



Pacific Northwest Harmful Algal Blooms Bulletin

Apr 07, 2025 HAB risk =

HAB risk key:

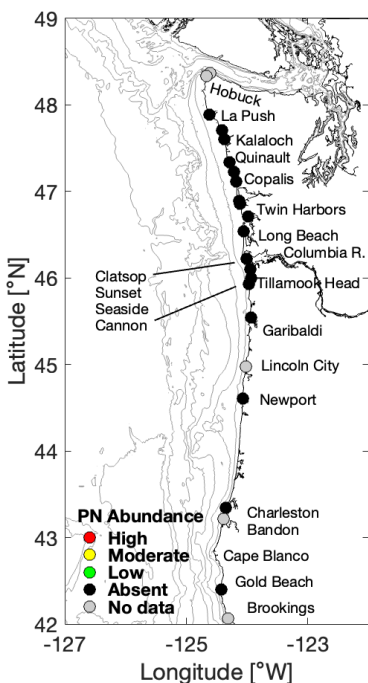
- = low
- = medium
- = high



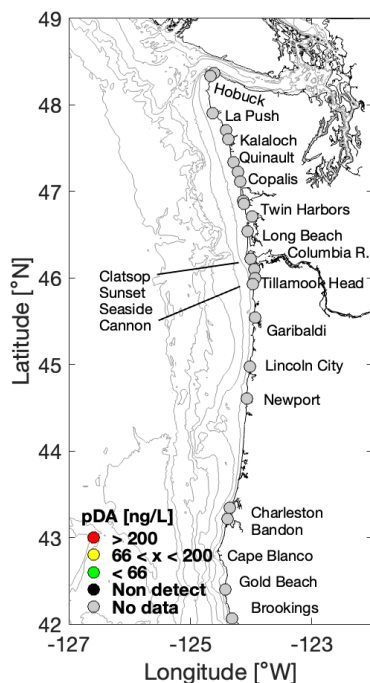
The statements, findings, conclusions, and recommendations do not necessarily reflect the views of NOAA or the Department of Commerce.

Beach Sampling

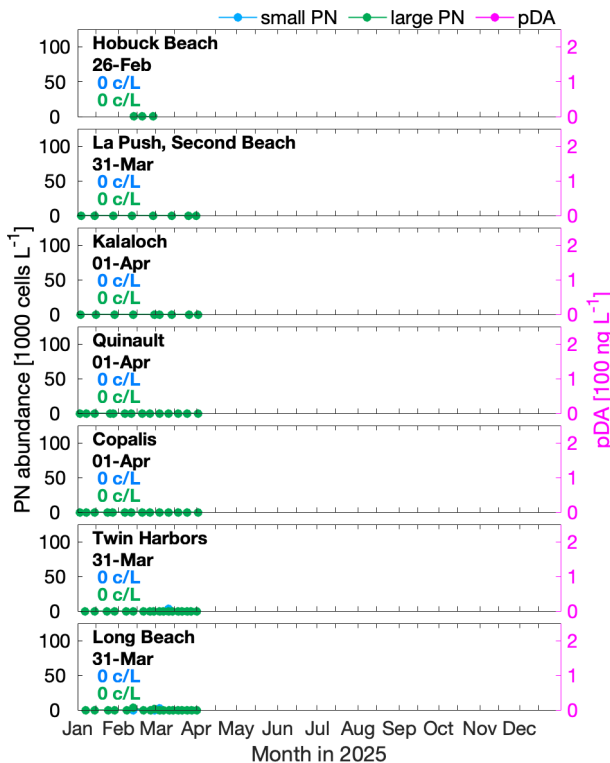
(*Pseudo-nitzschia*)



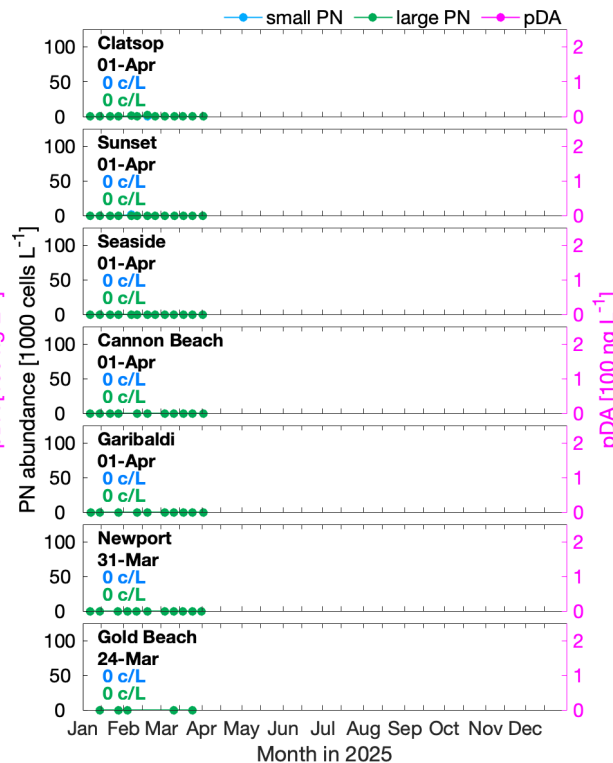
(particulate domoic acid)



