NOAA West Watch Update

15 August 2023

NANOOS Update

Jan Newton, on behalf of many

www.nanoos.org
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.

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.

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Marine heatwave thresholds exceeded more often as ocean temperatures increase.

**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.

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Fishers might decide to temporarily cease fishing during a brief heatwave.

Resource managers might permanently shift fishing grounds as oceans steadily warm.

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Total heat exposure over time

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

“**Hot relative to then**”

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

“**Hot relative to now**”

**Shifting:** 30 y before current (1993-2022)
Sea Surface Temperature Anomaly
NCEI Optimum Interpolation SST

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

NCEI OI SST 1983-2012

NCEI OI SST 1993-2022

NVS Climatology

Remote Sensing
NCEI OI SST 1983-2012
Water Temp. (Climate)
Water Temp. (Anomaly)
Water Temp. (Mean)

NCEI OI SST 1993-2022
Water Temp. (Climate)
Water Temp. (Anomaly)
Water Temp. (Mean)

June 2023
Sea Surface Temperature Anomaly
NCEI Optimum Interpolation SST

NCEI OI SST 1983-2012

NCEI OI SST 1993-2022

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

Climatology app: https://nvs.nanoos.org/Climatology
Ocean heat wave comes to Pacific Northwest shores

West Coast marine heat wave arrives

Aug 4, 2023 at 10:00 AM | Updated Aug 4, 2023 at 10:00 AM

By Isabella Breda
Scientific Times staff reporter

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

Sea Surface Temperature
Sea Surface Temperature

NDBC Cape Elizabeth  34 yrs
NDBC Stonewall Bank  34 yrs
NDBC Columbia River Bar  37 yrs
NDBC St. Georges  38 yrs

NANOOS:  [www.nanoos.org](http://www.nanoos.org)  Climatology app:  [https://nvs.nanoos.org/Climatology](https://nvs.nanoos.org/Climatology)
Puget Sound Profiling Buoys

Temperature Anomalies

https://nvs.nanoos.org/Climatology
Puget Sound Profiling Buoys

https://nvs.nanoos.org/Climatology

Salinity Anomalies
Puget Sound Profiling Buoys

Oxygen Anomalies

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

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.
www.nanoos.org

janewton@uw.edu
rjcarini@uw.edu

NANOOS 20th Anniversary Celebration and Community Event