



Pacific Northwest Harmful Algal Blooms Bulletin

Oct 4, 2026 HAB risk =



HAB risk key:

✓ = low

⚠ = medium

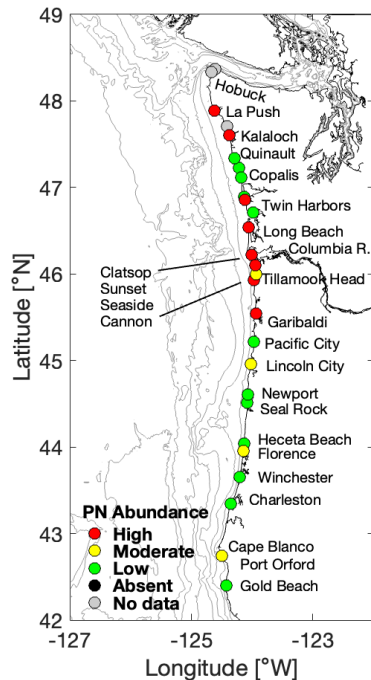
✗ = high



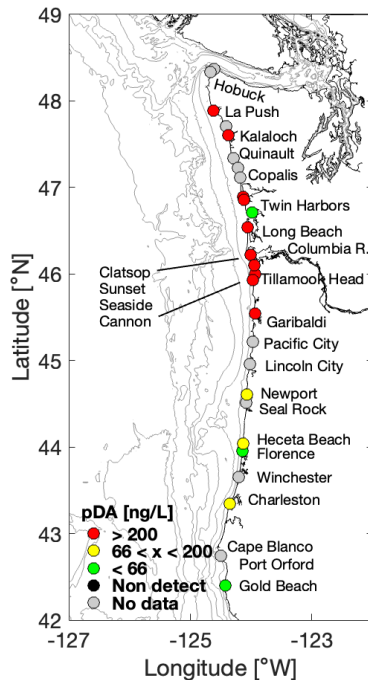
The statements, findings, conclusions, and recommendations do not necessarily reflect the views of NOAA or the Department of Commerce.

Beach Sampling

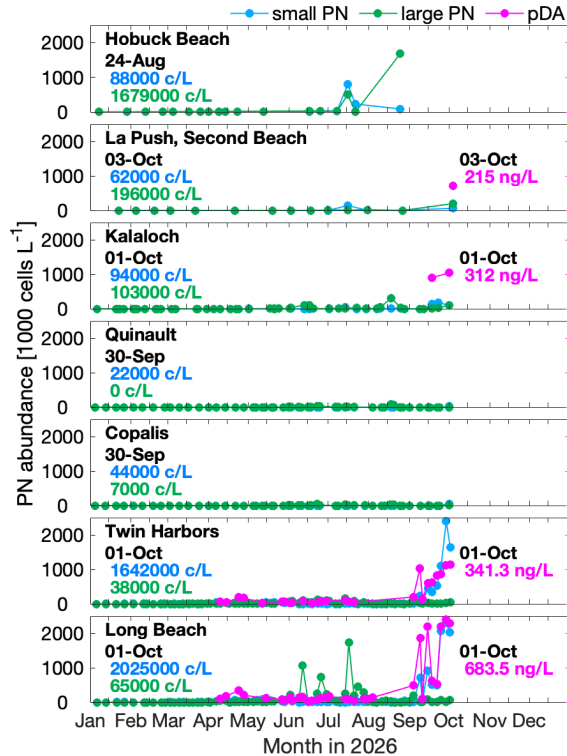
(*Pseudo-nitzschia*)



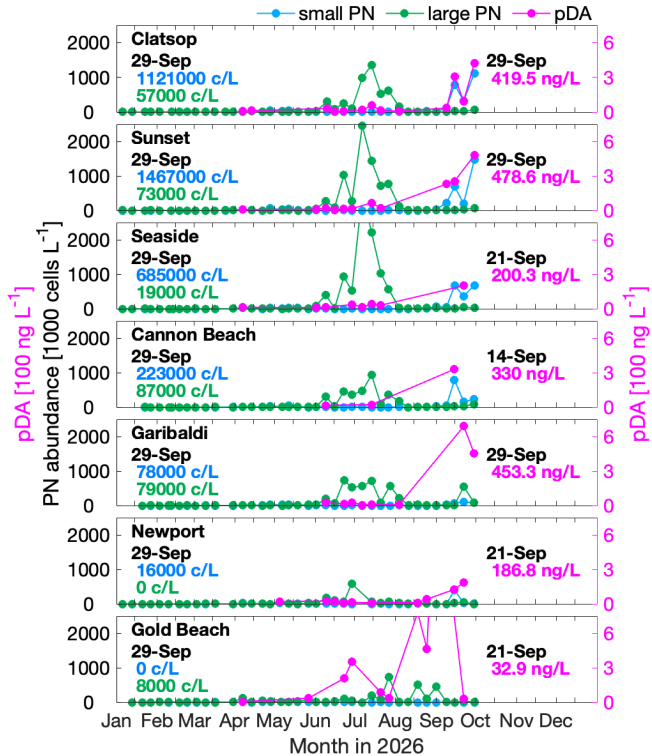
(particulate domoic acid)



