

NOAA West Watch Update

15 August 2023

NANOOS Update

Jan Newton, on behalf of many

www.nanoos.org



COMMENT | 03 April 2023 | Correction [05 April 2023](#)

Marine heatwaves need clear definitions so coastal communities can adapt

Clearly communicating baselines for assessing ocean warming is essential for understanding extreme events and how they will affect marine ecosystems and livelihoods in the future.

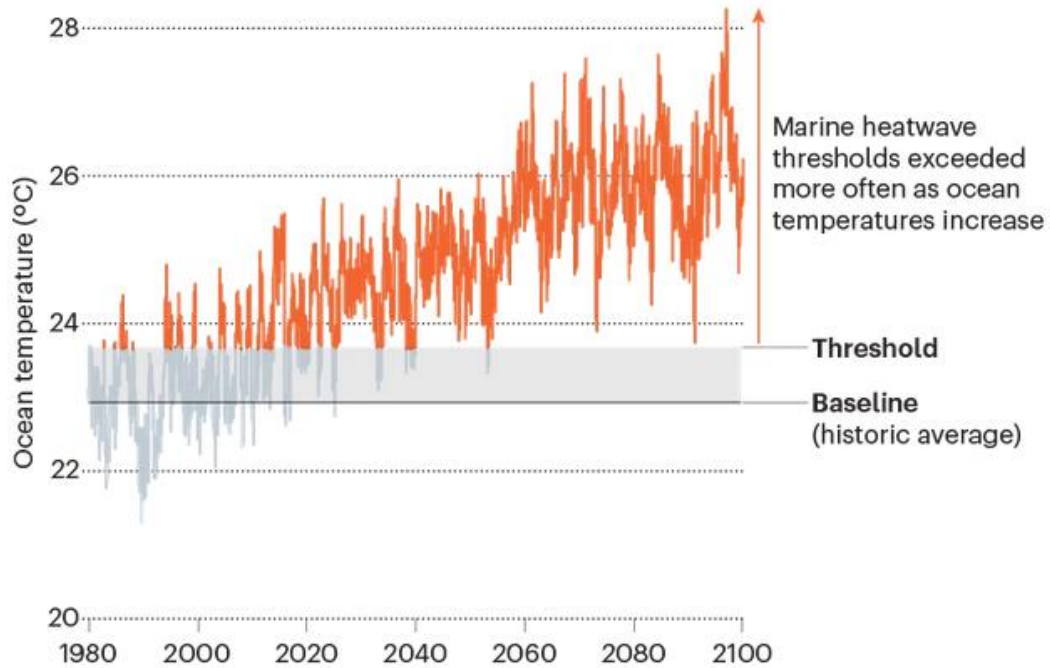
[Dillon J. Amaya](#) , [Michael G. Jacox](#), [Melanie R. Fewings](#), [Vincent S. Saba](#), [Malte F. Stuecker](#), [Ryan R. Rykaczewski](#), [Andrew C. Ross](#), [Charles A. Stock](#), [Antonietta Capotondi](#), [Colleen M. Petrik](#), [Steven J. Bograd](#), [Michael A. Alexander](#), [Wei Cheng](#), [Albert J. Hermann](#), [Kelly A. Kearney](#) & [Brian S. Powell](#)

MARINE HEATWAVES: DUELLING DEFINITIONS

Assessing spikes of extreme ocean temperatures using different baselines* paints two different pictures for the future as the climate warms. Coastal communities need to know which definition is being used so they can plan.

Fixed baseline

Measuring heat relative to historical temperatures makes sense for tracking coral bleaching, for example, but says little about patterns of future extremes.

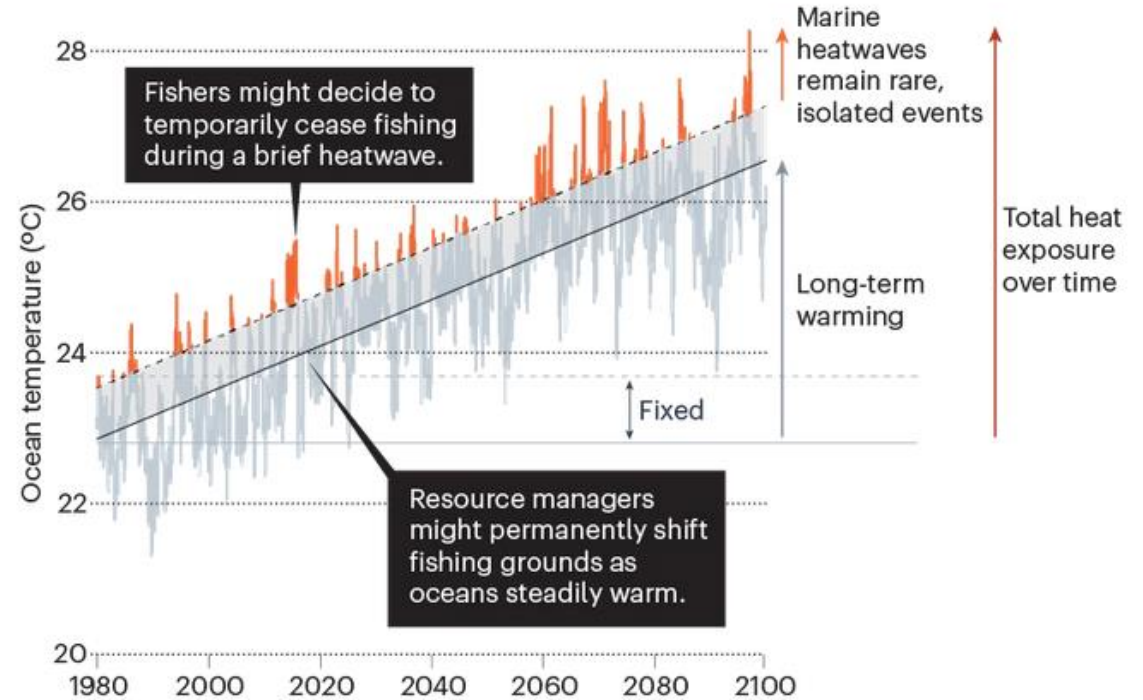


“Hot relative to then”

Fixed: 30 y pre-blob (1983-2012)

Shifting baseline

Defining marine heatwaves relative to increasing average temperatures helps resource managers to distinguish temporary changes and long-term trends.



“Hot relative to now”

