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

1. Call to Order
Welcome, Group Introductions, and Logistics

2. Charge for the Day

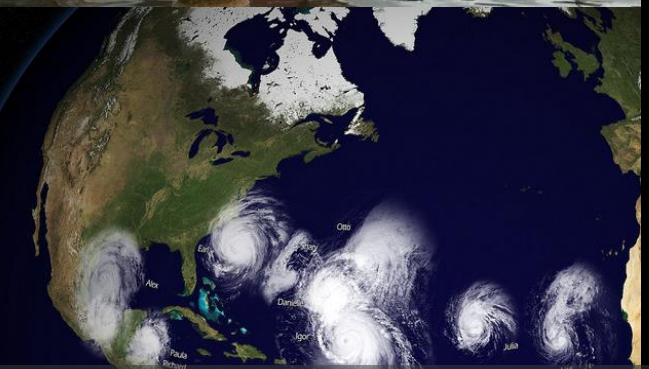
David Martin
NANOOS GC Board Chair

3. IOOS Update

Jennifer Rhoades
NOAA US IOOS Office

A Clear View of Tomorrow

Our Planet is Changing



We need advanced tools to understand and monitor our oceans, coasts and Great Lakes

Jenifer Rhoades
US IOOS Program Office

US IOOS®: A Partnership for Lives and Livelihoods

IOOS National and Regional Budget

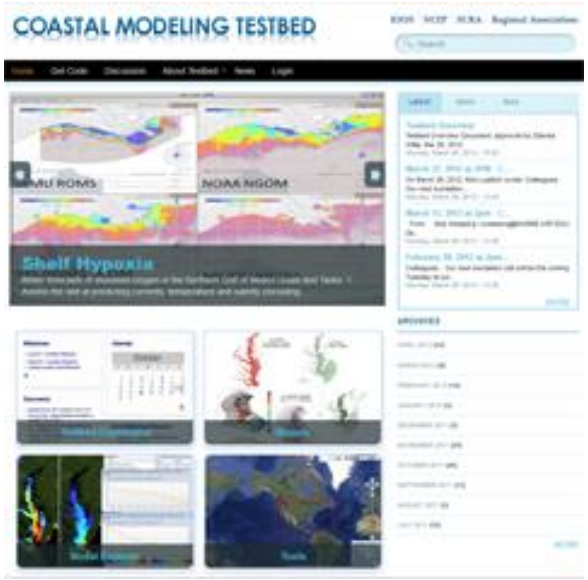
	FY 2013			FY 2014	
	Request	**Spend Plan**	**Sandy Supplemental**	**Request**	**Enacted**
IOOS Regional Observations	$29,520	$26,551	$2,613	$34,520	
NOAA IOOS	$6,533	$5,992			
Alliance for Coastal Technologies					
Northeast Coastal Monitoring Collaborative					
Navigation, Observations and Positioning (NOAA IOOS portion)				$6,593	
Total IOOS	**$36,053**	**$32,543**	**$2,613**	**$41,113**	

Updated: June 27, 2013

- FY13 Funding distributed to Regions are part of Y3 Awards
  - NANOOS distribution $3,089,477, including:
    - $409,420 for Marine Sensor Innovation Program
    - $296,251 from NOAA Ocean Acidification Program
- Final FY14 Budget Allotments for IOOS program are not available -- no appropriations approved.

Forward Look at FY2014

- IOOS Program Office Over-Arching Priorities
  - **DMAC and Modeling Progress**
  - **Marine Sensor Innovation**
  - **Certification**



- IOOS Opportunities and Challenges
  - **Funding**
  - **Increasing Federal-Regional partnering**

DMAC & QARTOD in FY13

- DMAC Focus
  - Conduct a systems integration test of IOOS DMAC services
  - Add a non-NOAA Federal data provider to DMAC
  - Adopt basic configuration control procedures for DMAC SOS
- Sustain QARTOD
  - Three manuals published
  - Publish Temperature and Salinity manual (currently under review).
  - Develop Water Level Manual (FY14)
  - Continue development of additional QA/QC Procedures
- Modeling
  - Develop a national modeling strategy

