

## Bringing Biological Data into the U.S. Integrated Ocean Observing System (IOOS®)

One challenge in ecosystem and fisheries management planning is that we do not necessarily know where in the ocean animals like fish, squid, and sharks spend their time. This information is especially important for threatened or endangered species, such as salmon and sturgeon, as we try to help these populations. We know that salmon and sturgeon born in our rivers go out to sea and then return to spawn, but where do they travel while they are out in the ocean, and how do ocean conditions affect their movement? Understanding critical habitat areas and ocean conditions for these animals will increase our chances of helping them.

The U.S. Integrated Ocean Observing System (IOOS®) has historically focused on collecting and providing access to oceanographic data such as temperature, wave heights, and sea surface currents. Recently, IOOS has launched a series of initiatives aimed at bringing biological data into its portfolio through partnerships that include federal and state agencies and IOOS Regional Associations, such as NANOOS. From 2010 to 2011, IOOS supported a project focused on coral reef fish populations near the Hawaiian and Pacific Islands, in collaboration with the PacIOOS Regional Association and regional and national partners ([http://www.ioos.gov/biological\\_observations/](http://www.ioos.gov/biological_observations/)). IOOS is also supporting the development of an Animal Telemetry Network to bring together the national community of marine biologists and technologists observing marine animals by attaching transmitters and environmental sensors to individual animals ([http://www.ioos.gov/observing\\_animal\\_telemetry/](http://www.ioos.gov/observing_animal_telemetry/)).

More recently, IOOS funded the “Animal Acoustic

Telemetry” (AAT) project in the Pacific Northwest in a partnership with NANOOS and the Pacific Ocean Shelf Tracking (POST) project, with participation and guidance from regional, national and international collaborators. The goal of the AAT project is to enhance the organization and distribution of ocean animal tracking data to:

A) make it more accessible to and usable by scientists and resource managers; and B) develop data organization structures that can be widely adopted by other groups involved in ocean animal tracking. POST specializes in tracking animals from Northern California to Alaska using acoustic transmitters and receiver arrays, and maintains an extensive database of observations in collaboration with many regional partners. NANOOS brings to

this project its data management and distribution skills, regional partnerships, and participation in the national, IOOS-led data management and communications efforts.

Adopting the same data organization and access standards allows easier data sharing between different groups, which can lead to increased collaboration. Since ocean animals cross through state and international boundaries, many state, province, and international research and monitoring groups need to be able to work together efficiently to share information so that resource and fisheries management and conservation efforts are effective. This pilot project will help facilitate this goal by developing the necessary data sharing approaches for the ocean animal tracking community.



*A POST receiver deployed in the Vancouver Aquarium's Strait of Georgia exhibit. Similar receivers are deployed in the ocean off the West Coast spanning from Alaska to Pt. Reyes, CA.*

## Products/Tools

### *NANOOS Tsunami Evacuation Map Makes the News*

In March 2011, Japan was rocked by a magnitude 9.0 earthquake. The upwards movement of the seafloor during the earthquake created a tsunami that took 30 minutes to reach Japan's shores. As one of the most earthquake and tsunami ready countries in the world, Japan is still recovering from the devastation caused by the 30-plus foot wall of water. When the tsunami touched the U.S. West Coast 9 hours later, it still had enough energy to create 6 foot waves and cause millions of dollars of damage. With similar magnitude earthquake looming closely on our horizon here in the PNW, are we prepared for "The Big One"?

Working with the Oregon Department of Geology and Mineral Industries (DOGAMI), the Washington State Department of Natural Resources (WA DNR), and Oregon Sea Grant, NANOOS is contributing to the major initiative to help coastal residents and visitors prepare for a large tsunami hitting our coast. Using maps created by DOGAMI and WA DNR that predict the tsunami impact on the PNW, NANOOS developed an improved web app and new mobile phone app to provide easy access to tsunami hazard zone information (*more info in NANOOS Observer Winter 2012 issue*). As part of a larger communication push around the one-year anniversary of the Japan earthquake and tsunami, NANOOS, DOGAMI, and WA DNR publicly announced the apps through a joint press release.

The story had great coverage in local and regional media outlets. There were over twenty articles on local and regional news websites, including the Bellingham Herald, King 5 in Seattle, KGW in Portland, and the Cannon Beach Gazette. NANOOS Executive Director Jan Newton and NANOOS User Products Committee Chair Jonathan Allan were also interviewed by a couple radio stations. All of this coverage increased traffic to

the web app from an average of 39 unique page views per day to 1,352 the first day of media coverage, and 890 the second day. Mobile app downloads also jumped the day of the release to over 500 on Apple and close to 300 on Android.

One of the most valuable parts of this media release was the feedback that we received from the public about the app. Here are a couple positive reviews we got:

*"Handy app works great! Lots of info — access to brochures on various areas in the PNW with evacuation instructions."*

*"This is an excellent resource. I just spent a weekend in a cabin on the water near Neah Bay, and made a tsunami escape plan with my friends as soon as we got there. This app provides information we could have used. My thanks to the developers for a great job."*

However, the most helpful reviews pointed out bugs or shortcomings of the apps:

*"Why is this app not available for smart phones operating on Blackberry or Windows operating systems?"*

*"When I'm using the satellite map behind the tsunami regions, I can't see the tsunami regions when I zoom all the way in!"*

Using these comments, we were able to make changes to the software so that the apps worked and displayed as we intended, or in the case of providing apps for only two smartphone platforms, change course in how we develop web and mobile apps in the future to make them available to all platforms.