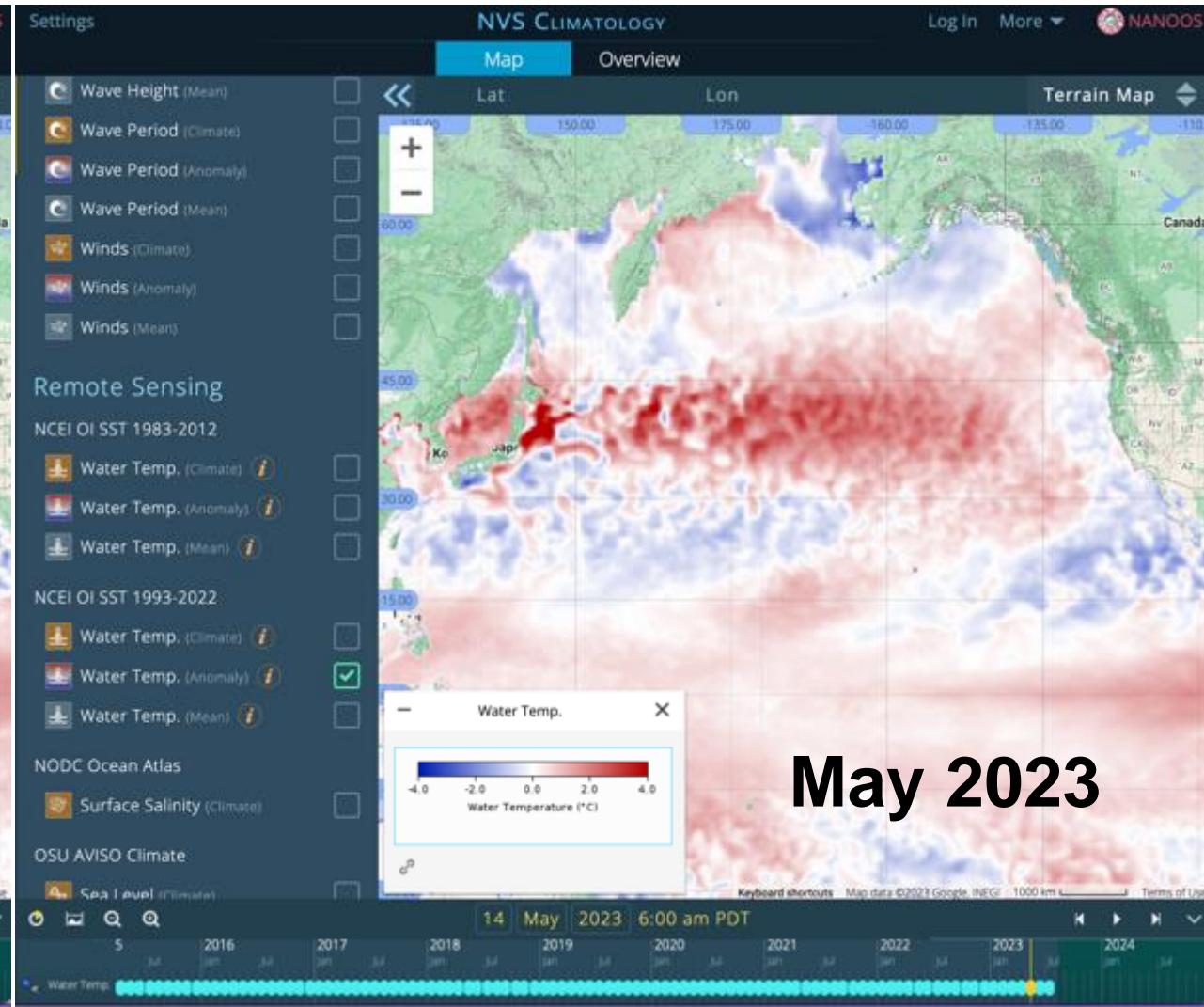
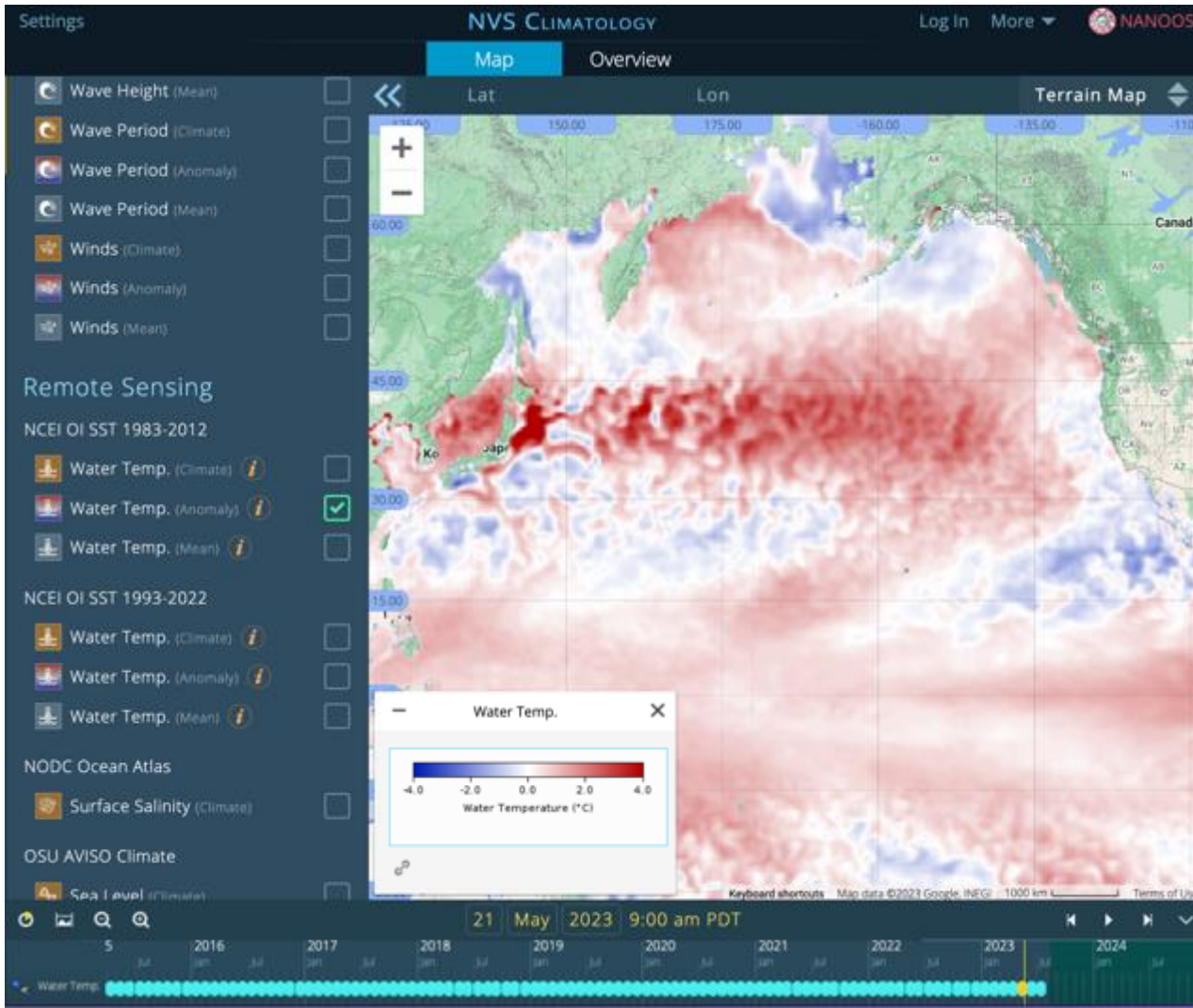
Shifting: 30 y before current (1993-2022)

*Baselines and thresholds are illustrative only; seasonal variations are not considered for simplicity.

