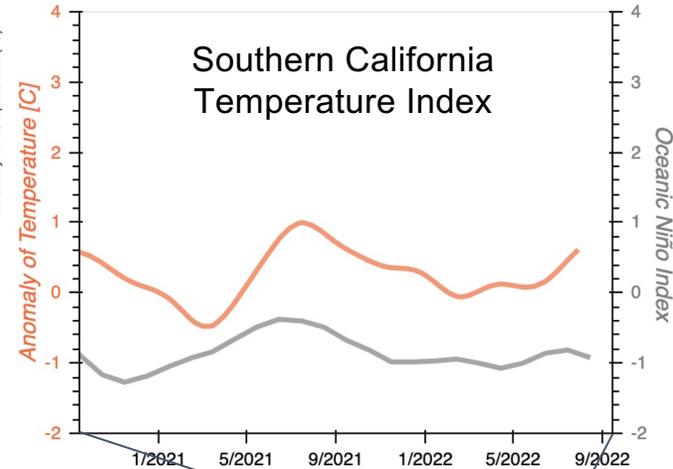
Temperature
Interannual Anomaly
as of 10/8/22



Salinity
Interannual Anomaly
as of 10/8/22



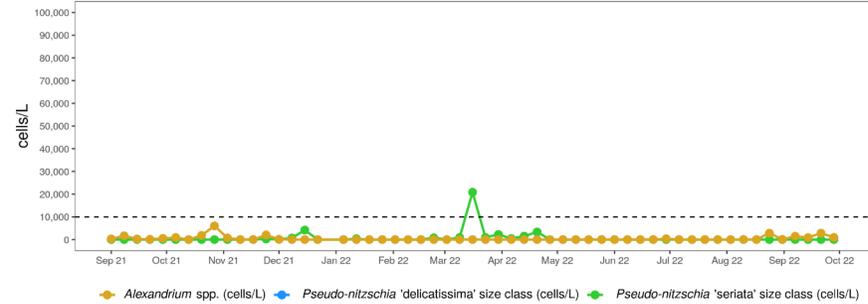
Line 90
Temperature
Anomaly



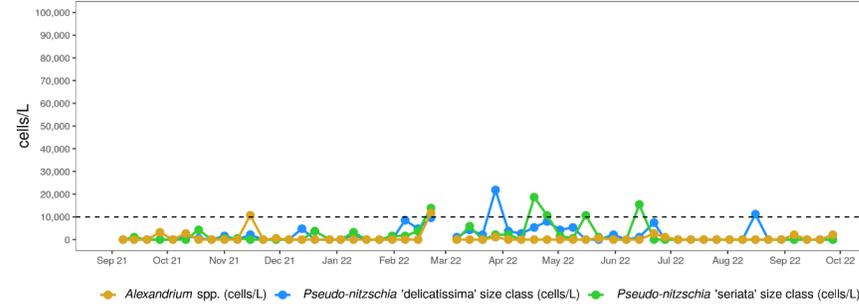
Harmful Algal Bloom Monitoring Alert Program (HABMAP)

Pseudo-nitzschia spp. quiet in last two months from the perspective of the piers — but what was going on offshore?

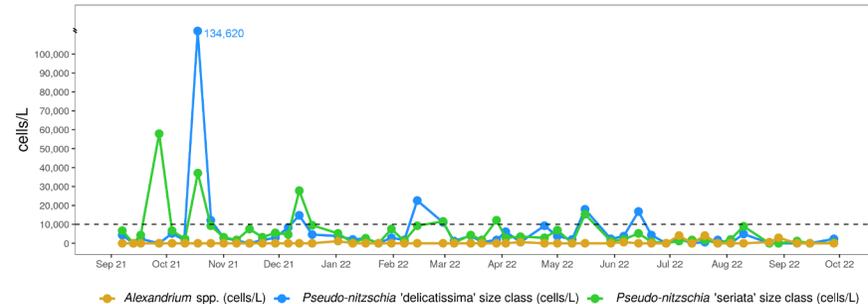
Santa Cruz Municipal Wharf HAB and DA Data