WA *Pseudo-nitzschia* & Domoic Acid

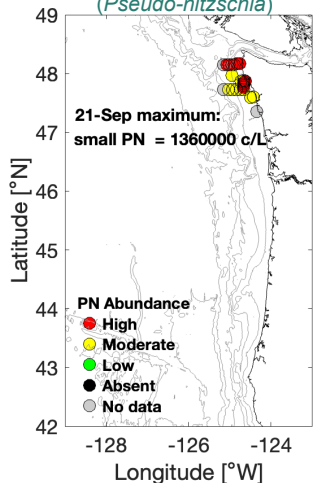


OR *Pseudo-nitzschia* & Domoic Acid

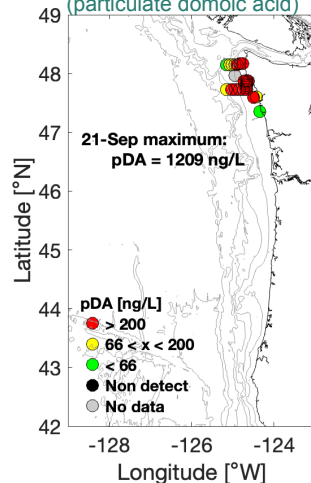


Offshore Sampling

(*Pseudo-nitzschia*)



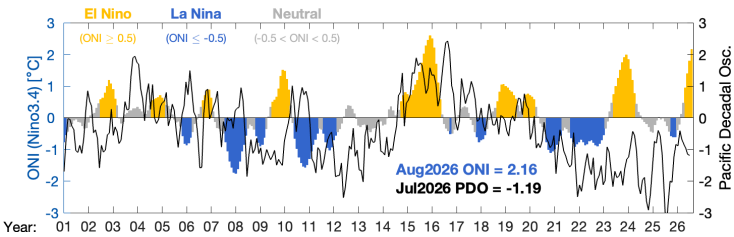
(particulate domoic acid)



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.

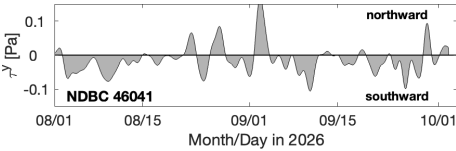
Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA [link](#); OR [link](#)), and not from the information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



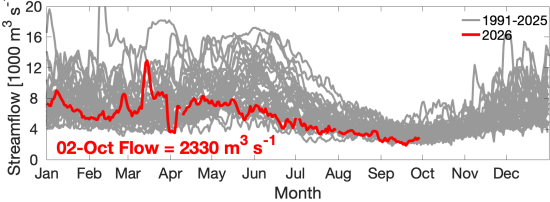
Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm.

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 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

Fri

Sat

Sun

Mon

Mon - NW wind, 5 kt

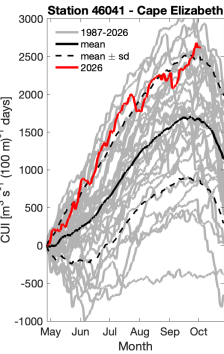
Tues - NW wind, 10 kt

Wed - NW wind, 10 kt

Thur - NW wind, 10 kt

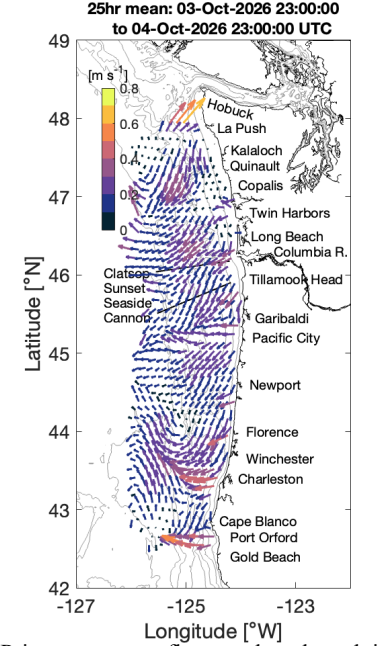
Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.