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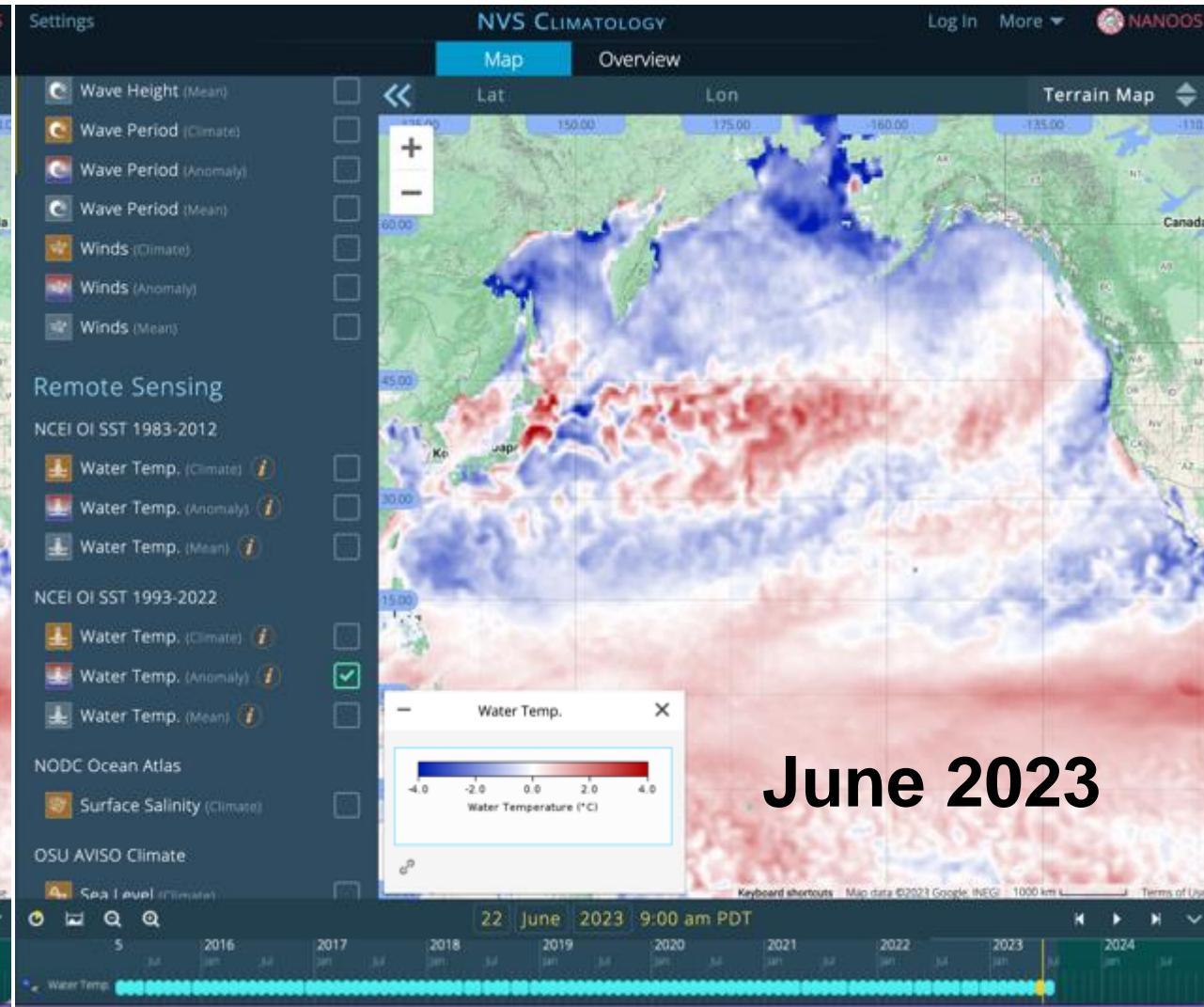
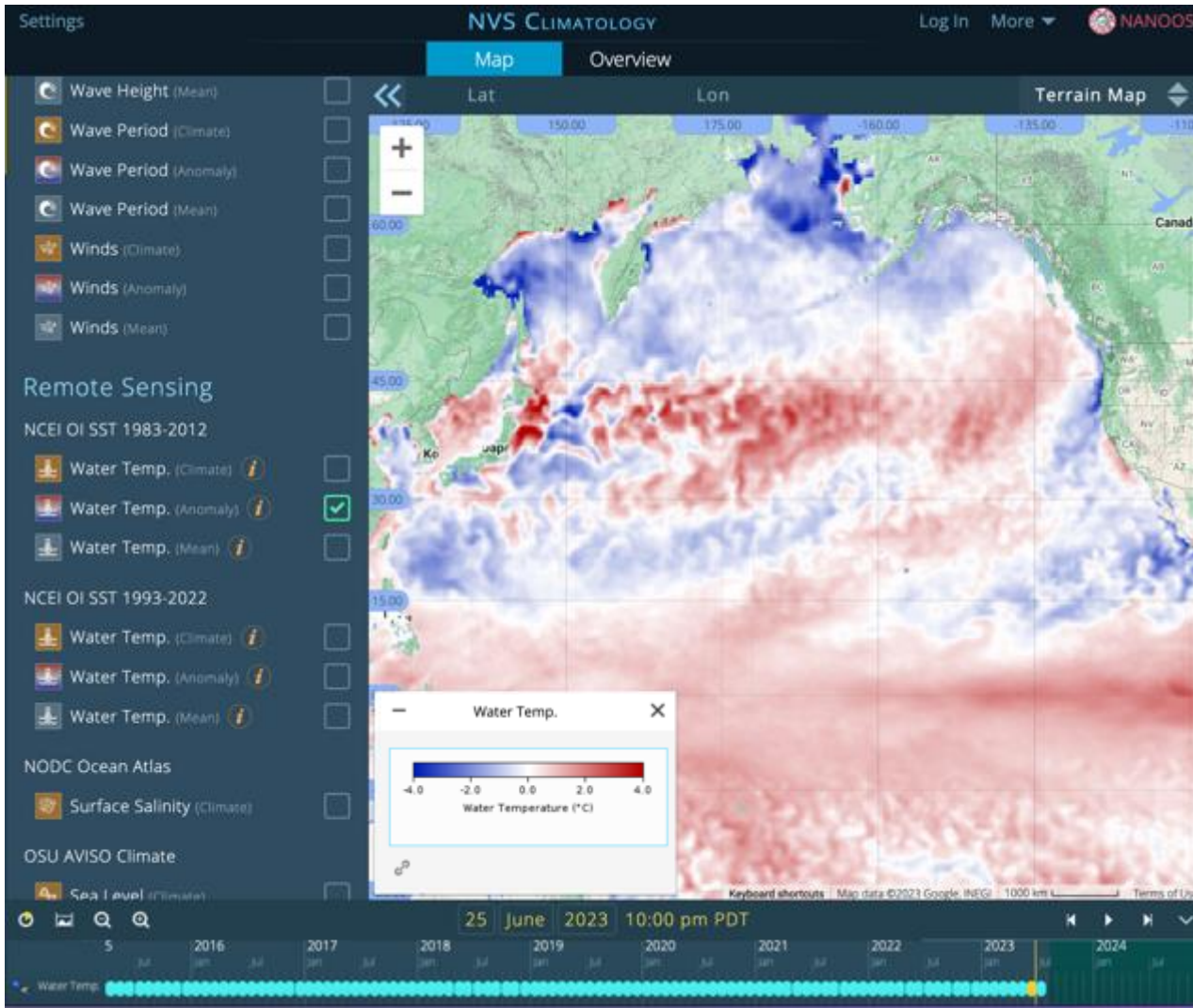
NCEI OI SST 1983-2012
fixed

