

## Washington's Ocean Action Plan: *Update from the State Ocean Caucus*

Jennifer Hennessey  
Washington Department of Ecology

## Outline

- Washington's Ocean Action Plan
- State Ocean Caucus and Ocean Policy Advisory Group
- 2011 Work Plan highlights
- Updates
  - West Coast Governors' Agreement
  - Sea Grant Research Priorities Plan
- State Legislation

## Washington's Ocean Action Plan

**Ocean Policy Work Group's final report**

**Volume 1:**

- Summary of status and value of state's ocean and coastal resources
- 15 Key Recommendations

**Volume 2:**

- Comprehensive recommendations (50+)
- Background on existing programs and issue analysis



## How do state agencies coordinate their work?

**State Ocean Caucus** provides a way:

- For state agencies to work together on important coastal and ocean issues.
- To act on Ocean Action Plan recommendations.
- To learn from and share information with citizens, interest groups, and local, tribal, and federal governments.

*Addresses Ocean Action Plan recommendation 6-1*

## Public Involvement with State Ocean Caucus

- Ocean Policy Advisory Group
- Outreach meetings
- Workshops
- Email listserv and website established for updates.
- Marine Resource Committees, *if formed.*



*Addresses Ocean Action Plan recommendation 6-1*

## Public Involvement with State Ocean Caucus

**Ocean Policy Advisory Group** roles:

- Share issues and expertise.
- Provide input to State Ocean Caucus on ocean and coastal issues.
- Review documents and policy responses.
- Attend meetings on outer coast a few times each year.



*Addresses Ocean Action Plan recommendation 6-1*

## 2011 Work Plan Activities

- Sustainable Fisheries
- Aquaculture
- Ecosystem-Based Management
- Ocean Energy
- Coastal Hazards
- Erosion & Sediment Management
- Climate Change
- Marine Debris
- Research & Observing
- Education
- Sustainable & Resilient Communities
- Governance

## Erosion and Sediment Management



### Completed:

- Hosted a science-policy workshop with technical experts on Washington's nearshore environment (July 07, Ilwaco).

### Ongoing:

- Developing large project to use sediment beneficially and advance understanding of sediment processes in Washington's nearshore with local, state, and federal partners.
- Developing regional sediment management plan to improve beneficial uses of sediment.

*Recommendations 2-9, 2-10, 2-11, and 2-12*

## Ocean Research & Observing

### Completed:

- Purchased a Remotely Operated Vehicle for underwater studies and activities. (WDFW/DNR)
- Held Seafloor Mapping workshop to understand status of mapping data and useful products.

### Ongoing:

- Developing regional research priorities plan for state and region through Washington Sea Grant.
- Investigating ways to advance ocean observing with NANOOS and others. Includes advancing Doppler weather radar and additional monitoring buoys.
- Developing strategy and partnerships for completing seafloor mapping.

*Ocean Action Plan recommendations 1-2, 4-1, 4-3*

## Ocean Energy

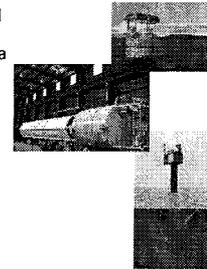
### Ongoing:

- Engaging federal agencies on associated regulatory and planning issues.
- Identifying baseline and site specific data needed for permitting potential pilot projects.

### Future:

- Host workshop with West Coast states and federal agencies to increase information on technologies. Provide stakeholder workshops and forums on this issue.

*Recommendations 1-9 and 1-10.*



## Sustainable Communities

### Completed:

- Created regional offices to better assist local communities with economic planning and projects (CTED).



### Future:

- Examine use of innovation zones and other tools to increase sustainability of coastal communities.

*Recommendation 5-1*

## Governance

### Ongoing:

- Providing outreach on establishing Marine Resource Committees in outer coastal communities.
- Establishing graduate fellowship to help State Ocean Caucus advance specific recommendations.

### Future:

- Examine Washington's Coastal Zone Management Program policies.

*Recommendations 6-1, 6-2, 6-6*

## West Coast Governors' Agreement on Ocean Health

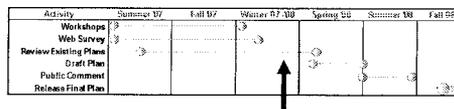
Final action plan due out for release in March 2008.