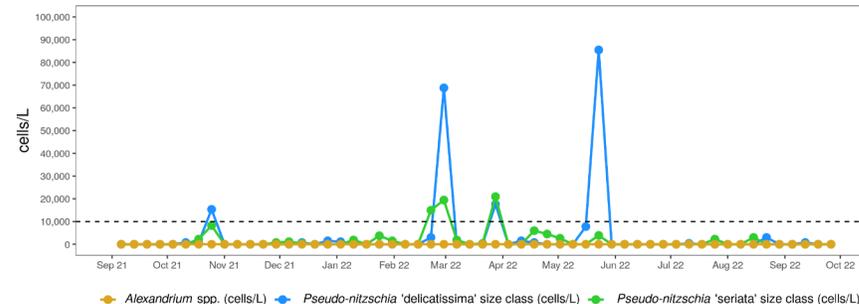
Cal Poly Pier HAB and Domoic Acid Data



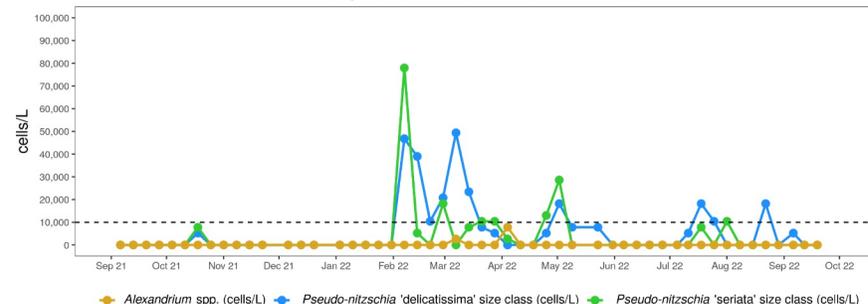
Stearns Wharf HAB and DA Data



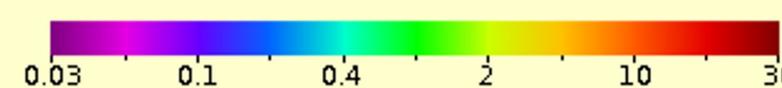
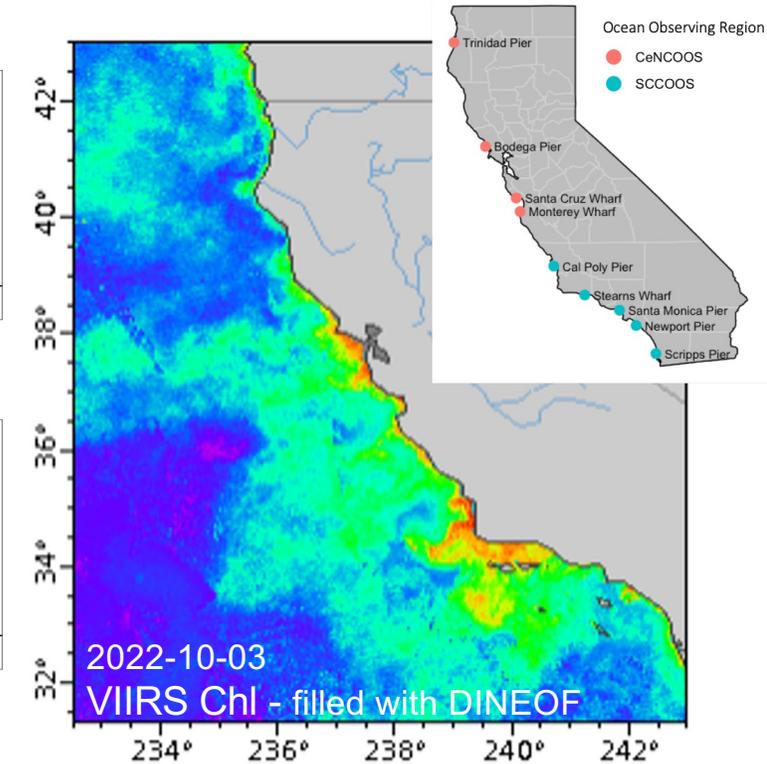
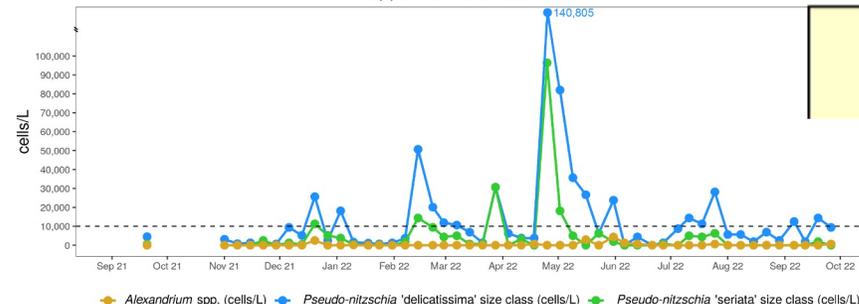
Santa Monica Pier HAB and DA Data



