Northwest Association of Networked Ocean Observing Systems

The Integrated Ocean Observing System (IOOS)
Regional Association for the Pacific NW

IOOS
INTEGRATED OCEAN OBSERVING SYSTEM

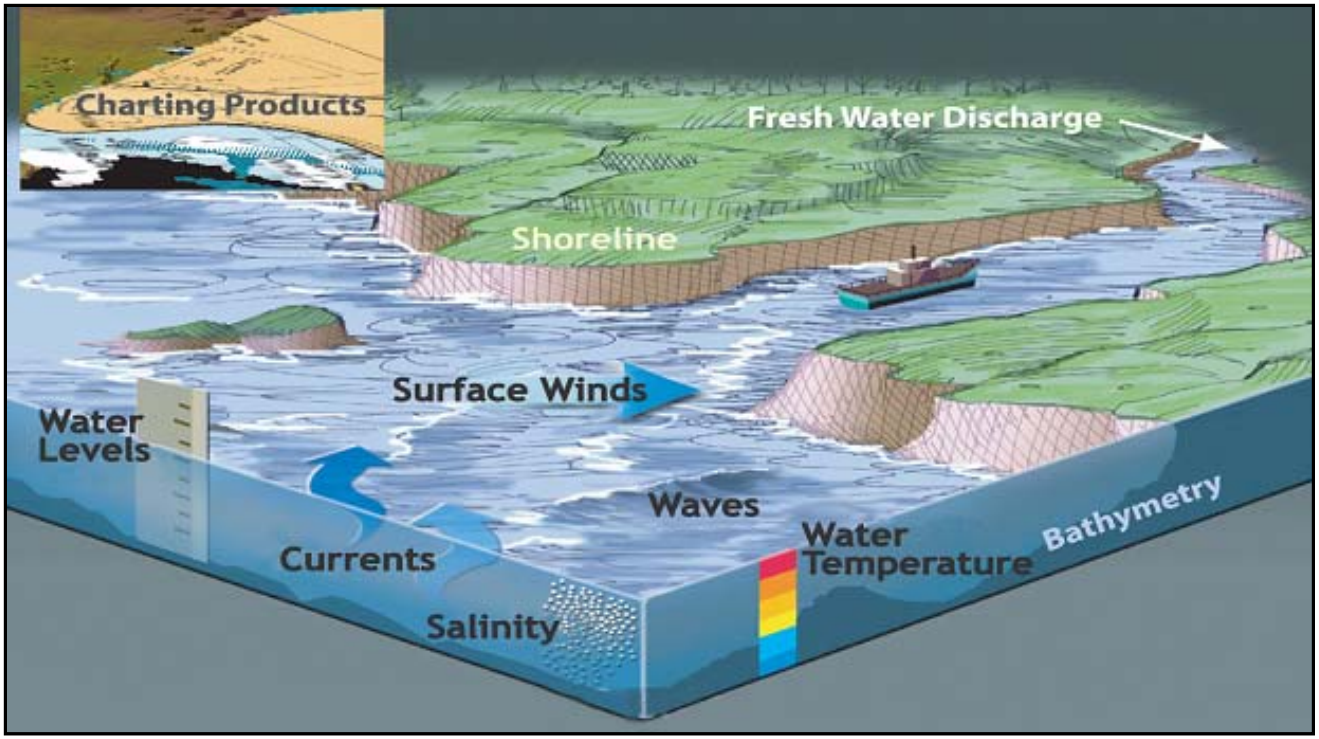
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

www.nanoos.org
www.ioos.gov

What is NANOOS?

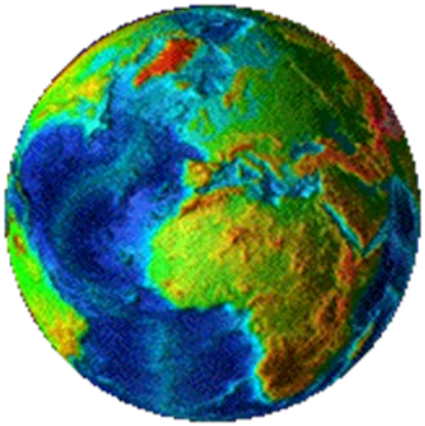
- A regional organization through which
  - to integrate and sustain existing ocean observing capability,
  - to strategize for new operational observing systems, and
  - to provide easy access to data, data products, model forecasts, etc. about regional marine conditions
  - via a **user-driven** regional coastal **ocean** observing system
    - "ocean" includes inland marine waters *(head of tide to EEZ)*
    - "user-driven" means users define priorities, delivery
- A system designed to produce and disseminate ocean observations and related products deemed necessary to the users, in a common manner and according to sound scientific practice

The challenge!