Marine Sensor Innovation Project

- Marine Sensor Innovation (MSI) required in ICOOS Act of 2009 [Section 12304 (b)(1)(D)]
- Allows focused effort to accelerate proven technology into operations.
- MSI has 3 Parts:
  - Sensor Evaluation
  - U.S. IOOS Coastal and Ocean Modeling Testbed (COMT)
  - Marine Sensor and advanced observing technology transition

Marine Sensor Innovation Project

- Sensor Evaluation:
  - The Alliance for Coastal Technologies was funded to conduct sensor evaluation.
  - Sustain core technical functions
  - Address instrumentation needs related to
    - Monitoring and understanding ocean acidification and its impact
    - Field testing of pH sensors,
    - training and demonstrations of in situ pH sensors, and
    - Ocean acidification monitoring strategy for the Chesapeake Bay

- U.S. IOOS Coastal and Ocean Modeling Testbed (COMT):
  - New projects were competed for COMT
  - Results of the competition for new award still pending.

Marine Sensor Innovation Project

Marine Sensor Innovation Project

- FY13 IOOS Appropriation includes $3 million for MSI
  - $1M for the Coastal and Ocean Modeling Testbed (COMT),
  - $1M for sensor technology evaluations by the Alliance for Coastal Technologies, and
  - $940K for ocean acidification monitoring for the Alaska, Hawaii, and West Coast shellfish industries and harmful algal bloom monitoring in the Gulf of Maine.

- Additional funding provided by WA and OR.

- The FY14 President's Budget request includes $10M for marine sensor innovation.
  - Federal Funding Opportunity published August 19, 2013
    - #NOAA-NOS-IOOS-2014-2003854

Certification of RICEs Background

- Requirement of ICOOS Act of 2009
- Certification Criteria – *IOOC*
  - Final Certification Criteria published by FRN; May 2012.
- Development of Rule – *U.S. IOOS Program Office*
  - Notice of Proposed Rulemaking published by FRN, July 2013
  - Public Comment period closed August 1, 2013
  - Program Office adjudicating public comments; expect to offer certification to RICEs by Fall 2013

Certification of RICEs

- Certification provides:
  - Liability protection extended to three positions of organization
  - Certification ensures the necessary policies, standards, data, information, and services associated with eligibility for integration into the System are appropriately established, coordinated, overseen and enforced in accordance with the Certification Standards.
- Certification has to be credible and reasonable
- Certification QA/QC of data from non-federal assets is necessary for liability coverage.
- Certification IS NOT intended to guarantee funding
  - Grants administration and certification are separate processes meeting separate objectives

Certification of RICEs

Q&A

For additional questions, please contact Dave Easter (dave.easter@noaa.gov)

Thank You!

4. NANOOS Update

Jan Newton
NANOOS Executive Director

Northwest Association of Networked Ocean Observing Systems

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IOOS Products and Services
Modeling and Analysis Systems
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The U.S. IOOS
Observing Systems

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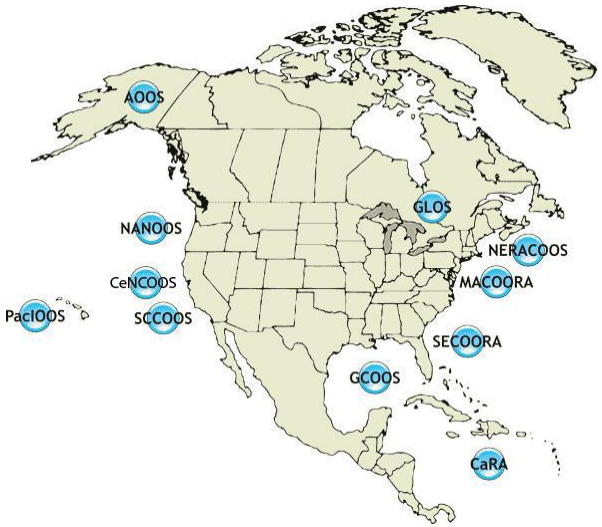
CONSISTENT NATIONAL CAPABILITY



assure

Reg. Assn's

engage

Leverage and Link

DIVERSE LOCAL STAKEHOLDERS

Integrated Coastal & Ocean Observation System Act of 2009

Created IOOS, with NOAA as lead Federal agency

"The purposes of this subtitle are to--

(1) establish a **national integrated System** of ocean, coastal, and Great Lakes observing systems,

comprised of **Federal and non-Federal** components coordinated at the national level by the National Ocean Research Leadership Council and at the regional level by a network of regional information coordination entities,
and that includes in situ, remote, and other **coastal and ocean observation, technologies, and data management and communication systems**,
and is **designed to address regional and national needs** for ocean information, to gather specific data on key coastal, ocean, and Great Lakes variables, and to ensure timely and sustained dissemination and availability of these data…"