Newport Beach Pier HAB and DA Data



Scripps Pier HAB and DA Data



CA Imaging Flow Cytobot Network - progress update

Roll out of stations:

- Hog Island Oyster Co. - Humboldt
- Bodega Marine Lab
- San Francisco Pier 17 - *offline*
- San Francisco Bay Cruises
- Santa Cruz Wharf (x2)
- MBARI Power Buoy - MB Bay
- Stearns Wharf
- Newport Beach Pier (x2)
- Del Mar Mooring - offshore SD
- Scripps Pier (x2)

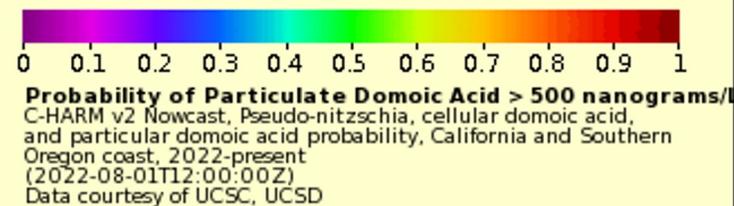
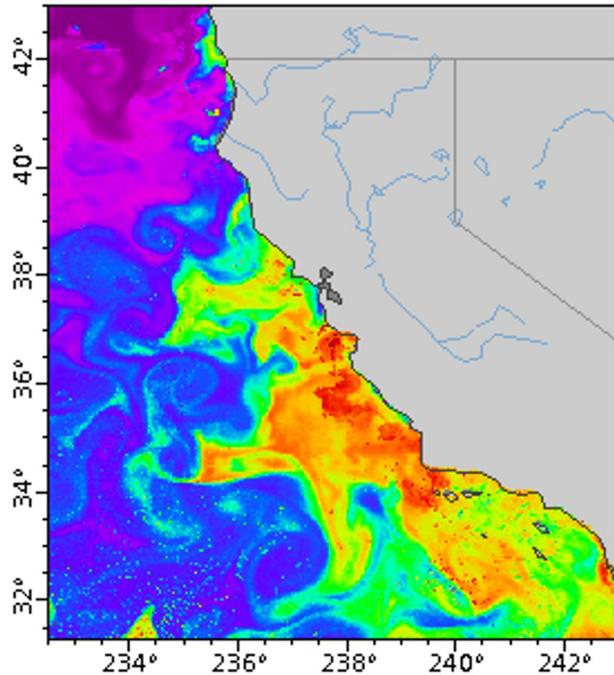
Total of 12 IFCBs in the system

<https://ifcb.caloos.org/dashboard>



Major Domoic Acid Event - central to southern CA

C-HARM Probability of particulate Domoic Acid (pDA) for Aug 1 - Oct 26 2022



Aug - Sep 2022 Stranding Event, 400+ animals!