We are limited and poorly coordinated with respect to environmental data supporting fundamental societal needs

How do we address this issue?



Build a system to deliver: Integrated and Sustained Ocean Observations

Goal: to coordinate the development of an operational, integrated, and sustained ocean observing system to routinely, reliably, and continuously provide data and information required to address seven goals:

- Detect and forecast oceanic components of climate variability
- Facilitate safe and efficient marine operations
- Ensure national security
- Manage resources for sustainable use
- Preserve and restoring healthy marine ecosystems
- Mitigate natural hazards
- Ensure public health

March 2009: President signs the Public Lands Management Act. Act authorizes for IOOS as a formal program.

NANOOS

NORTHWEST ASSOCIATION OF NETWORKED OCEAN OBSERVING SYSTEMS

WASHINGTON - OREGON - NORTHERN CALIFORNIA

NANOOS Governing Council Members

1. Ocean Inquiry Project
2. OR Dept of Land Conservation & Development
3. Surfrider Foundation
4. The Boeing Company
5. Oregon State University
6. Puget Sound Partnership
7. University of Washington
8. WET Labs, Inc.
9. Oregon Health and Sciences University
10. Quileute Indian Tribe
11. OR Dept of Geology and Mineral Industries
12. Humboldt State University
13. Marine Exchange of Puget Sound
14. WA Dept of Ecology
15. Pacific Northwest National Laboratory
16. Port of Newport
17. Puget Sound Harbor Safety Committee
18. Sound Ocean Systems, Inc.
19. Council of American Master Mariners
20. Hood Canal Salmon Enhancement Group
21. Pacific Northwest Salmon Center
22. Northwest Indian Fisheries Commission
23. Sea-Bird Electronics, Inc.
24. Western Association of Marine Laboratories
25. Science Applications International Corporation
26. OR Dept of Fish and Wildlife
27. King County Dept Natural Resources & Parks
28. Quinault Indian Nation
29. Western Resources and Applications
30. OR Dept of State Land
31. Columbia River Crab Fisherman's Association
32. Port of Neah Bay
33. Northwest Research Associates
34. Pacific Ocean Shelf Tracking Project
35. WA Dept of Fish and Wildlife
36. Northwest Aquatic and Marine Educators
37. Seattle Aquarium
38. NOAA Northwest Fisheries Science Center
39. Port Gamble S'Klallam Tribe
40. The Nature Conservancy
41. Portland State University
42. NOAA Olympic Coast National Marine Sanctuary
43. VENUS/U Vic

- Tribal Government
- Federal/State/Local Government
- Industry
- Academia/Research
- NGO

