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Improving access to ocean and coastal data: How the Northwest Association of Networked Ocean Observing Systems serves the Pacific Northwest

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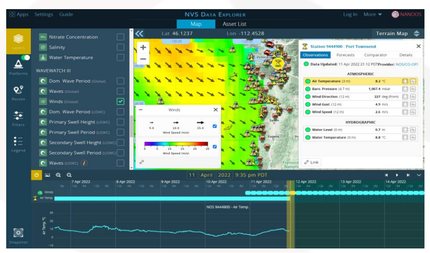
IOOS and NANOOS

The **U.S. Integrated Ocean Observing System (IOOS)** is a national effort designed to enable the broadest access to ocean data, tools, products, and knowledge. IOOS provides coordination of people, technology, and data from eleven Regional Associations around the country so that information is comprehensive, consistent, usable, and freely available to inform decision making.

NANOOS, the Northwest Association of Networked Ocean Observing Systems, manages and operates the PNW region of IOOS, integrating data assets from many providers in Oregon, Washington, Northern California and British Columbia including local, county, state, tribal, federal and Canadian government agencies, private industries, regional partnerships, non-profits, and academic groups.

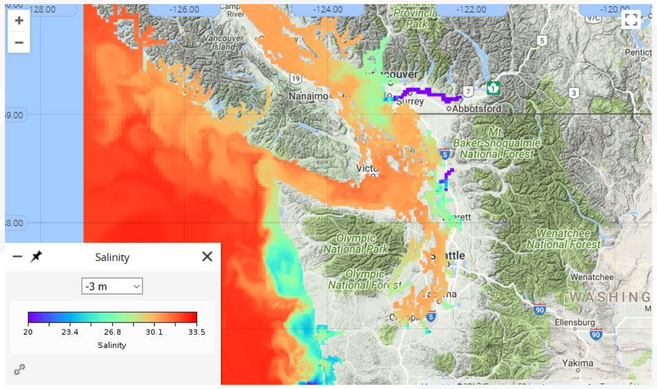
NANOOS Visualization System (NVS): *Providing Data Access*



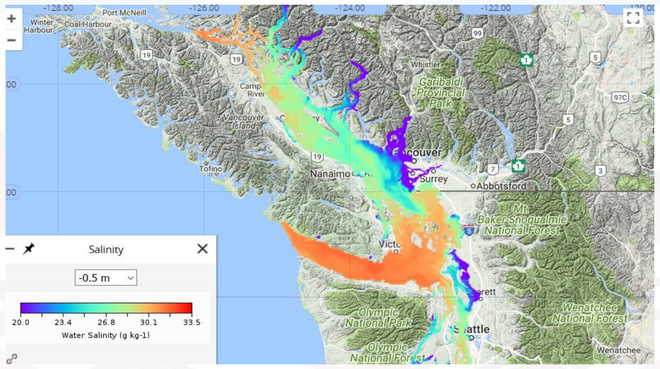
The NANOOS Visualization System (NVS) is a Google-Maps based interface that features data and forecasts including:

- Near real-time observations from fixed and mobile platforms
- Forecasts from federal and regional modelers
- Satellite data and forecast layers
- HF Radar surface current data
- Glider and cruise data
- Beach and shoreline mapping
- Tsunami Evacuation Zone maps
- Climatologies and anomalies

Models and Forecasts



LiveOcean provides overlays of water quality and ocean acidification variables such as nitrate and oxygen concentration, salinity, phytoplankton, pH and aragonite saturation at different depths.



UBC SalishSeaCast provides overlays of salinity and water temp at depth, and OSU ROMS provides pycnoclines and thermoclines at depth.

Contact NANOOS

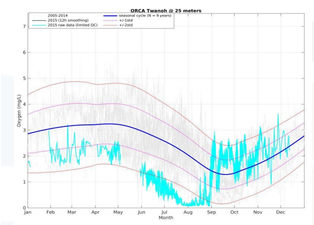
We welcome input and feedback on what exists now within NVS and what users would like to see in the future. Contact the NVS team:
http://nvs.nanoos.org/ContactUs

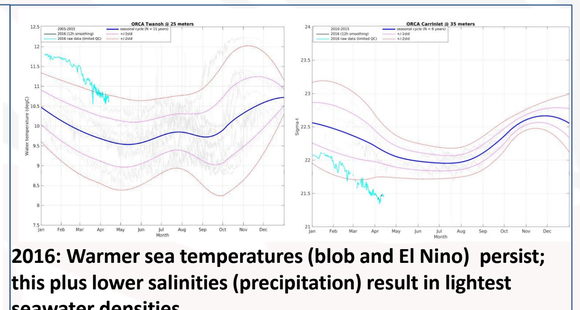
www.nanoos.org

Researchers: "*How different are conditions?*"

The NVS Climatology app compares present observations with data from previous years. We feature data from satellites and buoys and weather stations, showing the long-term conditions (climatology) and the departure from that mean (anomaly), enabling a quick understanding of how different current conditions are from typical.

2015: Hood Canal extreme hypoxia; flushing 6-wk early

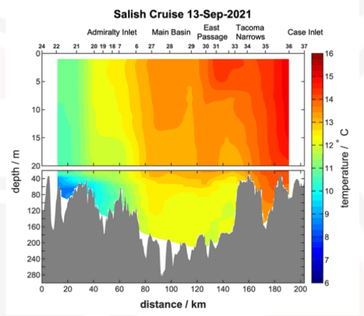




2016: Warmer sea temperatures (blob and El Nino) persist; this plus lower salinities (precipitation) result in lightest seawater densities

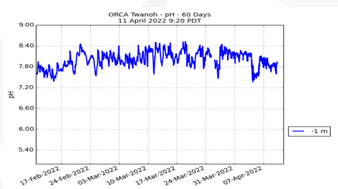
"What were conditions in a given year?"

The **NVS Salish Cruises** app provides access to data and contour plots from cruises that have taken place seasonally since 1998 at more than 40 stations within the Salish Sea and out to the coast.



Chemical and physical variables are available including - temperature, salinity, oxygen, nutrients, chlorophyll, DIC, pH, TA, Omega, and PAR. Data are presented as individual casts and as cross-sections.

Shellfish Growers: "*Should I seed the beach?*"



The **NVS Shellfish Growers** app, highlights sensors that yield a **near real-time understanding of how suitable conditions, such as temperature and pH, are for growing shellfish**.

It enables views of stacked plots to compare variables. Overlays include satellite remote sensing of water temperature and chlorophyll. Recent additions include WA DOH seasonal sensors and OA related data streams.