Integrated Coastal & Ocean Observation System Act of 2009

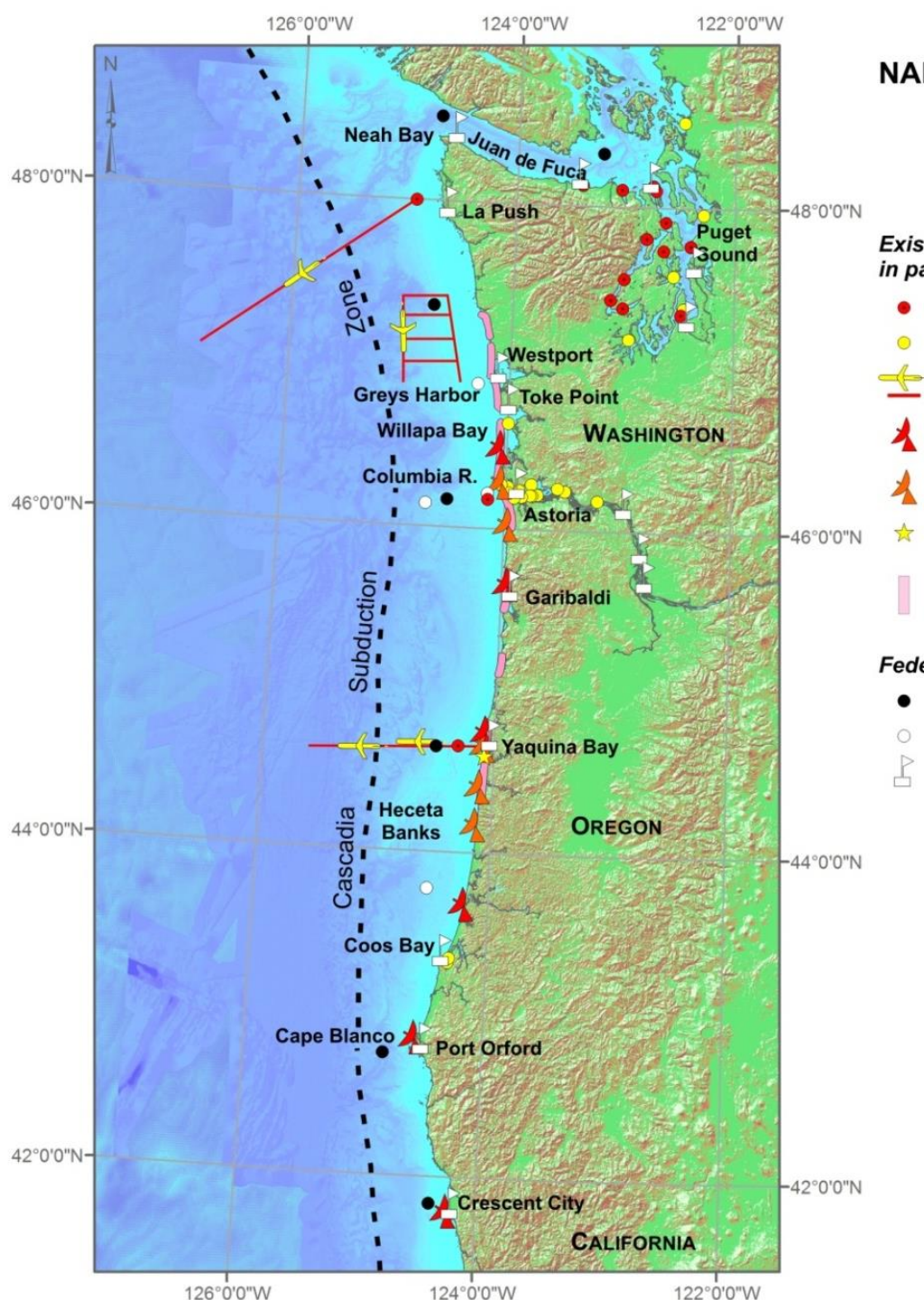
"In order to fulfill the purposes of this subtitle, the System shall be national in scope and consist of--