-began in Santa Barbara and spread to central and southern California

See the August and September CA HAB Bulletins for details:

<https://sccoos.org/california-hab-bulletin/august-2022/>



Search NOAA Fisheries

Find A Species Fishing & Seafood Protecting Marine Life Environment Regions Resources & Services About Us

NEWS

Toxic Algal Bloom Spreads Along California Coast, Poisoning Sea Lions

August 29, 2022



Claremont Institute
Marine & Wildlife
INSTITUTE

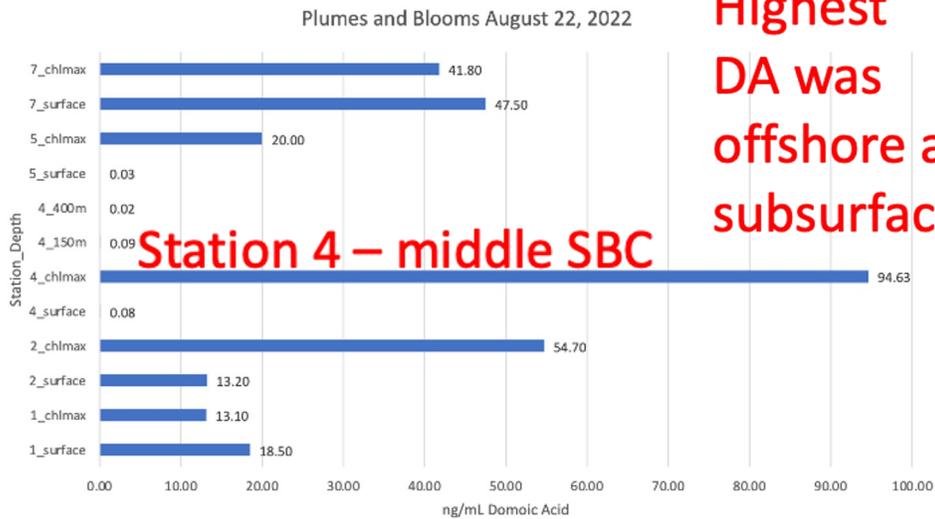


sccoos.org/california-hab-bulletin/

Major Domoic Acid Event - central to southern CA

Plumes and Blooms Cruise, 22 Aug Particulate domoic acid concentrations

Trace amounts detected in all samples, up to approx. 95 ng/mL !!



Station 4 – middle SBC

Highest DA was offshore and subsurface!

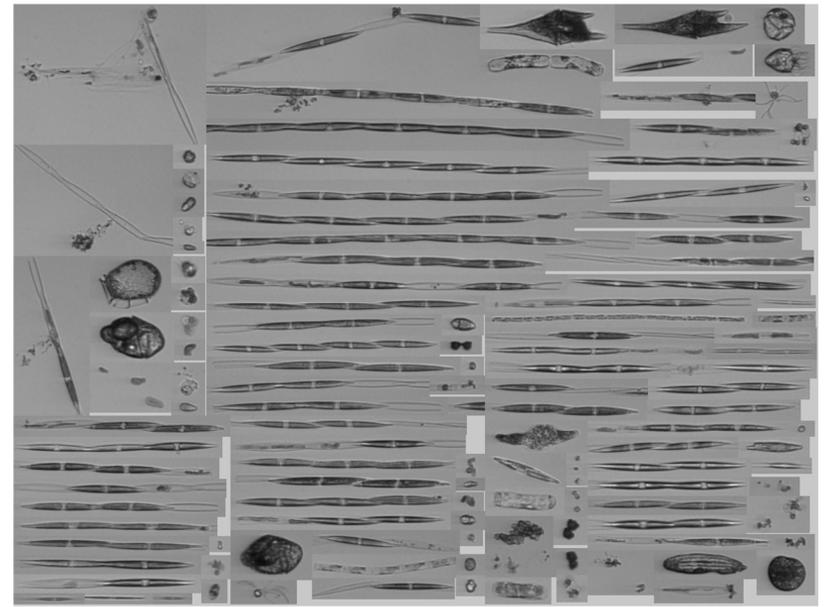
*Not detected (0.01 ng/mL detection limit)



Steffaney Wood



Monica Thukral



Pseudo-nitzschia australis was observed across many locations in CA in August. This image was taken with an IFCB in the Santa Barbara Channel during a CalCOFI cruise.

