

Pacific Northwest Harmful Algal Blooms Bulletin

Sep 29, 2025 HAB risk =

HAB risk key:

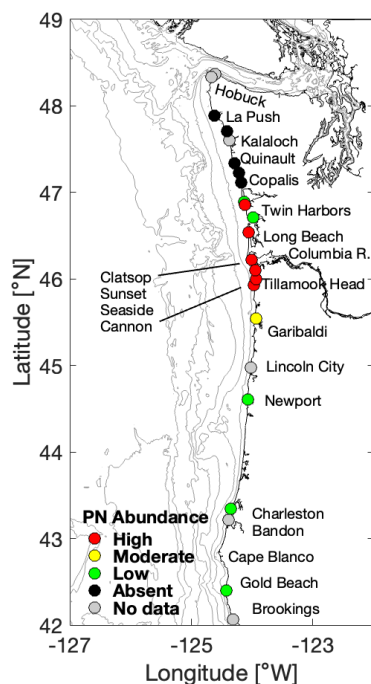
- = low
- = medium
- = high



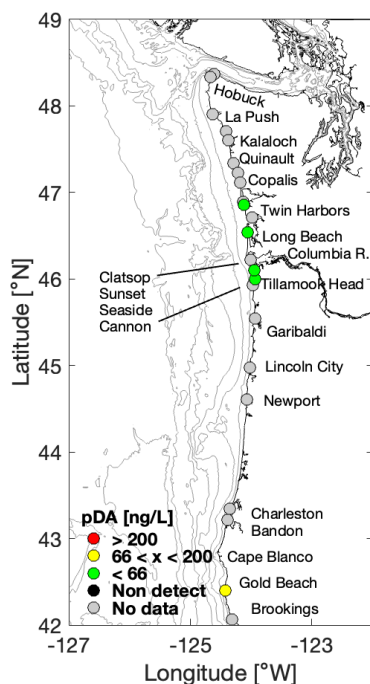
The statements, findings, conclusions, and recommendations do not necessarily reflect the views of NOAA or the Department of Commerce.

Beach Sampling

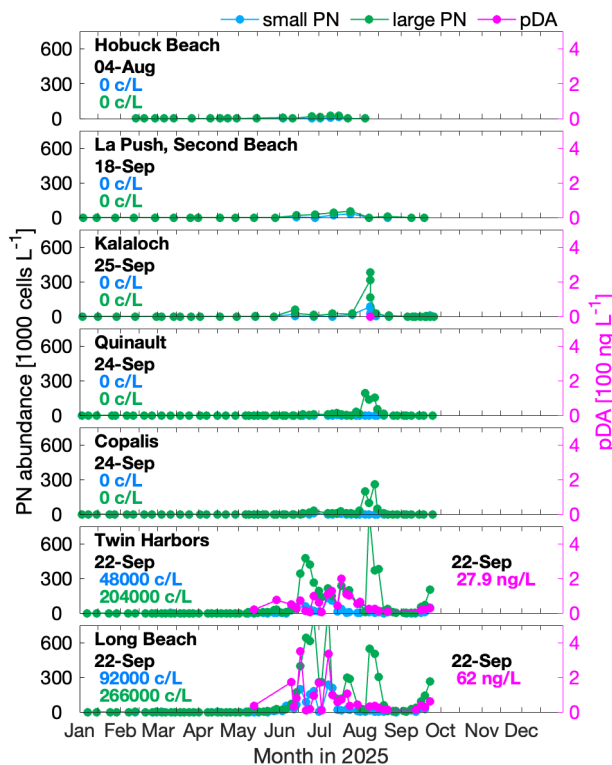
(*Pseudo-nitzschia*)



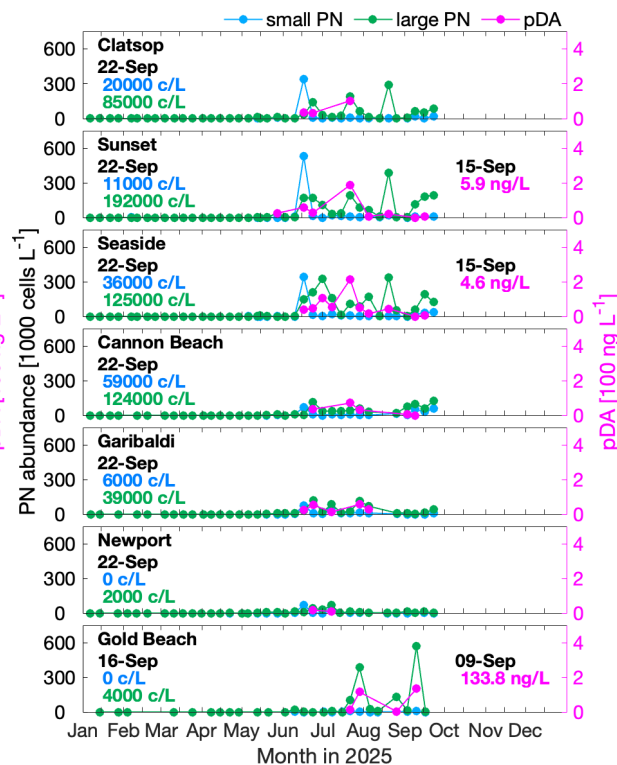
(particulate domoic acid)