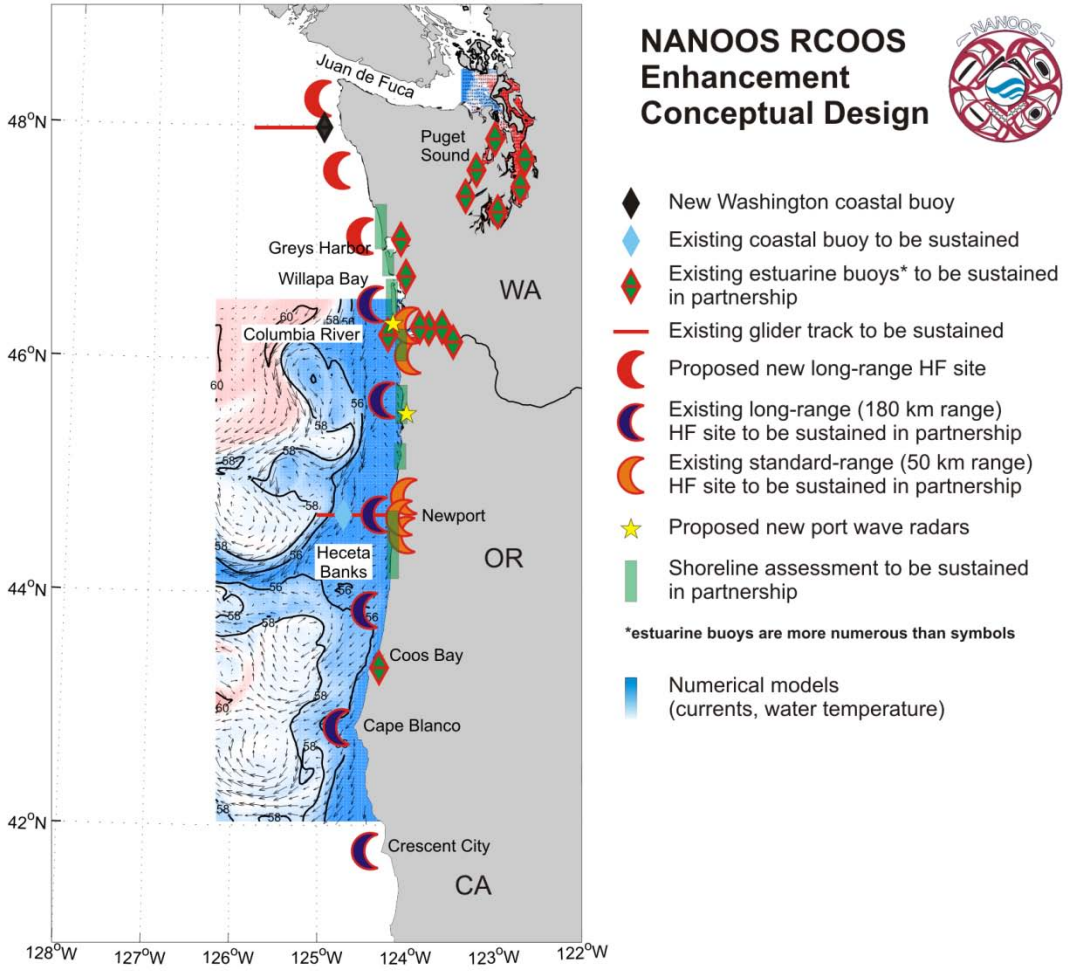
Stakeholder Priorities

The NANOOS GC selected four areas from among results of numerous regional workshops as the highest regional priorities because "these issues represent those having the greatest impact on PNW citizenry and ecosystems and, we believe, are amenable to being substantively improved with the development of a PNW RCOOS":

- Maritime Operations
- Ecosystem Impacts, including hypoxia and HABs
- Fisheries
- Mitigating Coastal Hazards

These priorities were put forth in our NANOOS proposal and are being addressed by the development of our regional coastal ocean observing system (RCOOS).

Regional scope:



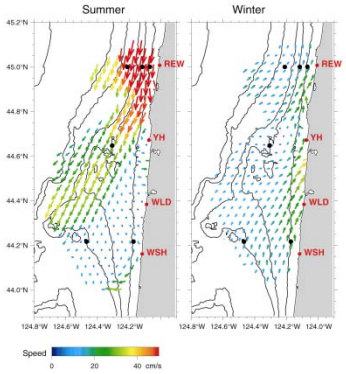
NANOOS 2007 proposal ranked top three. Awarded funds totaling $9 million over three years. Funding reduced by 66% due to federal shortfall.

NANOOS presently supports:

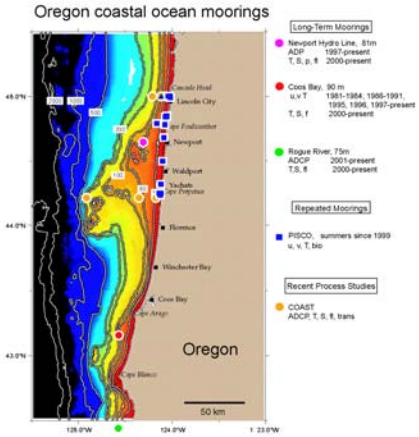
- OR coastal shelf buoy and glider (Newport Line)
- OR coastal shelf currents (HF)
- Puget Sound, Columbia River, Willapa and Coos Bays, and Grays Harbor moorings/buoys
- WA and OR shoreline profiles