Cumulative Wind Stress



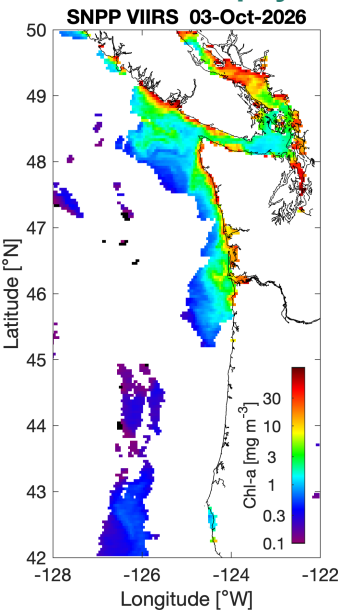
Model predicted sea surface salinity with particles released near the Juan de Fuca eddy and Heceta Bank and tracked three days into the future. Red dots indicate particle end points.

Ocean Surface Currents



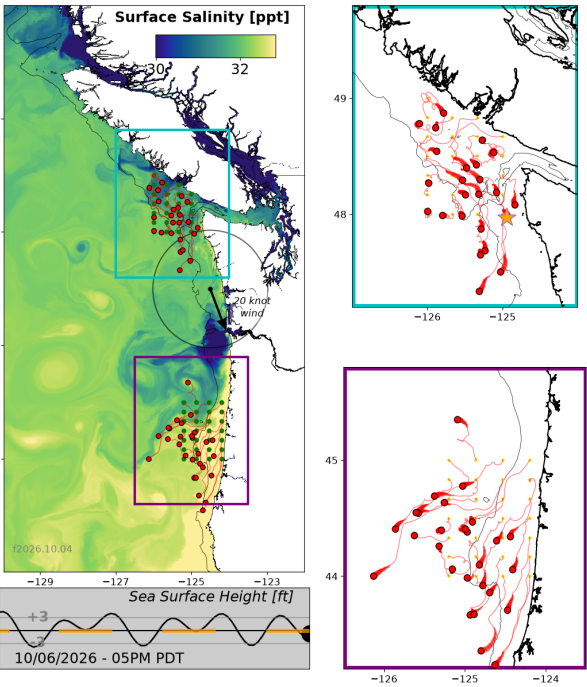
Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction.

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



Summary - Coastal winds turned northward (downwelling-favorable) last week with the passage of a frontal system. Both coastal HF radar and the LiveOcean model indicate a continuation of generally weak surface ocean currents, though net motion along the shelf remains southward. Mid-shelf bottom temperature off Newport, OR, has slowly increased since August and is now ~9.5 °C, indicating a lack of deep upwelling, consistent with the weak along-shelf flow. Moderate chlorophyll-a concentrations continue all along the coast with higher values generally nearshore. *Pseudo-nitzschia* (*PN*) cell concentrations increased at beaches in WA and northern OR this past week. Highest concentrations in WA were at Long Beach (>2,000,000 cell/L) on 24-Sep, where small morphology cells continued to dominate the *PN* assemblage. Small size *PN* concentrations also increased in northern OR, with highest values (~1,500,000 cells/L) at Sunset Beach on 28-Sep. Large *PN* had increased to >100,000 cells/L at northern WA sites (Kalaloch and La Push) as of 3-Oct. Interestingly, large-size *PN* concentrations also increased at northern OR beaches with values as high as 87,000 cells/L of *P. australis*-like cells at Cannon Beach on 28-Sep. *PN* concentrations were much lower at central and southern OR beaches. Seawater particulate domoic acid (pDA) concentrations were elevated at both northern OR (>400 ng/L) and southern WA beaches (>700 ng/L at Long Beach) as of 28-Sep. Particulate DA was also >200 ng/L at Kalaloch and La Push, WA, as of 3-Oct. A NOAA cruise confirmed high concentrations of large and small *PN* offshore of La Push on 28-Sep. Razor clam DA values from WA have not been updated since last week (highest values of 5 ppm were at Long Beach on 11-Sep). In OR, DA had increased to 44 ppm at Sunset Beach, well over the regulatory limit of 20 ppm, as of 2-Oct.

Forecast - A strong El Niño is currently developing and is predicted to strengthen through the end of the year. The PDO remains negative. Coastal winds turned southward (upwelling-favorable) on Saturday. Forecasts suggests winds should remain southward through most of the week. Longer-term forecasts suggest the possibility of northward wind reversals near the week's end that could push toxins shoreward and northward. Given this, the fact that pDA remains high at WA and northern OR beaches, and the additional observations of increasing concentrations of large-size, *P. australis*-like *PN* cells, perceived risk remains very high.