Ocean Action Plan recommendations advanced by this and other transboundary partnerships include:

- Ocean energy
- Collaborative and prioritized research
- Ecosystem indicators and assessments
- Regional sediment management
- Seafloor mapping

For more information: <http://westcoastoceans.gov>

## West Coast Regional Research Priorities Plan



For more information:

<http://seagrant.oregonstate.edu/research/RegionalPlanning/index.html>

Michelle Wainstein  
 Washington Sea Grant  
 Regional Research Coordinator  
 206.616.9568  
[mwain@u.washington.edu](mailto:mwain@u.washington.edu)

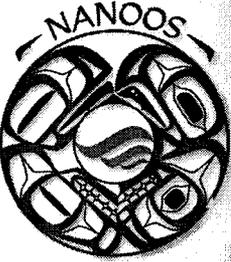
## State Legislation

- HB 3216 - Tidal and Wave Energy
- SB 6111 - Tidal and Wave Energy
- SB 6227 - Marine Resource Committees
- SB 5213 - Ocean Policy Council
- HB 6307 and HB 6231 - Marine Managed Areas

## For more information:

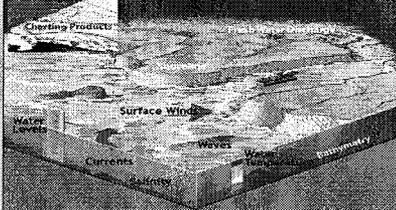
<http://www.ecy.wa.gov/programs/sea/ocean/>

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 360-407-6595  
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Northwest Association of Networked Ocean Observing Systems  
 The Integrated Ocean Observing System (IOOS) Regional Association for the Pacific NW  
[www.nanoos.org](http://www.nanoos.org)

**Fundamental Issue:**



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

R. Spinrad, NOAA

**We need a system that can fill societal needs for ocean data**

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- Must be sustained
- Must be driven by users
- Must be responsive to regional needs
- Must fill needs from end to end

**The Integrated Ocean Observing System is designed to fill this need**

**What will IOOS do?**

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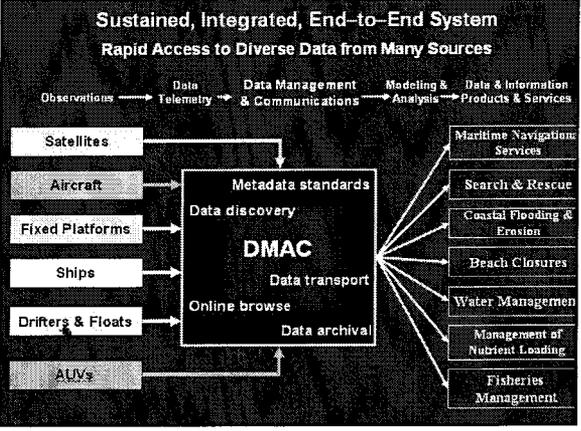
The U.S. Integrated Ocean Observing System (IOOS) is developing as a user-driven, integrated system of observations and data telemetry, data management and communications, and data analysis and modeling that **routinely, reliably, and continuously provides data and information required to address seven societal goals.**

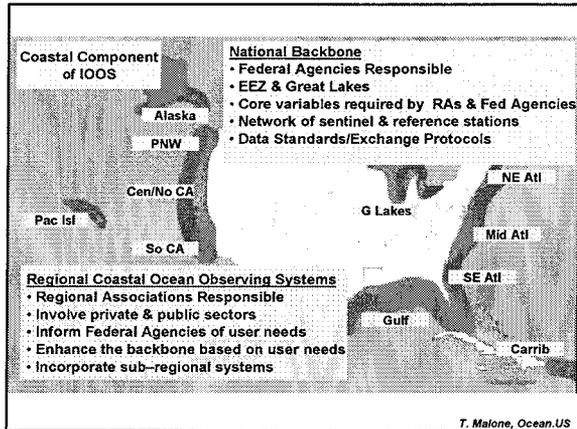
**What will IOOS do?**

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- Improve predictions of **climate change and weather** and their effects on coastal communities and nation
- Facilitate safe and efficient **marine operations**
- Improve forecasts of **natural hazards** and mitigate their effects more effectively
- Improve **homeland security**
- Protect and restore **healthy coastal ecosystems**
- Manage **living marine resources** for sustainable use
- Minimize **public health risks**