NCEI OI SST 1993-2022
shifting

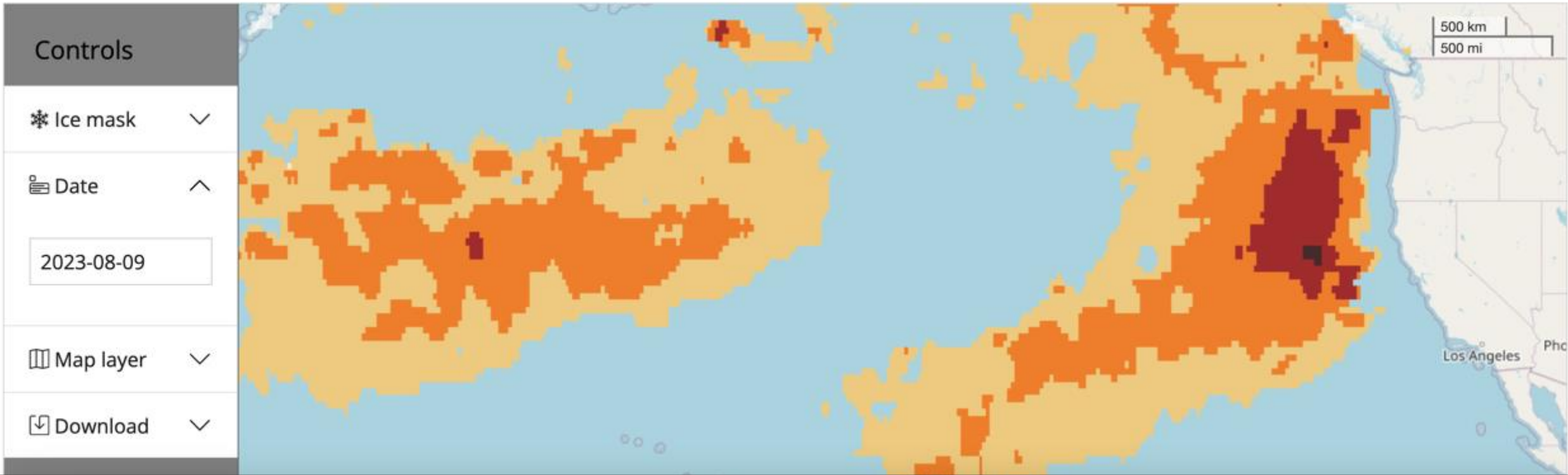


NCEI OI SST 1983-2012

NCEI OI SST 1983-2012



Marine Heatwave Tracker



Ocean heat wave comes to Pacific Northwest shores

John Ryan
August 02, 2023 / 9:56 am

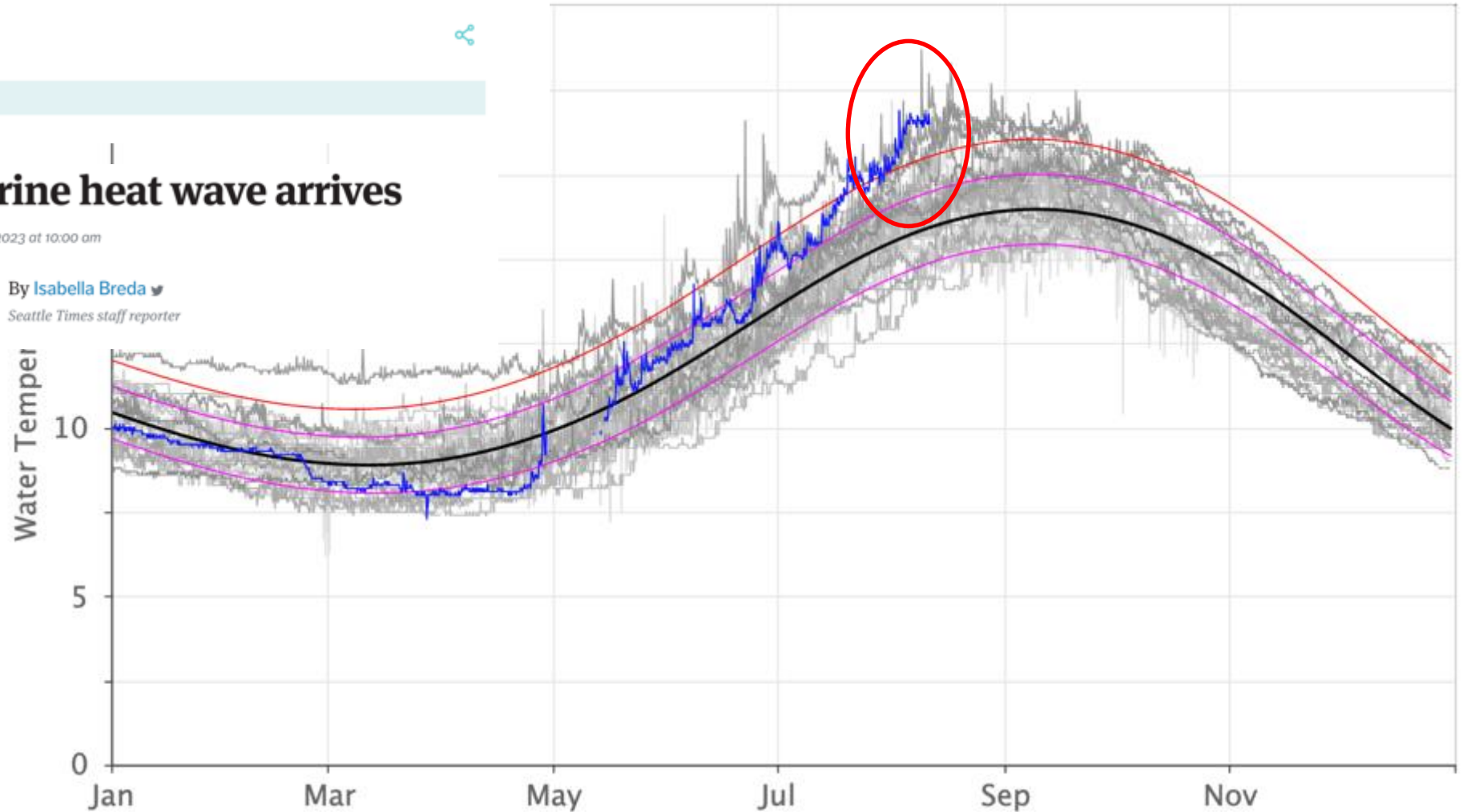


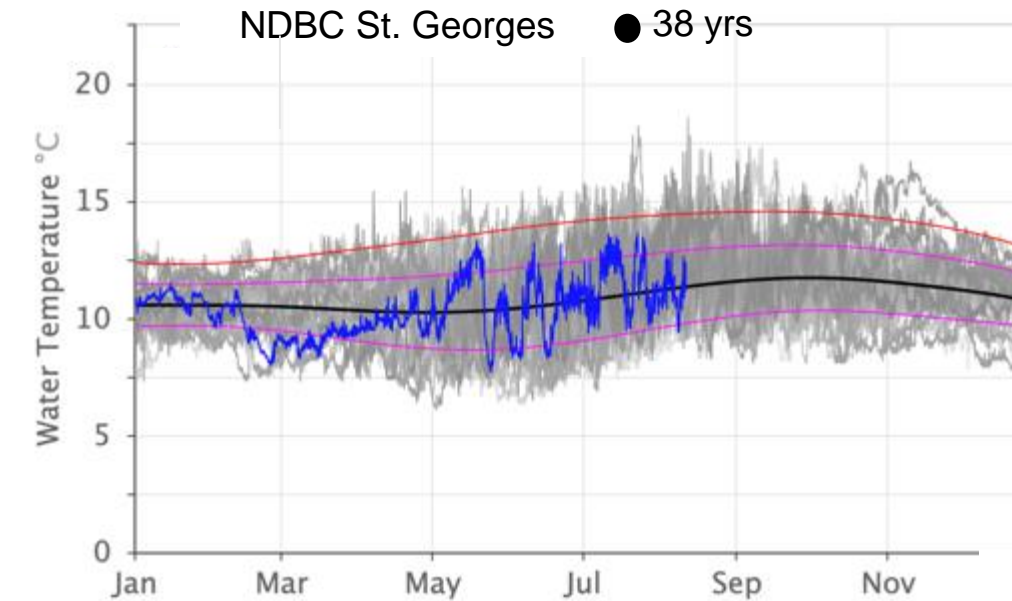