WA *Pseudo-nitzschia* & Domoic Acid

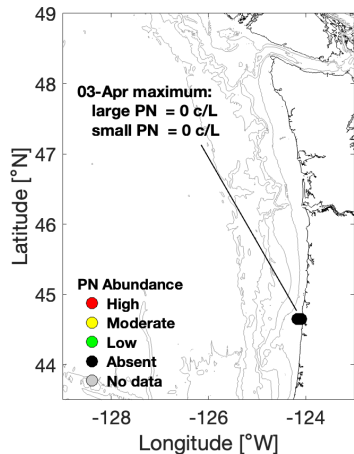


OR *Pseudo-nitzschia* & Domoic Acid

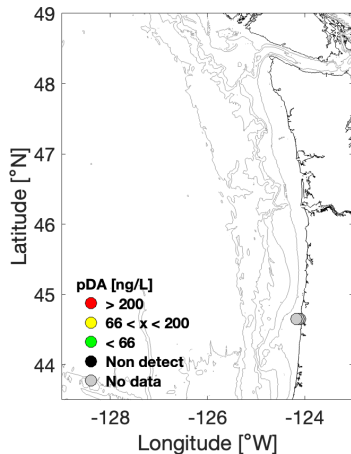


Offshore Sampling

(*Pseudo-nitzschia*)



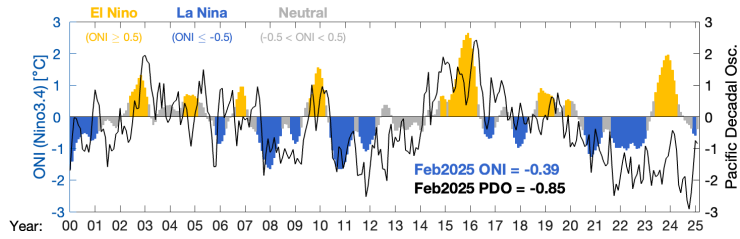
(particulate domoic acid)



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.

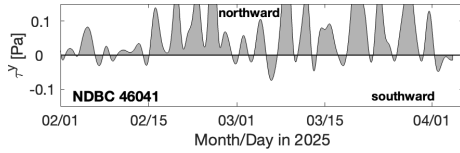
Decisions regarding shellfish harvest closures at individual beaches are made by the Washington Department of Health, the Oregon Department of Agriculture, and Coastal Treaty Tribes after measuring toxin levels in shellfish collected from each beach (WA [link](#); OR [link](#)), and not from the information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



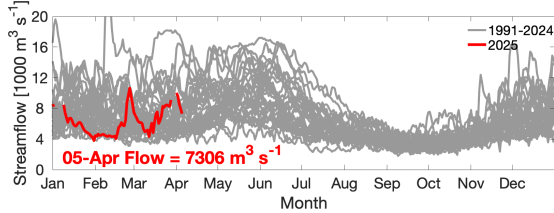
Research has shown that toxic HAB events off WA and OR tend to occur during or following periods of El Niño and/or positive phases of the PDO, when ocean temperatures are relatively warm.

North-south Wind Stress



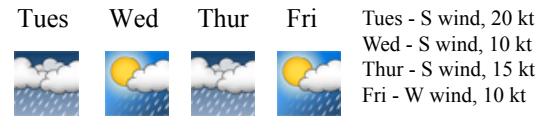
Southward wind stress drives coastal upwelling that can lead to plankton blooms. Northward wind stress tends to push any existing offshore plankton and toxins towards beaches. In addition, summer/fall toxic blooms often occur in years with a moderate cumulative upwelling index (i.e. during years with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

Columbia River Discharge



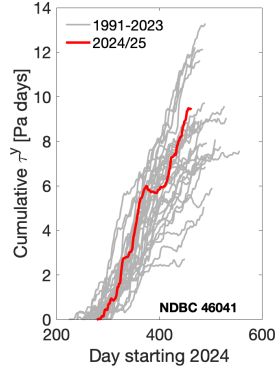
The Columbia River plume can help transport HABs and toxins from the south, northward along the WA coast. However, the plume can also serve as a protective barrier by preventing offshore toxins from reaching beaches.

Marine Weather Forecast



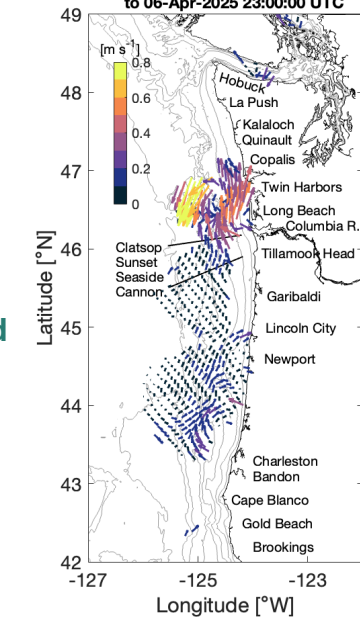
Fair weather can support plankton blooms whereas storms can concentrate any plankton and toxins on beaches.