**1 System, 7 Goals**





**NFRA** National Federation of Regional Associations for Coastal and Ocean Observing

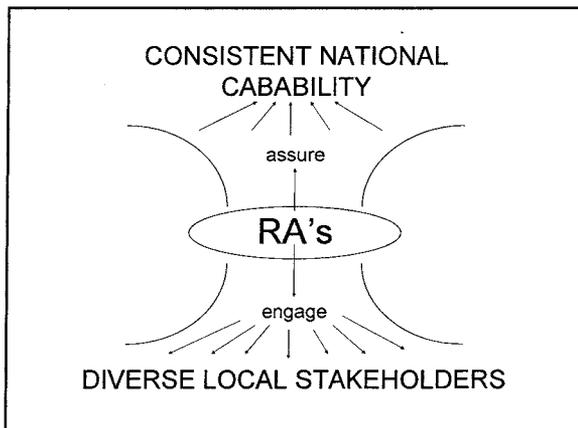
## What are RAs ?

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

**NFRA** National Federation of Regional Associations for Coastal and Ocean Observing

## Why have RAs ?

- Regional differences
  - e.g. Fisheries concerns in Maine are not those of the Gulf nor those of Hawaii nor those of the Chesapeake nor those of the PNW nor those of ....
  - e.g. Data needs for HABs in Maine are not those of the Gulf nor those of Hawaii nor those of the Chesapeake nor those of the PNW nor those of ....
- Leverage
  - The federal govt alone cannot afford nor mobilize what it will take (\$ and FTEs) to make and operate Regional Coastal Ocean Observing Systems nationwide
  - The federal govt cannot engage with private and public sector services and assets with the same ease that a RA can
  - RAs can effectively build an educated and involved



## Will IOOS ever happen?

**Re funding:**

For the first time, the President's budget contained line items for IOOS in 2008. The budget contained \$16.3 million for IOOS which includes \$11.5 for Regional IOOS; \$2.5 for data management and \$2.3 for coastal enhancements (NWLON and sensors for NDBC buoys). This is good news but falls far short of the needs \$138 million requested in the Ocean Commission Report.

**Re authorizing legislation:**

Senators Snowe (R-ME) and Cantwell (D-WA) introduced the bill to the Senate. Congressman Allen (D-ME) introduced the bill to House, as part of the Energy Bill. It passed both.

**Northwest Association  
Of Networked Ocean  
Observing Systems  
(NANOOS)**

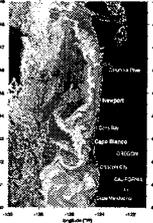


<http://www.nanoos.org>



 **Regional Characteristics**

- **Coastal ocean:**
  - Northern extent of California Current
    - Winds, topography, freshwater input, ENSO & other climate cycles
- **Major inland basins:**
  - Puget Sound-Georgia Basin, Columbia River
    - Urban centers, nearshore development, climate variation
- **Coastal estuaries:**
  - Willapa Bay, Grays Harbor, Yaquina Bay, Coos Bay, and 20 more
    - Resource extraction, development, climate variation
- **Major rivers:**
  - Columbia River (~75% FW input to Pacific from US west coast)
  - many rivers (e.g., Fraser, Skagit) via Strait of Juan de Fuca
    - Dredging, water regulation, climate change



 **ID of PNW User Groups**

*From NOAA/NANOOS analysis:*

**NEEDS**

↓

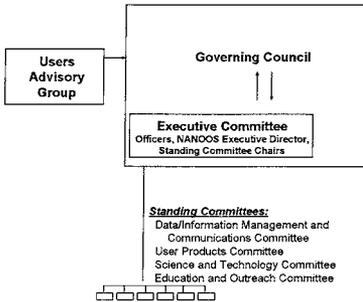
**SYSTEM**

- Marine shipping and oil transport/spill remediation
- Search and rescue
- Shellfish fishery and aquaculture
- Marine recreation
- Natural resource/environmental management
- National and homeland security
- Finfish aquaculture
- Research institutions
- Education
- Commercial groundfishing
- Crab fishery

 **Building NANOOS:  
A brief history**

- **Late 2003:** 1<sup>st</sup> year planning grant from NOAA Coastal Services Center
- **2003:** Pacific Northwest Regional Ocean Observing System Workshop I
  - Charter; Steering Committee
- **2004:** IOOS Pilot proposal regarding estuaries and shorelines funded by NOAA CSC
- **2004:** NANOOS Governance Workshop II
  - Governance Structure, User Needs Forum; Prioritization for Federal and Regional Activity
- **2005:** NANOOS System Design Workshop III
  - Priority User Needs and Responsive System Design
- **2005:** NANOOS Industry Day
  - Industry Needs, Opportunities, and Issues
- **2005:** NANOOS MOA activated
- **2006:** NANOOS holds Election, Governing Council and Standing Committees
- **2007:** NANOOS wins 3-year award to build Regional Coastal Ocean Observing System