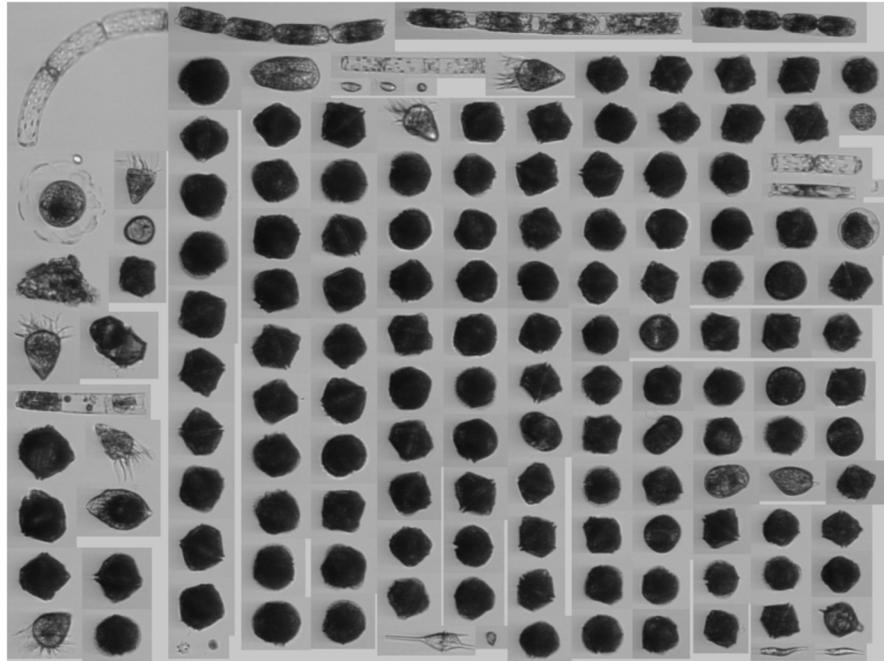
Thanks to NOAA Event Response Funds

Fall Red Tide

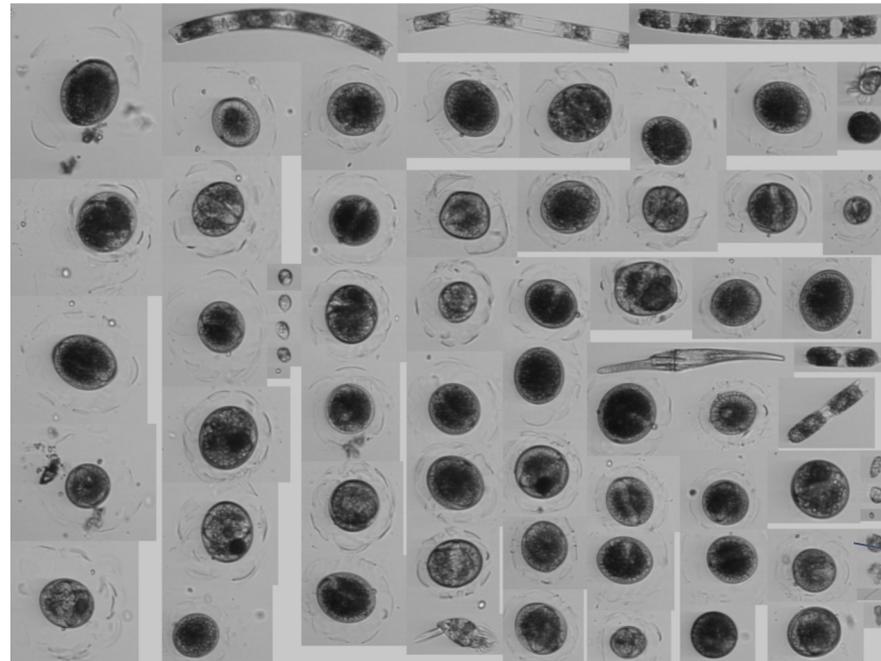
- *Lingulodinium polyedra* bloom at Newport Beach Pier and Scripps Pier in late September, followed by encystment (or possibly predation by *Fragilidinium*) in October.
- *L. polyedra* bloom extended from San Diego to Santa Barbara