Funds for the WA coastal shelf were cut (buoy) or eliminated (HF)

NANOOS RCOOS Objectives

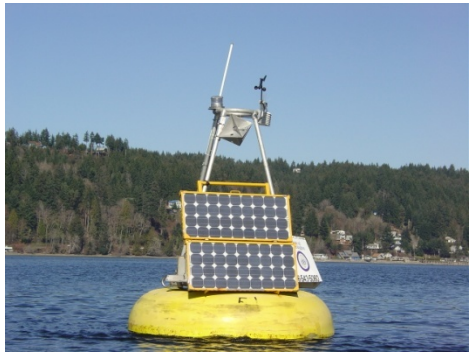


Current mapping

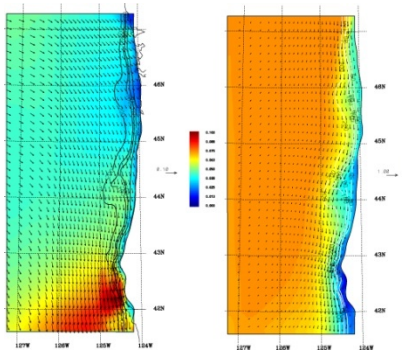


Shelf moorings

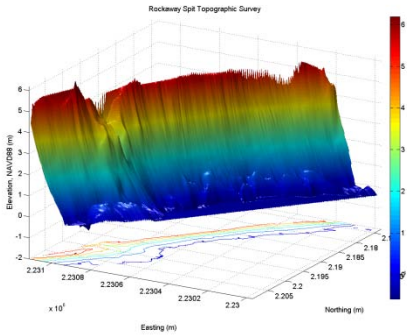
Beach/shoreline monitoring



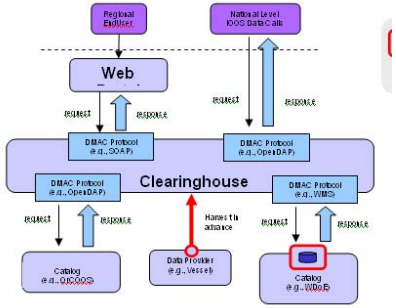
Estuary monitoring



Circulation models



Shoreline change models



Data Management & Communications

Education/Outreach

User products:

- Maritime Operations
  - Puget Sound Boater Information System
  - Forecasts (wave, tide, currents, weather)
- Regional Fisheries
  - Forecasts (temperature, currents)
  - PaCOOS Ecosystem reports & Habitat server; CROOS, TOPPS links
- Coastal Hazards
  - Forecasts (currents, waves)
  - Shoreline data (DOGAMI, *WDOE, OSU*)
- Ecosystem Impacts
  - Water quality data (Shellfish Growers, “Pilot” Estuarine obs)
  - Ocean acidification (with NOAA PMEL)
  - HABs (Biotoxin Bull., *regional page: Sound Toxins, ORHAB, MOCHA*)
  - Hypoxia *(regional page: OrCOOS, HCDOP)*

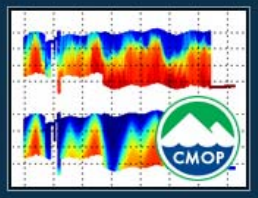
www.nanoos.org

Products

Show Products that Contain ALL of the Following:

Regions	☑ Washington	☐ Oregon	☐ California	All
Data Types	☑ Observation	☐ Model / Forecast		None
Variables	☐ Bathymetry	☐ Dissolved O2	☑ Salinity	☑ Temperature
	☐ Bottom Character	☐ Ocean Color	☐ Sea Level	☐ Tides
	☐ Contaminants	☐ Optical Properties	☐ Surface Currents	☐ Wind Direction
	☐ Dissolved Nutrients	☐ Pathogens	☐ Surface Waves	☐ Wind Speed
Keywords				Clear

5 Matches (out of 50 Products)



CMOP DataMart

Center for Coastal Margin Observation & Prediction

- Flexible data access — not just canned, pre-generated images.
- Coverage — online access to the entire CMOP observation archive, not just current observations.
- Specificity — access just what you need when you need it; no need for bulk downloads.