 **NANOOS:  
Governance structure**



**Users Advisory Group** → **Governing Council**

**Executive Committee**  
Officers, NANOOS Executive Director, Standing Committee Chairs

**Standing Committees:**  
Data/Information Management and Communications Committee  
User Products Committee  
Science and Technology Committee  
Education and Outreach Committee

 **NANOOS Members  
to date...**

1. Ocean Inquiry Project
2. Oregon Dept of Land Conservation & Development
3. Surfrider Foundation
4. The Boeing Company
5. Oregon State University
6. Puget Sound Action Team
7. University of Washington
8. WET Labs, Inc.
9. Oregon Health and Science University
10. Quileute Indian Tribe
11. Oregon Dept of Geology and Mineral Industries
12. Humboldt University
13. Marine Exchange of Puget Sound
14. Washington State 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 Salmon Center
22. Northwest Indian Fisheries Commission
23. Sea-Bird Electronics, Inc.
24. Western Association of Marine Laboratories
25. SAIC
26. OR Dept Fish and Wildlife
27. King County Dept Natural Resources & Parks
28. Western Resources and Applications
29. OR Dept State Lands



## NANOOS Members to date...

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5. Oregon State University, incl. OR Sea Grant
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- Tribal Gov't
- State/local Gov't
- Industry
- Academia/Research
- NGO



## NANOOS Successes

- The numerous NANOOS GC members represent a broad spectrum of the marine community (27% local Gvmt incl tribes, 27% NGO/Education, 23% Industry, 23% Research); their involvement is strong and supportive.
- NANOOS has gained substantial stakeholder input on RCOOS, data products, and outreach priorities from broad workshops and focused meetings.
- NANOOS has an MOA and governance structure identified, vetted and proven successful.
- NANOOS has elected Officers and Standing Committees

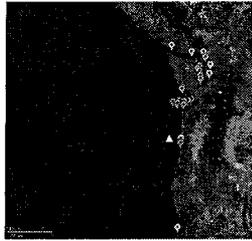


## Building NANOOS: System design strategy

- **Integrate what we have:**
  - NANOOS Pilot project
  - Other assets
- **Strategize to build what we need:**
  - Prioritize NANOOS backbone with federal agencies and the needs for our Regional Coastal Ocean Observing System (RCOOS)



Pre-existing observing assets that NANOOS has integrated. Data from all pictured assets are available via link from NANOOS website

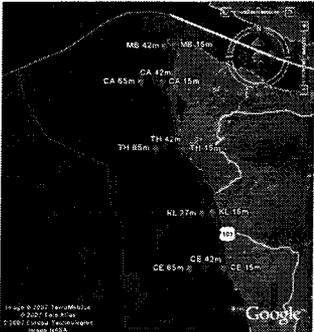


**Locations of monitoring buoys in the PNW**

**Estuarine buoys operated by:**  
golden (NOAA) purple (OHSU)  
green (UW) red (ODSL/NERRS)  
blue (WDOE)

**Coastal buoys operated by:**  
yellow (OSU/ORCOOS)

## Olympic Coast National Marine Sanctuary Mooring Array



- Initiated in 2000
- Sites coordinated with ORHAB, PISCO and OCNMS needs
- Sites stable since 2002; addition of Cape Elizabeth in 2004
- Hypoxia monitoring initiated in 2004
- Seasonal array – late April to mid Oct, weather dependent

## Olympic Coast National Marine Sanctuary Mooring Array

- Data available from OCNMS
  - Contact [Ed.Bowlby@noaa.gov](mailto:Ed.Bowlby@noaa.gov)
- Data eventually available at:
  - <http://data.nodc.noaa.gov/nmsp/wcos>
  - Currently hosts unflagged thermistor data from west coast sanctuaries/PISCO including OCNMS

 Pre-existing observing assets that NANOOS has integrated. Data from all pictured assets are available via link from NANOOS website

**Locations of HF sites in the PNW**

Six long-range systems (left panel) are operated near 5 MHz, with a range ~180km, range resolution ~6km, and angular resolution ~5 degrees.