(A) Federal assets to fulfill national and international observation missions and priorities;

(B) non-Federal assets, including a network of regional information coordination entities identified under subsection (c)(4), to fulfill regional observation missions and priorities;

(C) **data management, communication, and modeling systems for the timely integration and dissemination of data and information products from the System**;"

e.g., IOOS as critical part of National Water Quality Monitoring Network; the go-to portal for National Ocean Plan; etc.


126°0'0"W
124°0'0"W
122°0'0"W
48°0'0"N
46°0'0"N
44°0'0"N
42°0'0"N
N
Neah Bay
Juan de Fuca
La Push
Puget Sound
Zone
Westport
Greys Harbor
Toke Point
Willapa Bay
WASHINGTON
Columbia R.
Astoria
Garibaldi
Subduction
Yaquina Bay
Heceta Banks
OREGON
Cascadia
Coos Bay
Cape Blanco
Port Orford
Crescent City
CALIFORNIA

NANOOS

Northwest Association of Networked Ocean Observing Systems

Washington - Oregon - Northern California

NANOOS Governing Council Members 8/2013

1. Ocean Inquiry Project
2. OR Dept of Land Conservation & Development
3. Surfrider Foundation
4. The Boeing Company
5. Oregon State University, incl. Oregon Sea Grant
6. Puget Sound Partnership
7. University of Washington, incl. Wash. Sea Grant
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. Pacific Northwest Salmon Center (& HCSEG)
21. Northwest Indian Fisheries Commission
22. Sea-Bird Electronics, Inc.
23. Western Association of Marine Laboratories
24. Science Applications International Corporation
25. OR Dept of Fish and Wildlife
26. King County Dept Natural Resources & Parks
27. Quinault Indian Nation
28. Western Resources and Applications
29. OR Dept of State Land
30. Columbia River Crab Fisherman's Association
31. Port of Neah Bay
32. Northwest Research Associates
33. Pacific Ocean Shelf Tracking Project
34. WA Dept of Fish and Wildlife
35. Northwest Aquatic and Marine Educators
36. Seattle Aquarium
37. NOAA Northwest Fisheries Science Center
38. Port Gamble S'Klallam Tribe
39. The Nature Conservancy
40. Portland State University
41. NOAA Olympic Coast National Marine Sanctuary
42. University of Victoria
43. University of Oregon
44. Port Townsend Marine Science Center
45. Intellicheck-Mobilisa
46. Nortek, Inc.
47. Grays Harbor Historical Seaport Authority
48. Pacific Coast Shellfish Growers Association
49. US Army Corps Engineers
50. Olympic National Park
51. Oak Harbor Middle School

KEY: Tribal Government | Industry | NGO | Academia/Research | Federal/State/Local Government

New NANOOS members

- US Army Corps Engineers
- Olympic National Park
- Oak Harbor Middle School

NANOOS budget:

FY07-09: $1.4M + 0.4M = $1,800,000

Year 1, 2, 3

FY10: $1.7M + 0.4M = $2,100,000

Year 4

FY11: $2,087,500 *(w/ new start date)*

Year 5 or 1 of new 5-y award

FY12: $2,428,291 ($2,288,000 base)

Year 6 or 2

FY13: $3,089,477 ($2,392,136 base)

Year 7 or 3

NANOOS base budget:

- *Brought all observational efforts up to at least 60% of Enhancement #1 level*
- *Added to outer coastal obs (80-90% of E1)*
- *Added to modeling at OSU and UW*
- *Redistributed DMAC to team evolution*
- *Infused (repaid) Management ($10K)*

NANOOS enhancements:

- *HF radar*
- *DMAC*
- *OA Program funding for OA buoy ops*
  - *NH-10 and La Push*
- *Marine Sensor Innovation (MSI)*