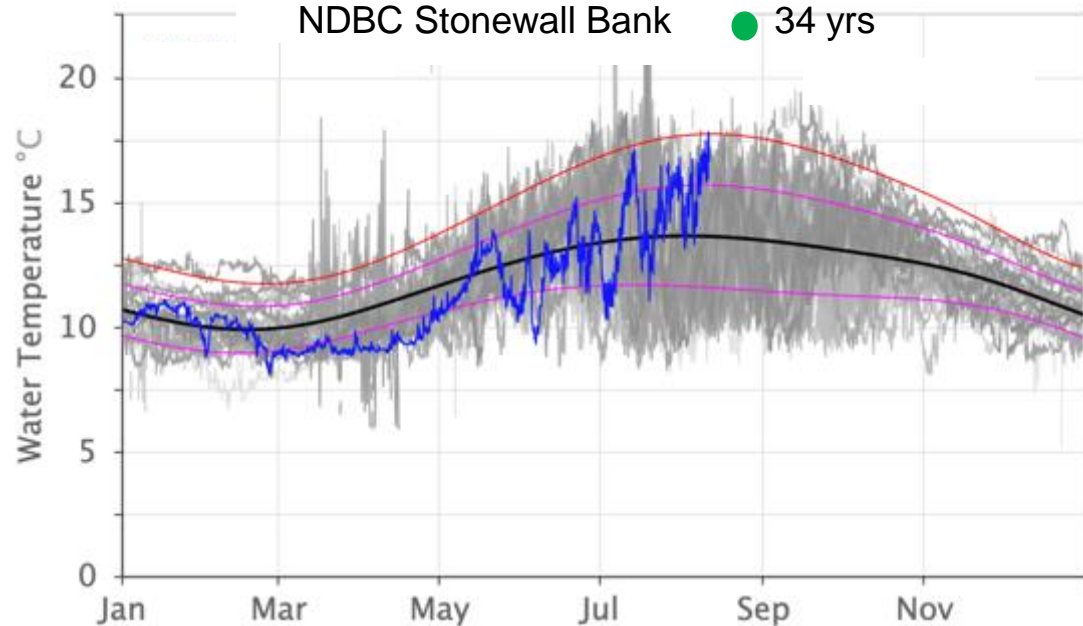
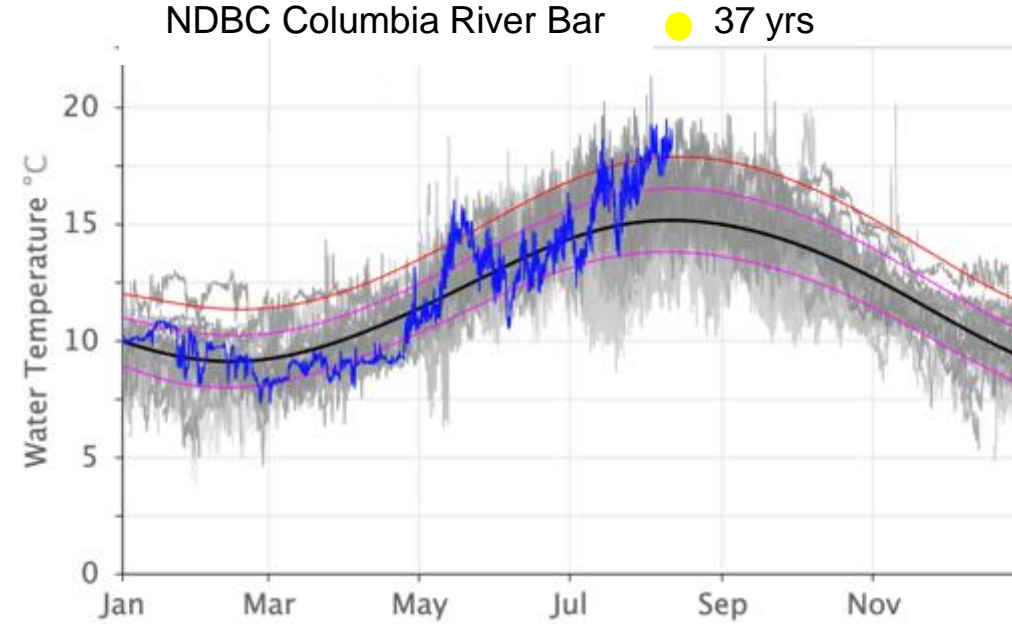
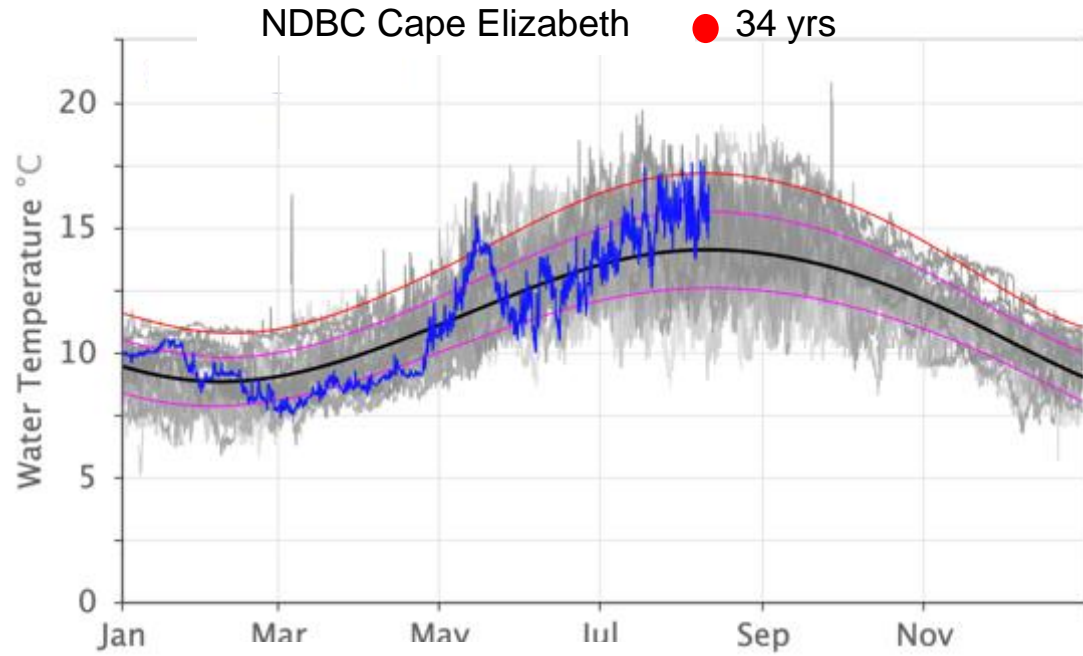
West Coast marine heat wave arrives

Aug. 4, 2023 at 10:00 am | Updated Aug. 4, 2023 at 10:00 am

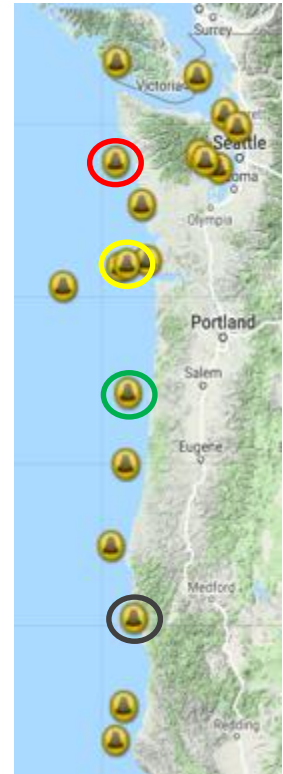
By Isabella Breda
Seattle Times staff reporter