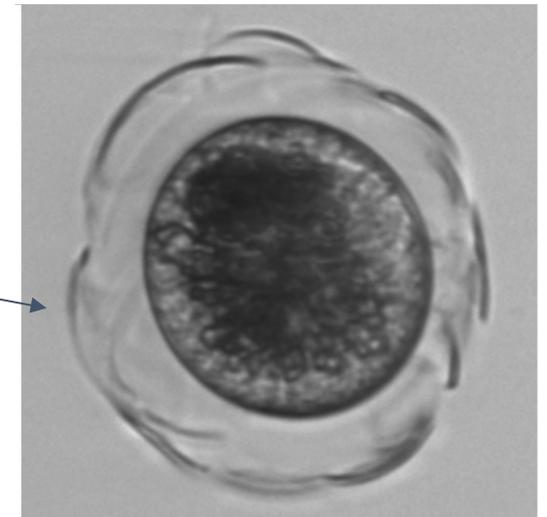
Photo from Newport Beach Pier Oct 11.



IFCB image of *L. polyedra* bloom at Newport Beach Pier on 27 Sep 2022.



IFCB image of cysts at Newport Beach Pier on 11 Oct 2022, close up to right.





<https://data.caloos.org/>

A screenshot of the California Ocean Observing System Data Portal website. The header includes the IOOS logo and navigation links for Home, Catalog, Map, Data views, Downloads, Settings, Share, Help, and Feedback. The main content area features a large image of a coastline with the title "California Ocean Observing System Data Portal" and the subtitle "Integrated Ocean Observing for a Changing California Coastline". Below this are three buttons: "EXPLORE REAL TIME DATA", "SEARCH 1100+ DATASETS", and "GLIDERS". A section titled "California Ocean Observing System Data Portal" includes a welcome message and a map of California showing the boundaries of the Central and Northern California Ocean Observing System (CeNCOOS) and the Southern California Coastal Ocean Observing System (SCCOOS).

California Ocean Observing System Data Portal
Welcome to the CeNCOOS and SCCOOS statewide data portal.

The Central and Northern California Ocean Observing System (CeNCOOS) and the Southern California Coastal Ocean Observing System (SCCOOS) are two of eleven regions that contribute to the national U.S. Integrated Ocean Observing System (IOOS). The regional observing systems work to collect, integrate, and deliver coastal and ocean observations in order to improve safety, enhance the economy, and protect the environment. The principal goal of CeNCOOS and SCCOOS is to provide observations and products to a diverse stakeholder community of managers and planners, operational decision makers, scientists, and the general public. CeNCOOS and SCCOOS have developed the capabilities to support short-term decision-making and long-term assessment by implementing and leveraging biological, chemical, and physical observations and models, many of which are available in near real-time. This interactive catalog and map provides a place to explore and download publicly available oceanographic and coastal datasets in California.

Explore map | Catalog | Glider deployments



CalOOS Science Impact And Stakeholder Engagement Meeting held in May

Questions?
info@sccoos.org



Next NOAA
West
Watch:

Tentative
date:
January 24,
2023

Thanks!

Photo: Tahoe Rim Trail, October 7, 2021
Credit: Dan McEvoy