Five standard-range systems (right panel) are operated near 12 MHz, with a range ~50km, range resolution of 2km, and angular resolution of 5 degrees.

 Pre-existing observing assets that NANOOS has integrated. Data from all pictured assets are available via link from NANOOS website

**Locations of beach monitoring sites in PNW**

Coastal beaches in Washington monitored by WDOE (left four panels): North Beach; Grayland Plains; Long Beach; Clatsop Plains.

Coastal beaches in Oregon monitored by DOGAMI (right three panels): BayOcean Spit; Rockaway; Nehalem Spit

 **Toward a system design...**  
*NANOOS workshop 3*

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**GOAL:** To identify and prioritize user-driven data products and design the observational system that can be responsive to these needs.

To do this, and using the initial priorities for the NANOOS observing systems developed at the second NANOOS Workshop, we will explore the following three related questions:

- \* What are the specific, prioritized data products and who are the users who need these? (Breakout #1, Mon afternoon)
- \* Based on these prioritized products, what variables are needed? (Breakout #2, Tues morning)
- \* Given the priority variables identified, what are the system design priorities (location, measurement capabilities, phasing, etc.) for various technologies? (Breakout #3-4, Tues afternoon-Wed morning)

**NANOOS RCOOS Conceptual Design**

- Coastal buoy
- Existing coastal buoy
- Existing estuarine buoys
- Glider track
- HF network
- Existing HF
- Hi resolution HF
- Shoreline assessment

 **NANOOS response to NOAA IOOS BAA**

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"The Governing Council of the Northwest Association of Networked Ocean Observing Systems (NANOOS), on behalf of its members, proposes to enhance its Regional Coastal Ocean Observing System (RCOOS). Established in 2003, NANOOS used results of nearly three year's NOAA-funded efforts and other regional contributions to build regional association partnerships in the Pacific Northwest (PNW) and to identify high priority user needs and requirements. We propose enhancements to develop a robust RCOOS for NANOOS that addresses these needs. ..."

 **NANOOS RCOOS Y1-3 priorities & approach**

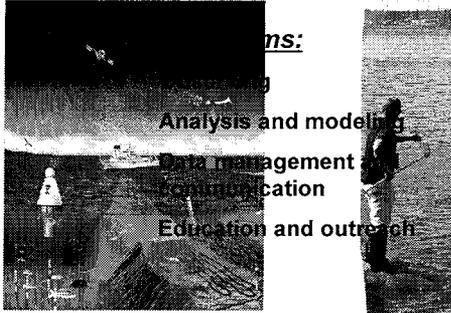
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*We will specifically focus on high-priority PNW applications of:*

- maritime operations;
- ecosystem impacts including hypoxia and HABs;
- fisheries; and,
- mitigation of coastal hazards

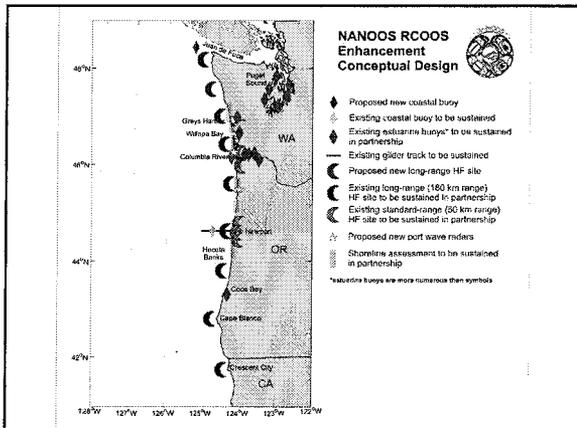
*to guide our efforts as these issues represent those having the greatest impact on PNW citizenry and ecosystems and, we believe, are amenable to being substantially improved with the development of a PNW RCOOS.*

# Ocean observing systems



# NANOOS RCOOS Objectives

- Maintain existing surface **current mapping** capability and expand with new prioritized HF radar sites in the PNW.
- Maintain and expand **observation capabilities in PNW estuaries**.
- Strategically expand coverage and range of **observations in the PNW shelf**, in coordination with emerging national programs.
- Maintain and expand core elements of existing **beach and shoreline observing programs** in Oregon and Washington.
- Create a federated system of **numerical daily forecasts of PNW circulation**.
- Commence development of state of the art cross-shore profile change models and probabilistic **shoreline change models**.
- Bolster ongoing **Data Management and Communications (DMAC)** activities to support routine operational distribution of data and information.
- Build from and strengthen ongoing NANOOS **education and outreach** efforts.