NDBC Washington





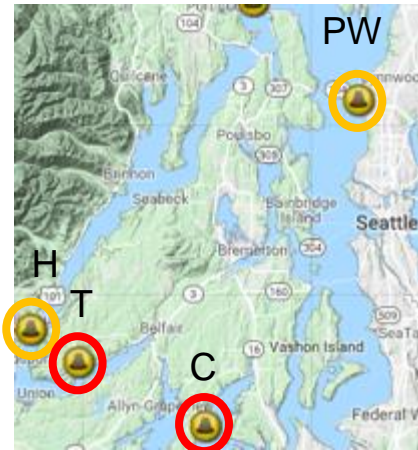
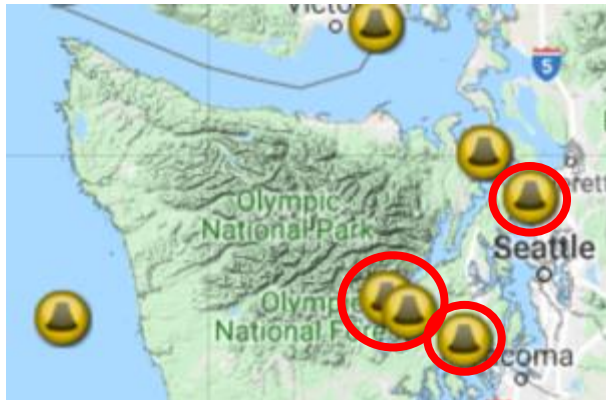
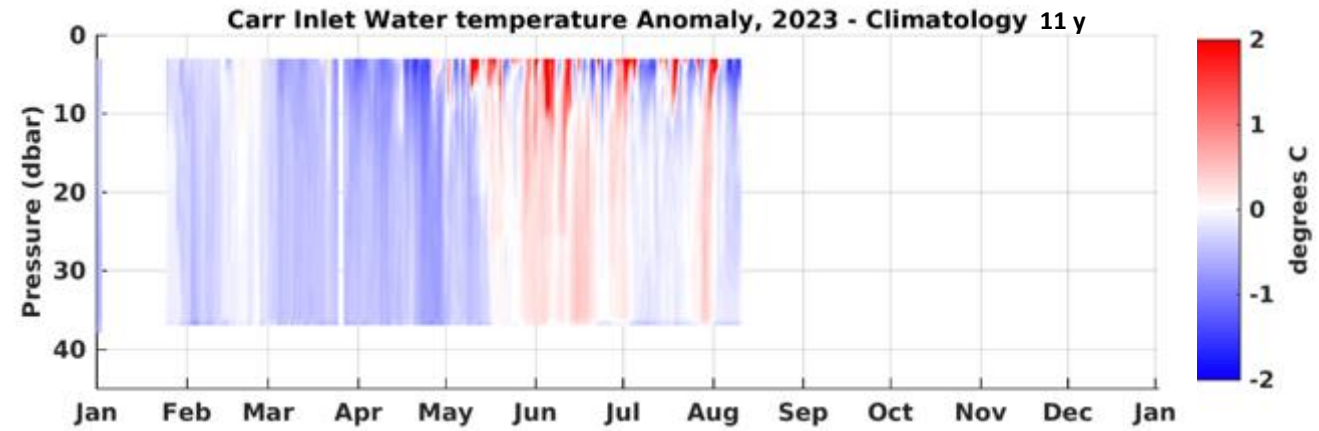
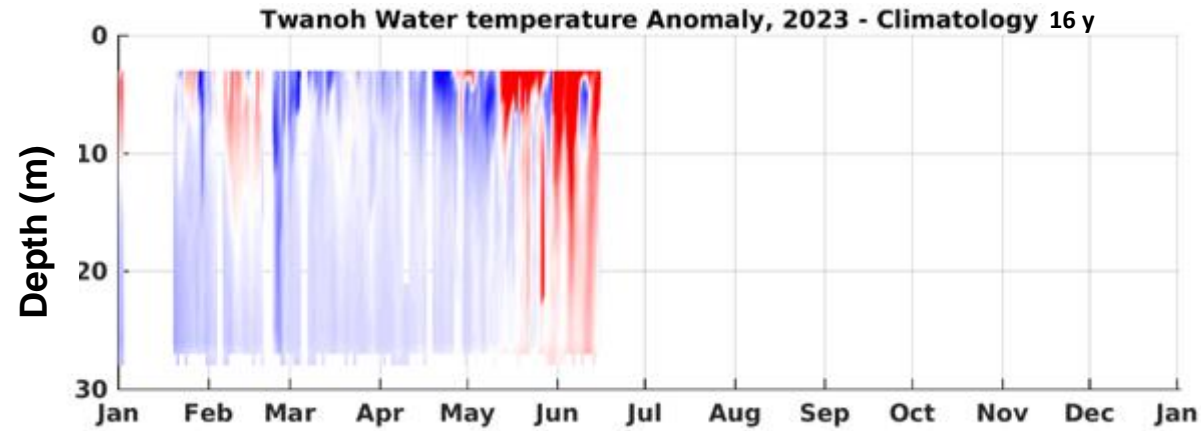
- Seasonal Cycle
- -1 STD
- +1 STD
- +2 STD
- 2023



Puget Sound Profiling Buoys

<https://nvs.nanoos.org/Climatology>

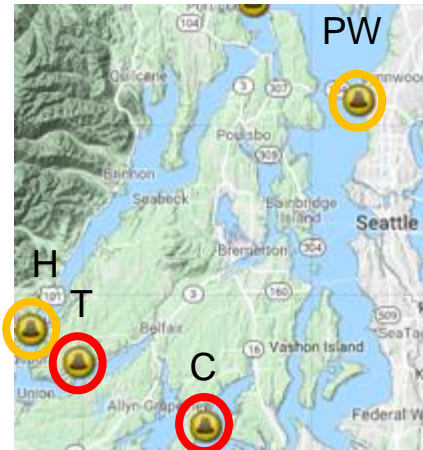
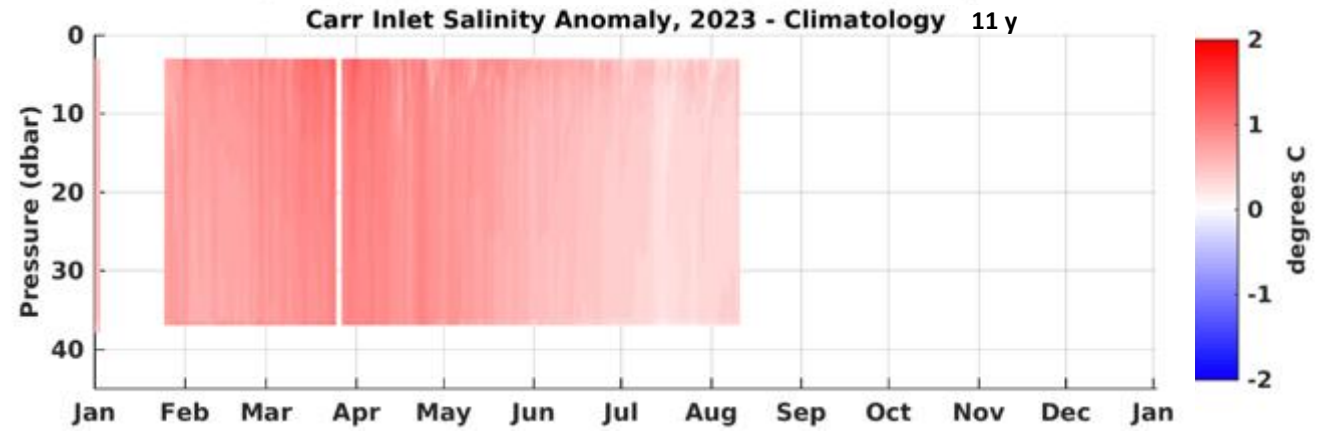
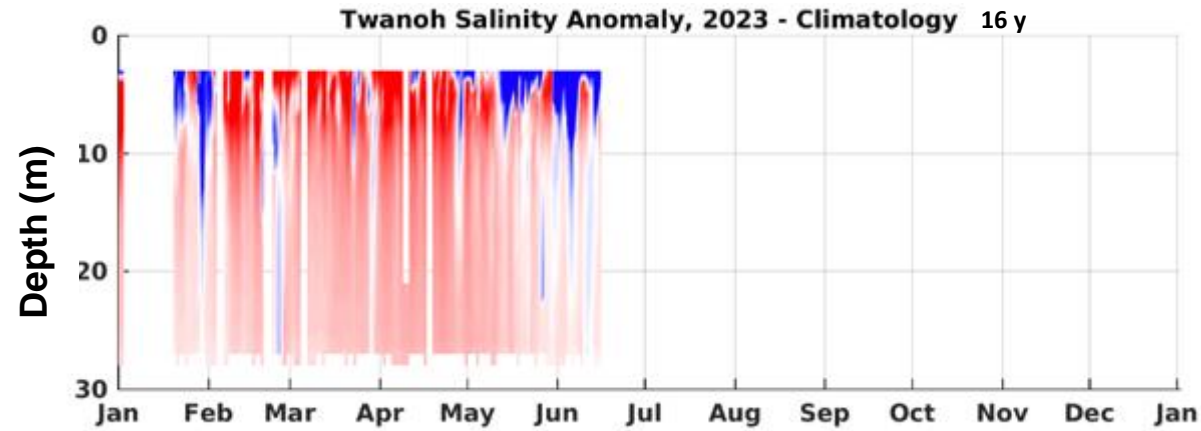
Temperature Anomalies