Marine Water Monitoring

WA State Dept. of Ecology Environmental Assessment Program assesses surface and ground waters and identifies threatened or impaired waters, utilizing a statewide network of stations in rivers, streams, and estuaries. Historical water quality observations available.

NANOOS Buoy Locations

Interactive plot of NANOOS buoys.

OpenIOOS Real-Time Data Display

The Real Time Data Display uses standards from OGC to display data from sensor platforms in near realtime. This website is a testbed for interoperability between data providers. Data for the Pacific Northwest is provided by NANOOS via the NANOOS SOS service.

Puget Sound ORCA

Oceanic Remote Chemical Analyzer (ORCA) measures the physical parameters of temperature and salinity to obtain density, and measures the biological parameters of dissolved oxygen, phytoplankton chlorophyll fluorescence, and nutrient concentrations (Nitrate).

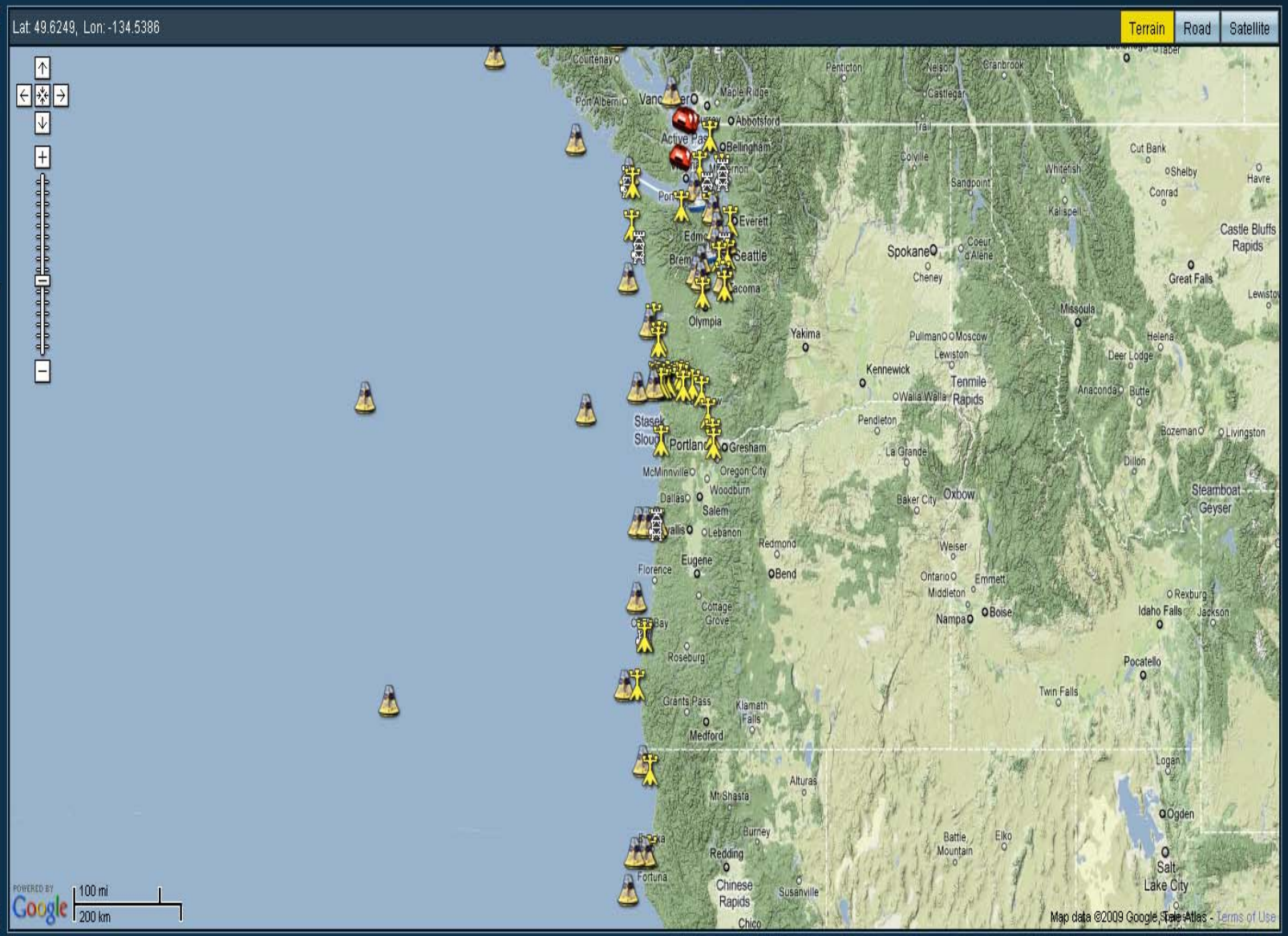
Filters

In-Situ Assets (94)