# NANOOS DMAC

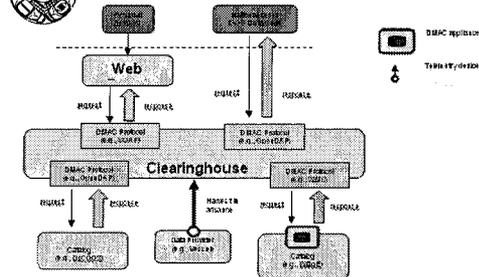
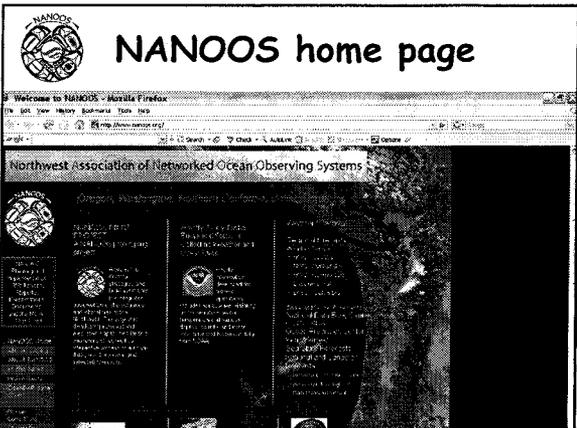


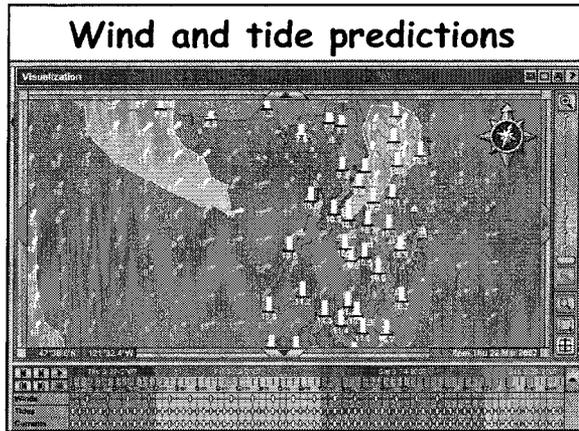
Chart showing NANOOS DMAC system of systems centered around a Clearinghouse and Web Portal. Requests may be served directly by the Clearinghouse or forwarded to remote catalogs.



# NANOOS home page







## Shellfish Growing -

### Real-time Water Quality Data for Shellfish Growers in the Pacific NW

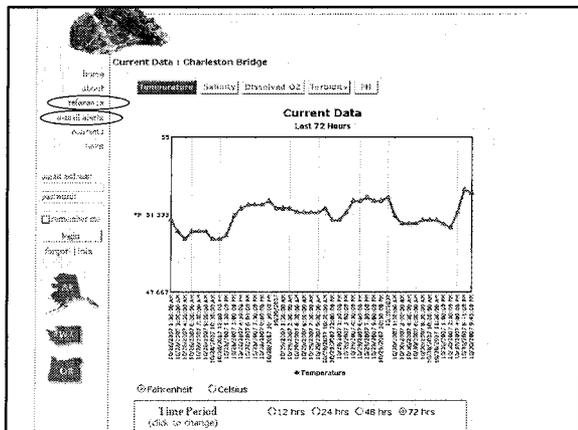
A pilot project between NANOOS and the National Estuarine Research Reserve System

**Make Informed Decisions Based on Real-Time Data!** This pilot project represents an effort to bring real-time water quality data to shellfish growers in the Pacific Northwest. The project has started with nine monitoring sites in Alaska, Washington, and Oregon. Expansion to other sites is anticipated.

**Alaska**  
Are you at risk for a *Vibrio bacterium* outbreak in Kachemak Bay? Check temperature and other readings here.