Puget Sound Profiling Buoys

<https://nvs.nanoos.org/Climatology>

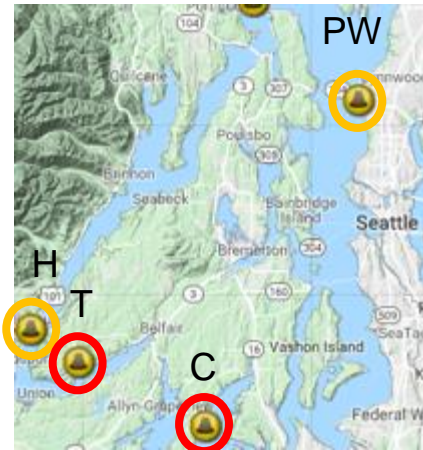
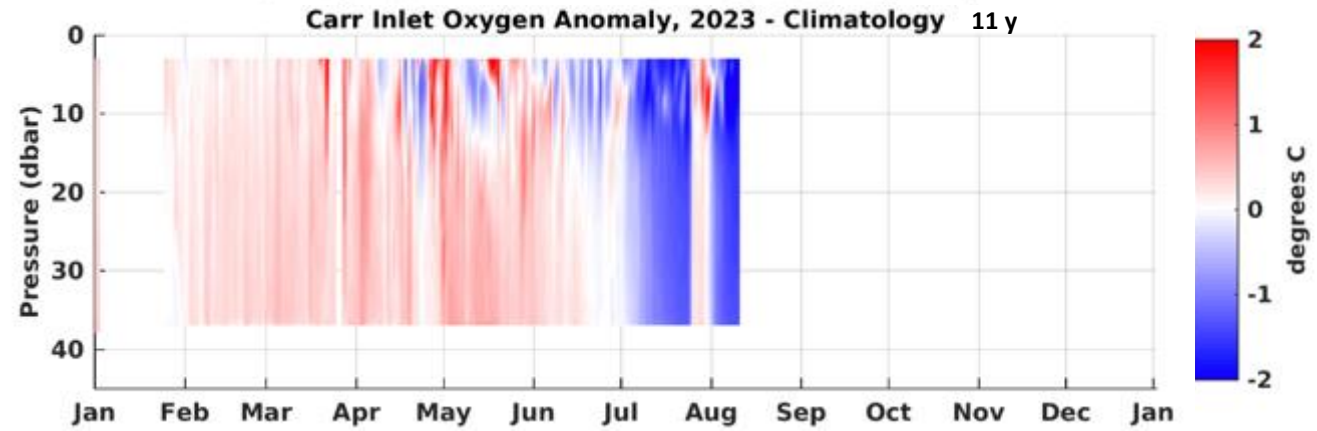
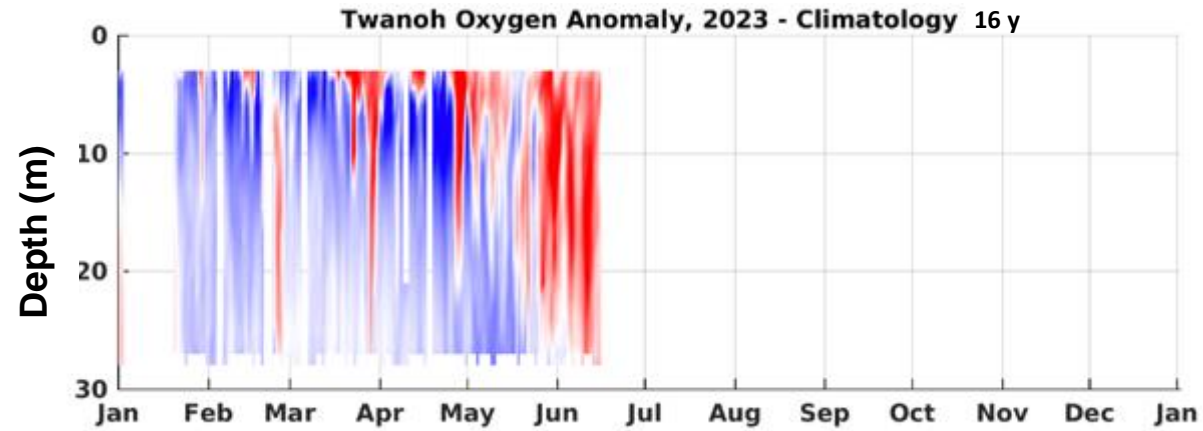
Salinity Anomalies



