

View the anomalous Pacific seawater temperatures in NANOOS' new "Climatology App"

You may be hearing about warmer than average seawater temperatures in the NE Pacific Ocean. Last year, University of Washington atmospheric scientist and Washington State Climatologist Nick Bond named the large mass of warm ocean water off the Pacific Northwest coast "[the Blob](#)." But is this phenomenon still occurring? How much warmer are these waters? Is there variation along the coast from Washington to Oregon? All of these questions now can be answered by using a new web application developed by the Northwest Association of Networked Ocean Observing Systems ([NANOOS](#)), the Climatology App: <http://nvs.nanoos.org/Climatology>.

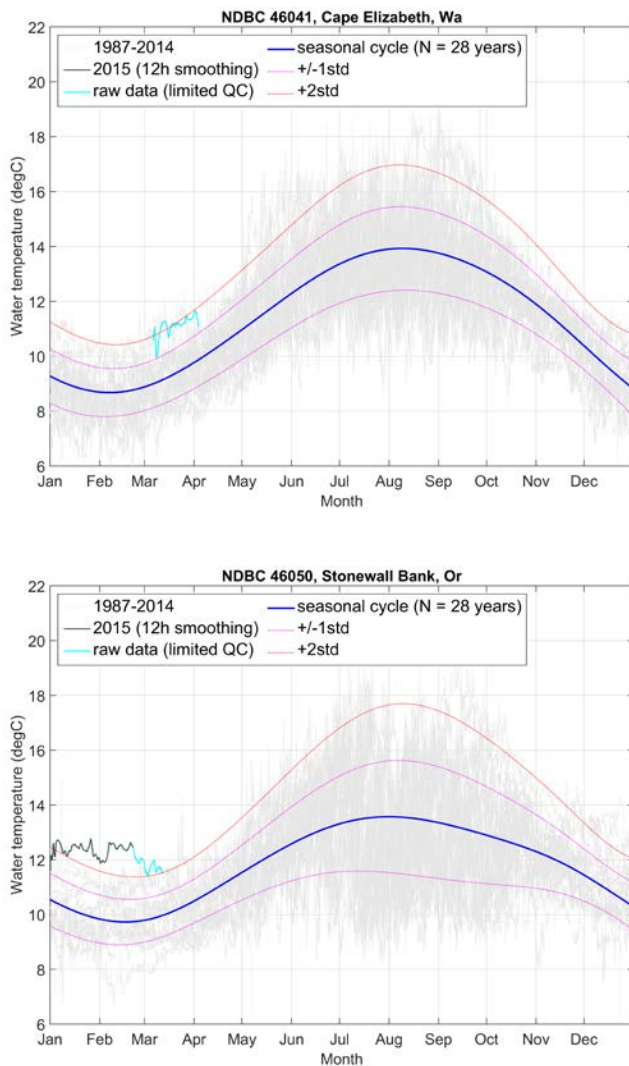


Figure 1. NDBC Stations 46041 (top) and 46050 (bottom) sea surface temperature data for 2015 (cyan and black lines), which are currently approximately two standard deviations above normal (blue line). The light grey lines show all of the data collected between 1987 and 2014.

Within the Climatology app, you can click on a buoy icon and view the normal (aka "climatology") seasonal water temperature, its typical variation on a monthly basis (shown by 1 and 2 standard deviations), and the currently measured data. The plots show that the present data's departure from normal (aka "anomaly") is quite large! Most of these offshore buoys show that the current water temperatures offshore the Pacific Northwest coast are in excess of 2 standard deviations above normal. A look at the buoys off Cape Elizabeth, WA, and Stonewall Bank, OR, (Figure 1) shows sea surface temperatures that are 2-3°C or 3.5-5.5°F above average, based on 28 years of data. NANOOS, part of the US Integrated Ocean Observing System or [IOOS](#), developed this app in order to better show patterns and trends developed from various data sources including [National Data Buoy Center](#) buoys and C-MAN land based stations, as well as satellite data collected over the past two decades; NANOOS plans to extend the analysis to other regional buoys and moorings in Washington and Oregon.