**Washington**  
Do your oysters have enough oxygen to thrive in the Hood Canal? Get the latest information now.

**Oregon**  
What impact did the last rainfall have on salinity? See what's happening near Charleston and Valeo Island.

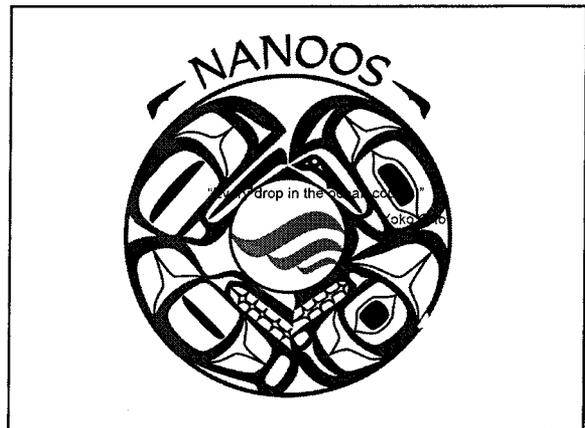


## NANOOS Successes

- NANOOS Pilot project has allowed for multi-estuary information system connected and available through NANOOS portal.
- NANOOS Pilot has spearheaded technology transfer between Washington and Oregon shoreline management state agencies
- Information on high priority matters of regional marine concern (e.g., hypoxia in Hood Canal and outer coast) available through NANOOS portal
- Recent NERRS/NANOOS Joint Project to provide marine conditions in various instrumented locations to shellfish grower user community.
- NANOOS is out of the gate towards building a user-driven Regional Coastal Ocean Observing System.

## How can you join in ?

- Become a NANOOS member
- Contact Jan Newton:  
newton@apl.washington.edu  
206 543 9152



# Alternative Ocean Energy in Washington

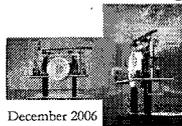
Jennifer Hennessey

*Washington State Department of Ecology  
Coastal Program*

## Outline

- Coastal impacts of wave and tidal energy
- Regulatory process
- Status of alternative energy proposals, projects and activities in Washington

## What do we know about coastal impacts?



December 2006  
OpenHydro  
Scotland's European Marine Energy Centre



September 2007  
Finavera AquaBuOY  
Oregon



May 2003  
Marine Current Turbines  
United Kingdom



September 2006  
Clean Current at Race Rocks  
British Columbia



Winter 2006/2007  
Verdant Power  
New York's East River

## Regulatory Process



- Federal Energy Regulatory Commission (FERC) issues licenses for hydrokinetic technologies in state waters.
  - **Preliminary permits** allow feasibility studies only.
  - **Licenses** allow construction of a project. Incorporate most state authorizations and usually take years to complete.
  - Over the past year, FERC developed new policies:
    - strict scrutiny policy over issuing and oversight of preliminary permits
    - pilot licensing process
    - "conditional" license policy

## Regulatory Process: How can the public get involved?



- Access and inspect via eLibrary all public documents
- Submit written concerns via eFiling to the Commission and its staff
- Participate in **public meetings** held near the proposed project area
- Participate in **site visits** near the proposed project area
- Submit eFiling comments on draft Environmental Assessments and Environmental Impact Statements
- **Intervene** on a specific proposed project
- Have federal court review a Commission's decision (you must be an intervener)
- **File a Critical Energy Infrastructure Information Request**

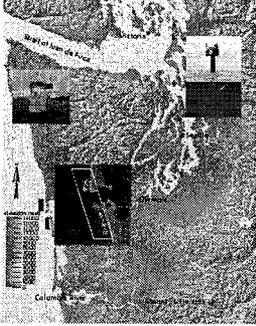
More information on [www.ferc.gov](http://www.ferc.gov)

## Regulatory Process



- Minerals Management Service for federal waters
  - Completed Programmatic EIS.
  - Working on regulations for offshore renewable energy program.
  - Nomination areas for testing technologies.
- Regulatory conflict between MMS and FERC from 3 n.m.-12 n.m. for hydrokinetic technologies.

## Washington proposals



△ Wave Energy:  
AquaEnergy/Finavera  
project at Makah Bay.  
FERC issued conditional  
license.

◆ Tidal Energy: project  
proposals with approved  
preliminary permits.

■ Pending: wave/wind  
preliminary permit.

Digital Elevation Map courtesy of University of Washington &  
Washington State Dept. of Ecology's GIS Division

## Washington activities

- Governor's Office of Regulatory Assistance:
  - coordinates permitting and communication
  - facilitates technical team for potential pilot projects
- Informal interagency collaboration on policy and regulatory issues.
- Regional collaboration through West Coast Governors' Agreement. Planned 2008 workshop on information needs, environmental impacts, and regional assessments.
- Possible Memorandum of Understanding with FERC.
- Bills pending in the state legislature.

## Questions?