WA *Pseudo-nitzschia* & Domoic Acid

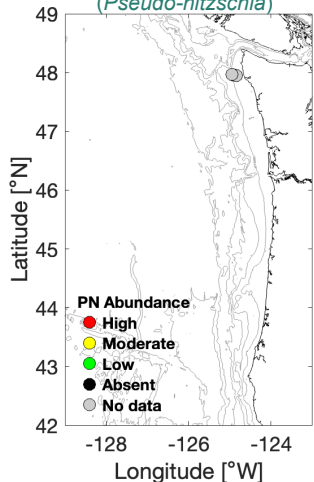


OR *Pseudo-nitzschia* & Domoic Acid

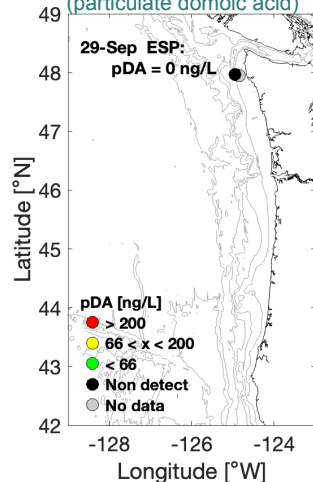


Offshore Sampling

(*Pseudo-nitzschia*)



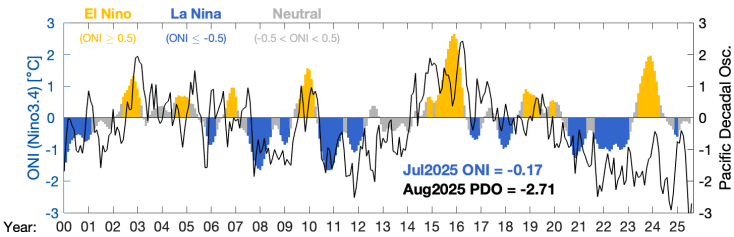
(particulate domoic acid)



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.

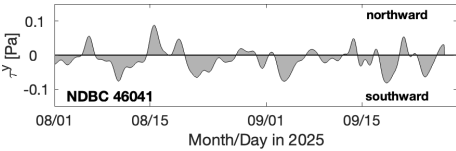
Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA [link](#); OR [link](#)), and not from the information 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



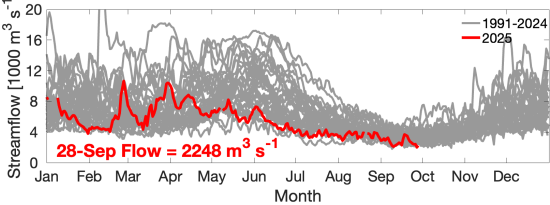
Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm.

North-south Wind Stress



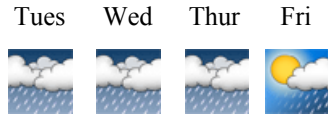
Southward wind stress drives coastal upwelling that can lead to plankton blooms. Northward wind stress tends to push any existing offshore plankton and toxins towards beaches. In addition, summer/fall toxic blooms often occur in years with a moderate cumulative upwelling index (i.e. during years with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

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.

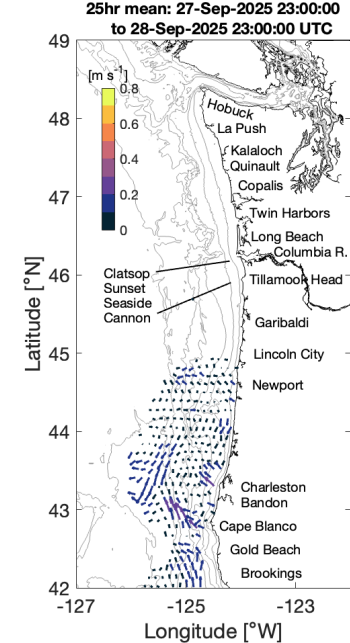
Marine Weather Forecast



Tues - SE wind, 30 kt
Wed - S wind, 25 kt
Thur - S wind, 15 kt
Fri - S wind, 10 kt