FY13:

"In accordance with congressional direction included in appropriations language to build a national operational High Frequency Radar network and ICOOS Act direction to the U.S. IOOS Program Office to develop national system capacity, the Northwest Association of Networked Ocean Observing Systems will make the following allotments with FY13 funding:

- No less than $405,000 to fund operations and maintenance of **High Frequency Radars**.
- $1,603 for **post IOOS Summit** activities.
- $20,000 to the University of Washington (Emilio Mayorga) for continued **IOOS DMAC support** in data access services (SOS encoding templates), systems engineering (DMAC implementation guidance), and vocabularies.
- $10,000 to support the **Eye on Earth Project**.
- $256,291 to continue support to **NOAA's Ocean Acidification Program**.
- $409,420 to support **Marine Sensor Innovation** in support of NOAA's Ocean Acidification Program."

NANOOS portion of MSI:

- *119K: Support for nearshore obs relevant to shellfish growing (3 Puget Sound buoys)*
- *60K: Enhancements to WA/OR deep coastal buoys (pH at depth)*
- *200K: OSU (Hales) to support 3 new pCO_2 & DIC in CeNCOOS, SCCOOS and AOOS hatcheries*
- *30K: NANOOS to build data system for above*
- *Potential for being testbed buoys*

OA activity in WA and OR

- WA Governor's Blue Ribbon Panel
  - WA coast, Puget Sound, coastal estuaries, Columbia R
- WA Legislature funds OA Center at UW and 6 actions from BRP report
  - Shellfish hatchery monitoring, integrated monitoring, forecast modeling
- OR Legislature funds OSU for OA actions
  - Shellfish hatchery monitoring, research
- CA and OR form joint OA Science panel with WA members

NANOOS priorities:

Ecosystem Assessment

Fisheries & Biodiversity

Maritime Operations

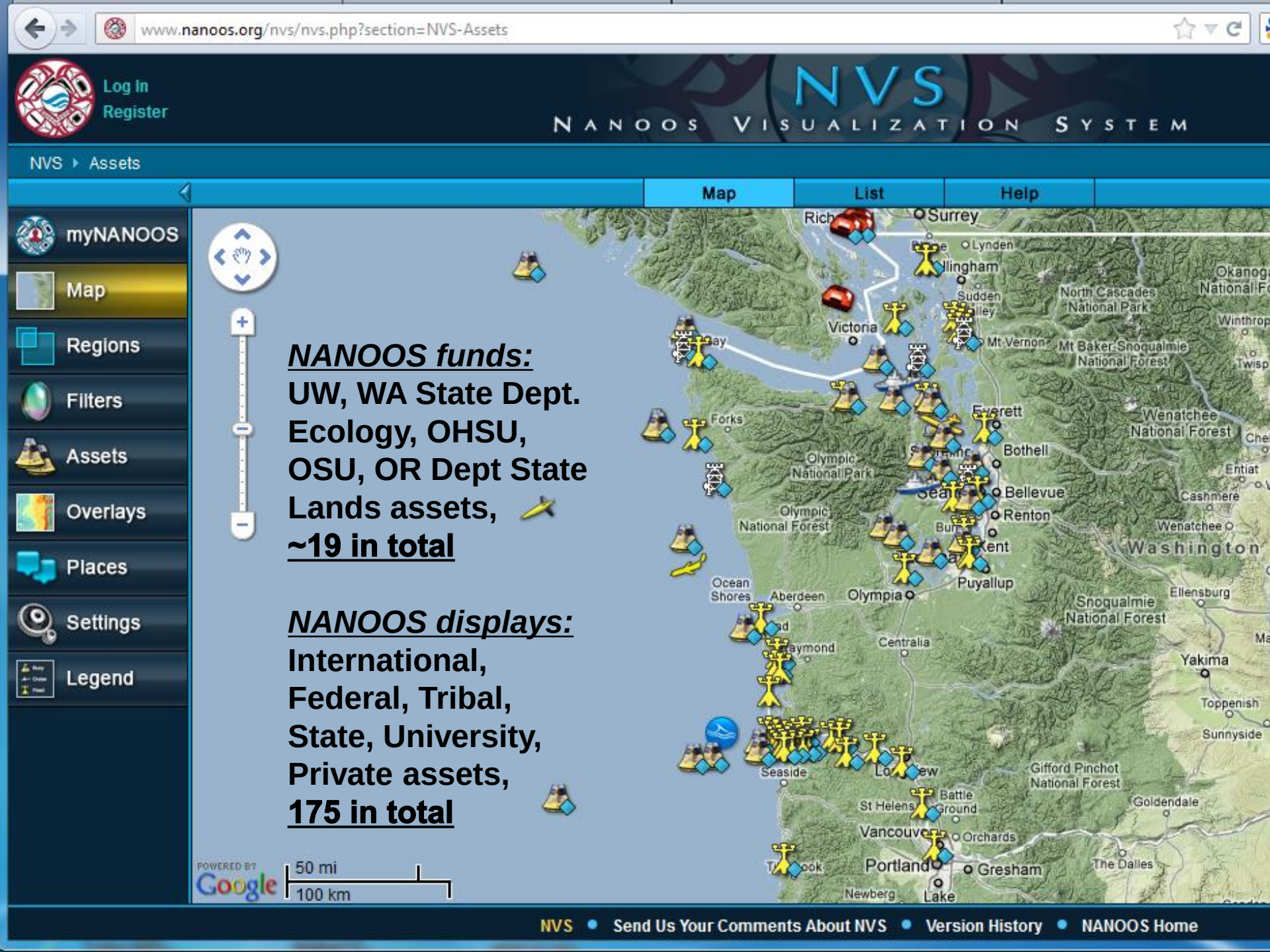
Coastal Hazards

Climate & Weather

Accomplishments

NANOOS sets bar high:

- NVS 3.0 and 3.1 released
- NANOOS participation at IOOS Summit
  - 9 participants: Schumacker, Quinault Indian Nation, Barton, Whiskey Creek Hatchery, Suhrbier, Pacific Shellfish Institute, Allan, DOGAMI, Spinrad & Barth, OSU, Newton & Martin, UW, Mooers, PSU
- First IOOS photo press release on Earth Day 2013
- First IOOS RA “OneNOAA” seminar, May 2013


www.nanoos.org/nvs/nvs.php?section=NVS-Assets
Log In
Register
NVS
NANOOS VISUALIZATION SYSTEM
NVS ▸ Assets
Map
List
Help
myNANOOS
Map
Regions
Filters
Assets
Overlays
Places
Settings
Legend
NANOOS funds:
UW, WA State Dept. Ecology, OHSU, OSU, OR Dept State Lands assets,
~19 in total
NANOOS displays:
International, Federal, Tribal, State, University, Private assets,
175 in total
Surrey
Victoria
Forks
Olympic National Park
Olympic National Forest
Bellevue
Renton
Puyallup
Olympia
Aberdeen
Ocean Shores
Centralia
Seaside
Portland
Vancouver
Gresham
Bothell
Everett
Mt Vernon
North Cascades National Park
Mt Baker-Snoqualmie National Forest
Wenatchee National Forest
Snoqualmie National Forest
Gifford Pinchot National Forest
Yakima
Washington
Google
50 mi
100 km
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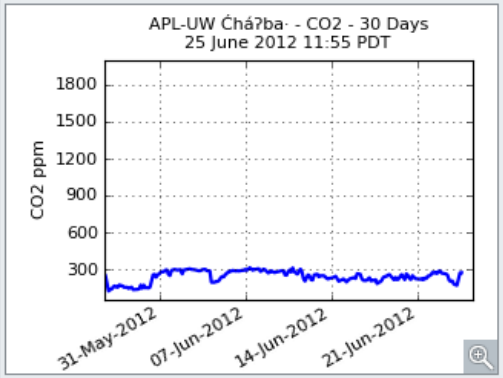
UW-NOAA

Ćhá?ba· UW/NANOOS Moored Buoy near La Push — Website

Location: La Push, Washington — Lat: 47.9662 Lon: -124.9499
Provider: APL-UW **Data Source:** NANOOS-APL2