Platform Type

Expand All | Collapse All

- Buoy
  - APL-UW
    - APL-UW NPB-1 Buoy
  - CDIP-Scripps
    - CDIP Cape Mendocino
    - CDIP Clatsop Spit
    - CDIP Grays Harbor
    - CDIP Humboldt Bay
    - CDIP Umpqua
  - CMOP
    - CMOP Ogi02
  - Env. Canada
    - EC 46131
    - EC 46132
    - EC 46146
    - EC 46206
  - ICM-Mobilisa
    - ICM Marrowstone
    - ICM Poulsbo
    - ICM Worden
  - King County
    - KC NSGE01
  - LOBO
    - LOBO Yaqui
  - NDBC
    - NDBC Cape Elizabeth
    - NDBC Col River Bar
    - NDBC Eel River
    - NDBC Neah Bay
    - NDBC New Dungeness
    - NDBC Oregon



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  - NDBC
    - NDBC Cape Elizabeth
    - NDBC Col River Bar
    - NDBC Eel River
    - NDBC Neah Bay
    - NDBC New Dungeness
    - NDBC Oregon

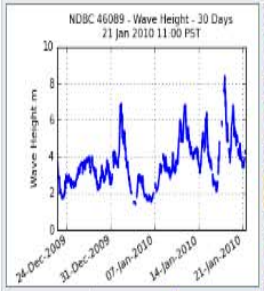
Lat: 50.8753, Lon: -130.5615

Terrain | Road | Satellite

Station 46089 (LLNR 689) - 85 NM WNW of Tillamook

Location: Tillamook, Oregon **Lat:** 45.908 **Lon:** -125.76
Provider: NDBC **Data Source:** NDBC

Data Updated: 21 Jan 2010 9:50 PST



Air Temp. (4m):	9.7	oC
Avg. Wave Period (0m):	7.5	sec
Baro. Pressure (0m):	975	mbar
Dom. Wave Period (0m):	9	sec
Water Temp. (-0.6m):	9.6	oC
Wave Height (0m):	4.3	m
Wave Mean Dir. (0m):	--.-	deg (from)
Wind Direction (5m):	150	deg (from)
Wind Gust (5m):	18	m/s
Wind Speed (5m):	15	m/s

24 Hours | 7 Days | 30 Days

Link

Google 100 mi 200 km

Map data ©2009 Google, Tele Atlas

Ocean Acidification Theme Page:

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WASHINGTON - OREGON - NORTHERN CALIFORNIA

What is Ocean Acidification? | What Do We Know? | Who's Doing What? | Real-time Data | Scientists Talk

Ocean Acidification is on the Rise

Ocean acidification refers to the ongoing decrease in the pH of the Earth's oceans caused by the uptake of carbon dioxide from the atmosphere. For the last 200 years, the burning of fossil fuels — coal, oil, natural gas — for energy, cement production, and deforestation pumps carbon dioxide or CO_2 into the atmosphere. The ocean has absorbed about 1/3 of this CO_2, which when combined with water, forms a weak acid. The drop in pH increases the hydrogen ion concentration in the ocean thereby making the oceans less alkaline. The impacts of ocean acidification are an urgent issue because of the potential global-scale effects they present across a broad spectrum of marine life.

The absorption of excessive amounts of CO_2 from the atmosphere is changing the chemistry of seawater by increasing the acidity and lowering the seawater's naturally occurring carbonate ion, a building block of the calcium carbonate required of many marine organisms to grow their shells and skeletons. Ocean acidification reduces calcification rates in corals, leaving reef structures vulnerable to storm damage, and may affect economically important shellfish species such as oysters, scallops, mussels, clams, sea urchins, crabs, and lobsters.

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