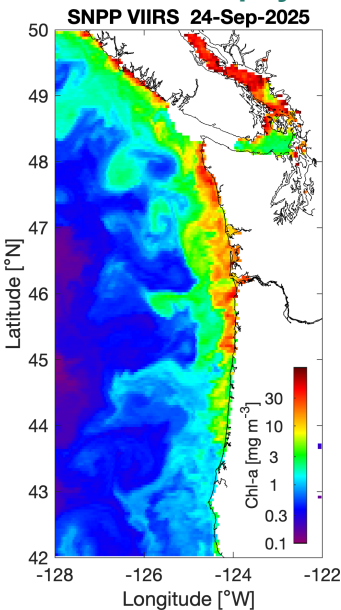
Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.

Ocean Surface Currents



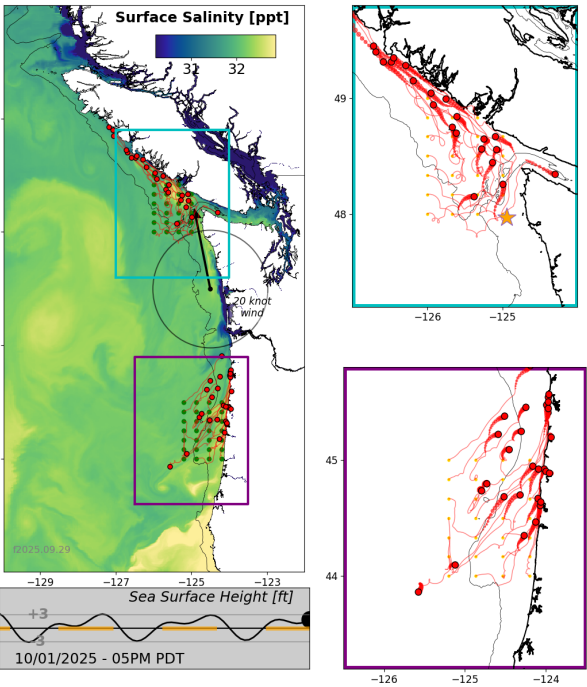
Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction.

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.

Summary - Persistent upwelling conditions have dominated this summer. Throughout the latter half of August and in September, upwelling winds manifested as strong, longer-duration pulses that gave rise to bands of high chlorophyll-a off WA and northern OR (see recent satellite imagery). On Friday, winds began turning northward as the first in a series of fronts approached the coast. A stronger front on Sunday brought northward winds to most of the region north of San Francisco, CA. *Pseudo-nitzschia* (PN) cell concentrations have fluctuated throughout summer, but began increasing again at southern WA and northern OR beaches during the last few weeks. Highest PN concentrations in WA were >200,000 cells/L large cells at Long Beach and Twin Harbors on 22-Sep, with small PN also abundant at lower concentrations. A sample from Sunset Beach, OR, contained similar concentrations (192,000 cells/L large PN) on 22-Sep, while samples collected from Seaside and Cannon Beach, OR, contained large PN >100,000 cells/L on that same date. Researchers aboard the NOAA Ship *Bell M. Shimada* reported low PN concentrations off OR in mid Sep, but concentrations of chain-forming PN as high as ~50,000 cells/L off Crescent City, CA. Seawater particulate domoic acid (pDA) has remained low at most beaches, with the highest values at Long Beach, WA (62 ng/L) on 22-Sep, and at Gold Beach, OR (134 ng/L), on 09-Sep. DA has not been recently detected at the ESP mooring off northern WA. Razor clam DA continues to decrease or remain low. Highest values in WA were at Twin Harbors on 22-Sep (3 ppm). In OR, values had decreased to 37 ppm at Gold Beach, and 8.9 ppm at Coos Bay North Jetty as of 12-Sep; no DA was detected in razor clams from Sunset Beach, OR, as of 26-Sep.

Forecast - A transition from ENSO-neutral to La Niña is likely to occur around November. The PDO remains strongly negative. Northward winds will continue over the coast this week as a large storm impacts the region. The northward winds will be strong and persistent enough to push surface water, and any plankton and toxins, northward and shoreward. Offshore information has been limited, but the persistently low pDA values reported at beaches suggest risk is generally low. Southern OR is an exception; risk is higher there given the possibility of northward transport of chain-forming PN cells recently documented off northern CA and the higher pDA values recently reported at Gold Beach, OR. Caution is therefore advised.