Puget Sound Profiling Buoys

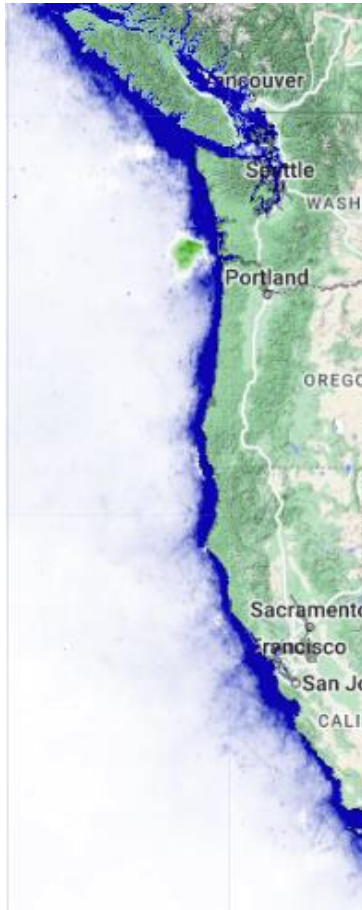
<https://nvs.nanoos.org/Climatology>

Oxygen Anomalies



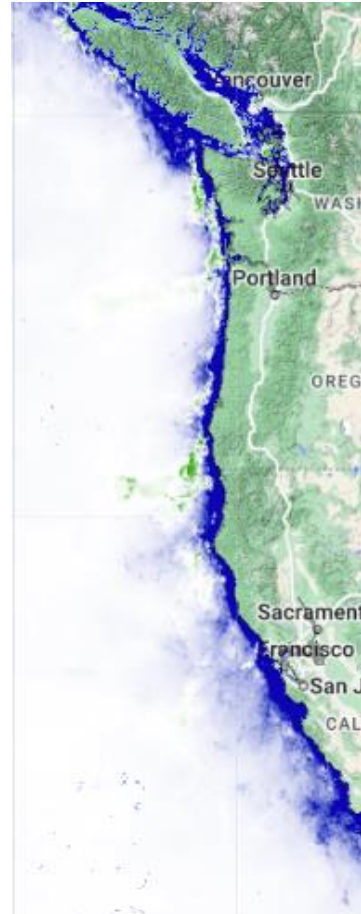
May 2023

OSU MODIS 2012-2022



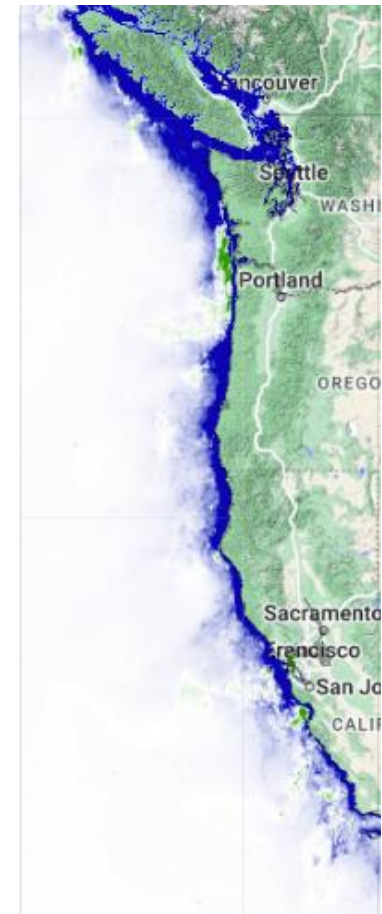
June 2023

OSU MODIS 2012-2022

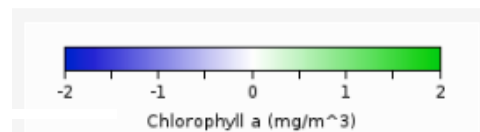


July 2023

OSU MODIS 2012-2022



Chlorophyll

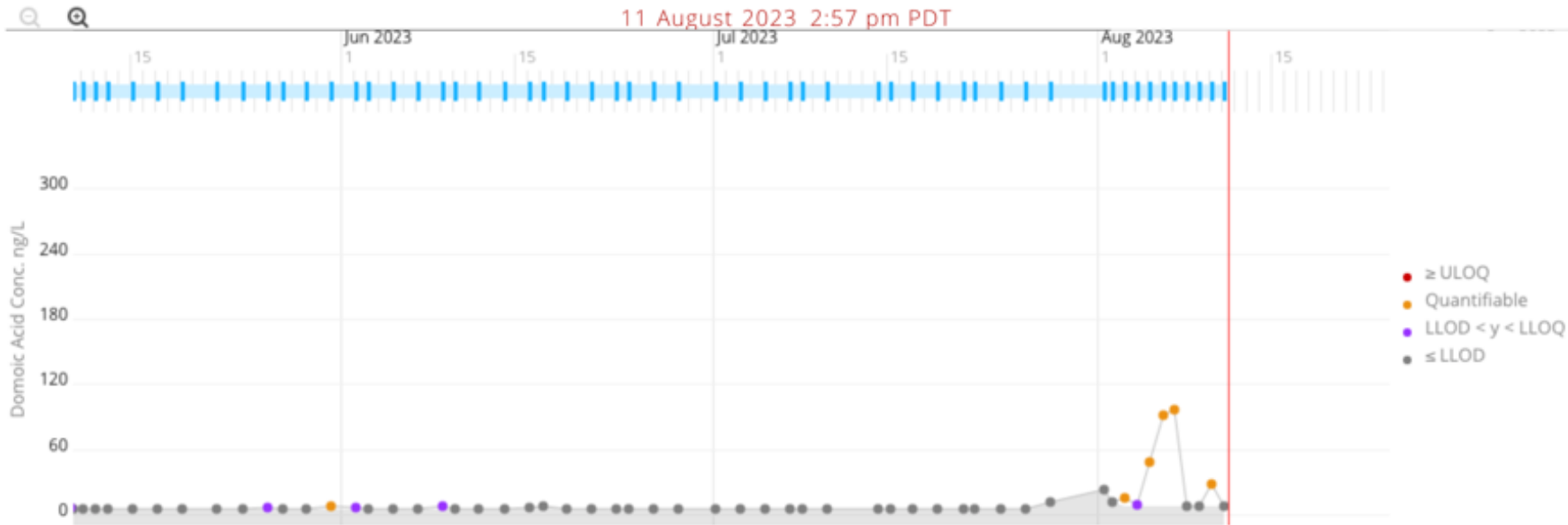




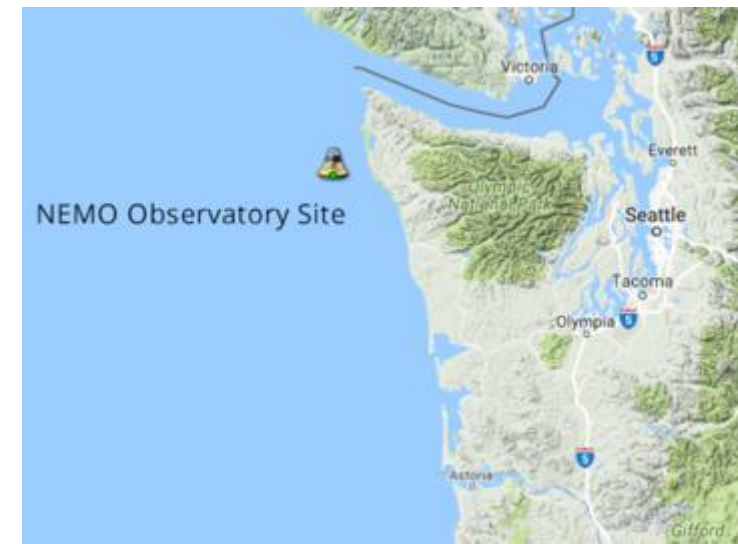
Real-Time HABS provides timely information on harmful algae in the Pacific Northwest. The *Pacific Northwest HAB Bulletin (PNW HAB)* provides an early warning of HABS to coastal shellfish managers. An integrated component of the PNW HAB Bulletin, measurements are made remotely and autonomously by an underwater robot, the ESP, and are available in near-real time in the *ESP Now* section. By detecting both the potentially harmful phytoplankton species as well as the toxin they produce, the ESP gives us early warning of these events.

Domoic Acid Concentration

11 August 2023 2:57 pm PDT



<https://www.nanoos.org/products/habs/real-time>





To summarize:

Coastal conditions

- El Niño persists; heat anomaly in NE Pacific strongest offshore; MHW intensifying, but less so along the coast.
- Offshore WA coastal buoy well over 2 SD warmer; inshore buoy data indicate higher variation but trending upwards.

Puget Sound

- Temperature anomalies switched from cooler to warmer, mid-May heat dome, variable since.
- Salinity anomalies saltier than average except for surface in Hood Canal, likely influenced by river input

Chlorophyll & HABs

- Satellite shows lower than average values except for pockets of strong blooms.
- Domoic acid detected on OR beaches and a spike detected by ESP near La Push, WA.

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NANOOS 20th Anniversary Celebration and Community Event