To hear Jan's radio interview:

<http://kgmi.com/pages/12627905.php>



Need help understanding how to use the NANOOS Tsunami Web App? We created a video tour that provides a quick orientation to the features and functions of the portal, as well as how to interpret the map and data. You can find it on the NANOOS YouTube Channel:

<https://www.youtube.com/user/NANOOSpnw>

## Happenings

### *Pacific Northwest Waters: Gateway to Our Future The 5th Interagency Ocean Observation Committee (IOOC) Industry Workshop, 2012*

Microsoft Research sponsored the Northwest Association of Networked Ocean Systems (NANOOS) Industry Day 2–3 February 2012, at Microsoft’s Research Campus in Redmond Washington.

Laura Furgione, Deputy Assistant Administrator of NOAA’s National Weather Service (NWS), started the day off with a keynote address highlighting how data and information from the Integrated Ocean Observing System’s (IOOS) supports the development of NWS products and services.

*“None of us can achieve a Weather-Ready Nation alone, and this fact underscores the value of collaboration and partnership. Private sector research and innovation, investments in new technologies by research institutions, add value to our work. A Weather-Ready Nation requires regionally scaled and user-driven collaborations in observations, data delivery, and product development—all things that NOAA relies on the regional IOOS system operators and their extensive stakeholder communities to provide,” Furgione said.*



More than 150 stakeholders and partners attended the meeting, which focused on the importance of NANOOS measurements and observations and their benefit to local, regional, national, and international safety, economic and environmental benefits.

Panel sessions described the application of marine information in generating forecasts of hazards unique to the Pacific Northwest, supporting decision making including coastal engineering, hazard response, marine operations, fishery management, and alternative energy.

An aquaculture panel provided in-depth information on how ocean measurements and observations support the aquaculture industry. This panel included representatives from Whiskey Creek Shellfish Hatchery, Taylor Shellfish, and the Pacific Shellfish Institute who described how NANOOS data is helping improve oyster harvesting in the Region.

During the second day, Microsoft Research presented a summary of their recent work on the development of the ‘Eye on Earth’ (<http://watch.eyearth.org>) portal for public delivery of environmental data and the incorporation of data from citizen observing networks. NANOOS also held a strategic discussion to formulate achievable outcomes for the Region including: optimum integration of Pacific Northwest regional observing efforts, supporting the needs of Federal IOOS partners, and marketing NANOOS to stakeholders.

Videos, presentations and meeting program available online at:

[http://www.nanoos.org/education/events/pnw\\_waters/pnw\\_waters\\_workshop.php](http://www.nanoos.org/education/events/pnw_waters/pnw_waters_workshop.php)

## Happenings, cont'd.

### Learning and Fun with Buoys!

Teens participating in this summer's Junior Leadership Program of the Washington Sea Grant run [NOAA Science Camp](#) designed, built and deployed two buoys to answer their own research questions about temperature and biological growth in Seattle's Lake Washington. NANOOS member Ocean Inquiry Project provided materials and NANOOS PI Kipp Shearman loaned temperature sensors to make this project happen. The buoy project was a successful pilot project which the NANOOS Education committee hopes to expand in the future.



## Members' Spotlight

### NANOOS Governing Council Holds 2012 Annual Governing Council Meeting and Elections

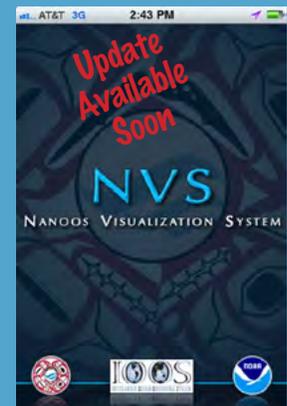
This July, the NANOOS Governing Council (GC) held its annual meeting at WSU Vancouver. The NANOOS GC is comprised of representatives from each NANOOS member organization. GC members provide oversight and policy guidance at the annual GC meeting as well as actively promote NANOOS both within and beyond the NANOOS region. In addition to providing guidance on upcoming NANOOS efforts, the GC held elections for NANOOS Chair and Vice Chair. David Martin of University of WA Applied Physics Laboratory and Mike Kosro of Oregon State University were unanimously elected as Chair and Vice Chair respectively. The July 2012 meeting presentations are available on the [NANOOS web portal](#).

### NANOOS Welcomes New Members

Welcome to the newest members of NANOOS:

- [Intellicheck Mobilisa](#)
- [NortekUSA](#)
- [Grays Harbor Historical Seaport Authority](#)
- [Pacific Coast Shellfish Growers Association](#)
- [United States Army Corps of Engineers, Portland District](#)

Coming Soon:  
New Release of the  
**NANOOS  
VISUALIZATION  
SYSTEM**



This winter NANOOS will be releasing an updated version of the NANOOS Visualization System

[nvs.nanoos.org](http://nvs.nanoos.org)

The new version of NVS will have an updated interface and improved visualizations and access to data. To receive notifications on NVS improvements sign up for or update your **myNANOOS** account at:

[http://www.nanoos.org/user\\_accounts/register/register.php](http://www.nanoos.org/user_accounts/register/register.php)

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