Cumulative Wind Stress



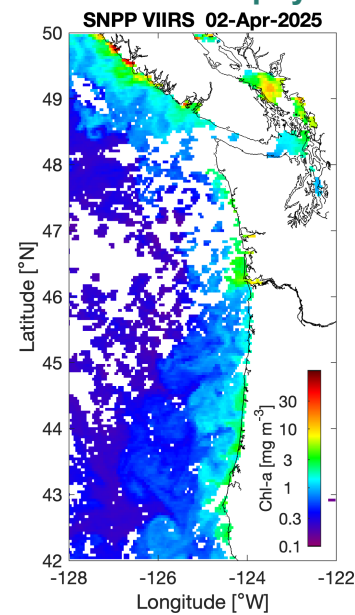
Ocean Surface Currents

25hr mean: 05-Apr-2025 23:00:00 to 06-Apr-2025 23:00:00 UTC



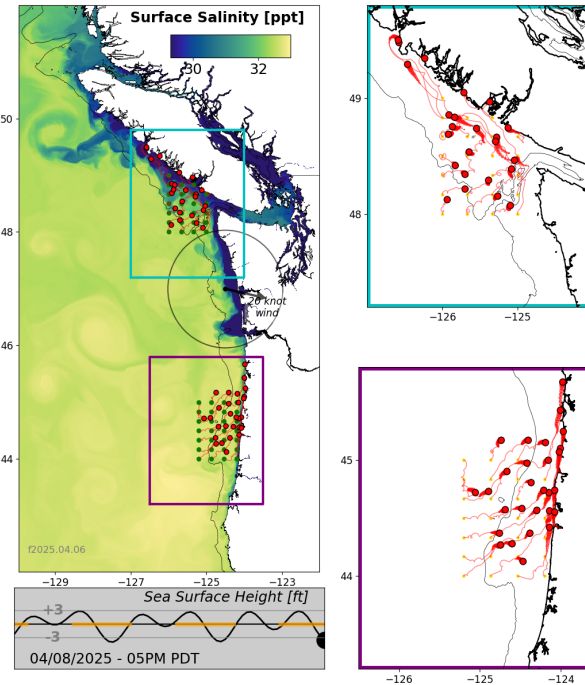
Primary currents flow north and south in winter and summer, respectively, except within ~10 km of shore, where fluctuations follow changes in wind direction.

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 - An extended period of clear, upwelling-favorable conditions in January and early February gave way to numerous storms from mid-February through March. Relatively weak upwelling-favorable winds returned this past week, but they were interrupted by another storm front this weekend and a return to downwelling-favorable conditions. Recent satellite imagery show moderate chlorophyll-a concentrations off both WA and OR. The LiveOcean model indicates that the Columbia River plume remains north along the WA coast. Mid-shelf bottom temperature is relatively warm. All signs indicate that the spring transition to seasonal upwelling has not yet occurred. *Pseudo-nitzschia* (PN) cells have appeared only intermittently and in low concentrations at southern WA beaches over the past few weeks; some net tow samples in March were reported as *P. australis*-like cells. The highest PN concentrations so far were 6,000 cells/L of small size PN at Westport on 13-Mar, but PN have been absent from most samples in both WA and OR. Samples collected offshore of Newport, OR, on 3-Apr also contained no PN. Given the low PN concentrations, seawater particulate domoic acid (pDA) has not yet been quantified at beaches or offshore. Razor clam DA values have been low throughout WA, with highest concentrations of 4 ppm at Willapa Bay on 1-Apr, and 2ppm or less at other sites. In OR, razor clams as far north as Newport have not depurated sufficient toxins from the 2024 DA event to allow for safe harvests. Recent values were 33 ppm at Newport Agate Beach and 36 ppm at Coos Bay on 4-Apr. DA was not detected at Sunset Beach, OR on 4-Apr.

Forecast - The current La Niña is weakening and ENSO neutral conditions are expected by summer. The PDO index remains negative. Predominantly downwelling-favorable winds are expected through the remainder of the week, with stronger systems impinging the coast on Tues and Thurs. Longer-term forecasts suggest the possibility of upwelling-favorable conditions next week, but those forecasts remain uncertain. A shift to large-scale upwelling is unlikely to occur before the start of anticipated digs on 12-Apr, suggesting low risk of a PN HAB prior to the weekend. During the following week, any sustained periods of strong southward winds (e.g., three days or more) followed by weak or northward winds could increase risk, so pDA testing is recommended if PN cells begin to increase substantially.