You can view average and current values for other variables including wind, waves, and air temperatures for various locations in Washington, Oregon, and Northern California. Are air temperatures in Seattle and Newport similarly warmer than usual? A click on the NOAA "[C-MAN](#)" land-based weather stations reveals the answer.

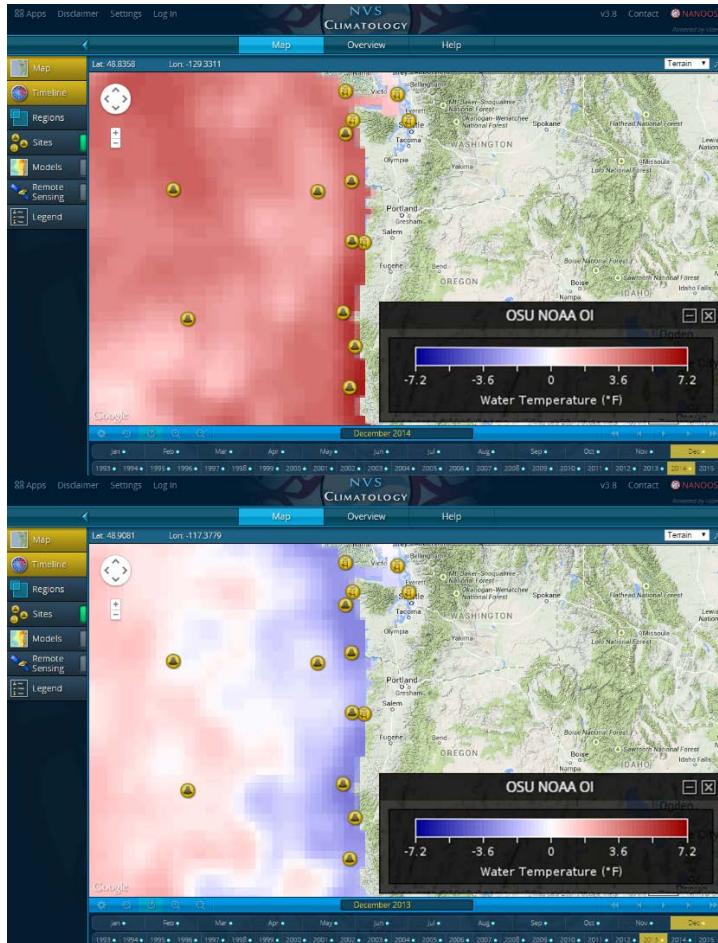


Figure 2. December 2014 (top) and 2013 (bottom) sea surface temperature anomaly fields. Temperatures in December 2014 were more than 6°F warmer than normal while in December 2013 they were slightly cooler than normal.

The NANOOS app also presents a bird’s eye view of surface seawater average (climate) and departure from normal (anomaly) conditions from satellites, averaged over a given month. Figure 2 shows how conditions last December 2014 compare with those in December 2013.

Monthly average temperatures that are normal show as white, while those cooler are blue and warmer are red. While the seawater temperatures that are much warmer than average in 2014 and 2015 are capturing much attention now, the app also provides similar views for winds, sea-level, chlorophyll, and salinity. Each overlay is based on a different satellite, observation, or model provided from various sources including NASA and various NOAA Centers: National Center for Environmental Prediction, National Ocean Data Center, and National Climate Data Center.

Viewing our current-day data compared to long-term averages is an important base for understanding the status of our ecosystem. How will these anomalous seawater temperature conditions translate to

chemical or biological aspects of the Pacific? What is causing these conditions? These two questions cannot be fully answered [yet](#), but the IOOS and partners are convening scientific workshops to address them. The first [workshop](#) will be held in San Diego in early May, congregating scientists from Alaska to Mexico and across to the Pacific Islands. Scientists who observe and model both the open ocean and coasts (like NANOOS) will meet with atmospheric scientists to better understand this phenomenon. In the meantime, watch it develop in our Pacific Northwest region with this new data presentation!