Data Updated: 25 Jun 2012 10:51 PDT



Air Temperature (3.7m):	11.8 °C
Chlorophyll	
-3m:	1.7 µg/L
-86m:	0.4 µg/L
CO2 (-1m):	270.9 ppm
CO2 Air (3m):	402 ppm
Nitrate (-3m):	13.3 µmol/L
Oxygen Concentration	
-3m:	10 mg/L
-86m:	9.3 mg/L
pH (-1m):	--.-
Pressure	
-1m:	0.7 dbar
-3m:	3.3 dbar
-10m:	10.3 dbar

24 Hours | 7 Days | 30 Days

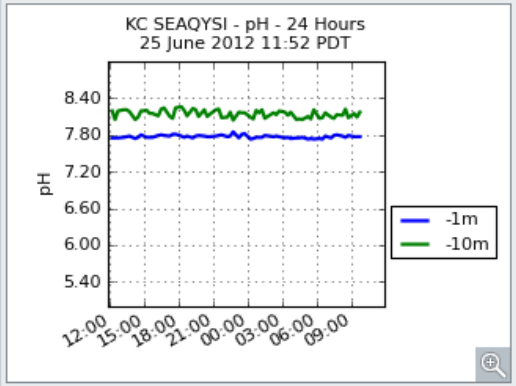
Link

Seattle Aquar.

Seattle Aquarium Mooring - Elliott Bay — Webs

Location: Puget Sound, Washington — Lat: 47.608 Lon: -122.3
Provider: King County **Data Source:** King County

Data Updated: 25 Jun 2012 10:00 PDT



Air Temperature (7.6m):	13.6 °C
Barometric Pressure (7.6m):	1013.6 mbar
Chlorophyll	
-1m:	2.6 µg/L
-10m:	3.3 µg/L
Oxygen Concentration	
-1m:	8.8 mg/L
-10m:	8.6 mg/L
Oxygen Percent Sat.	
-1m:	95.2 %
-10m:	92.4 %
pH	
-1m:	7.8
-10m:	8.2
Rain (7.6m):	0 in

24 Hours | 7 Days | 30 Days

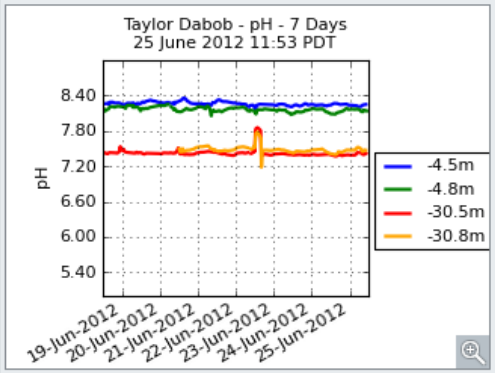
Link

Taylor Inc.

PCSGA - Taylor Shellfish Hatchery intakes, Dabob Bay — Website

Location: Puget Sound, Washington — Lat: 47.8199 Lon: -122.8215
Provider: TaylorShellfish **Data Source:** TaylorShellfish

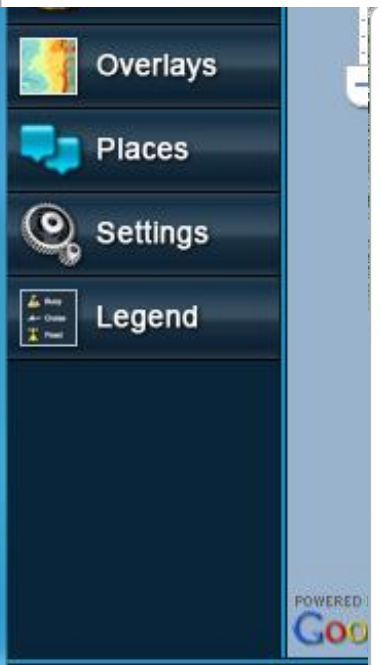
Data Updated: 25 Jun 2012 11:02 PDT



Oxygen Concentration	
-4.5m:	9.1 mg/L
-4.8m:	12.3 mg/L
-30.5m:	5.1 mg/L
-30.8m:	19.9 mg/L
Oxygen Percent Sat.	
-4.5m:	107.6 %
-30.5m:	53.8 %
pH	
-4.5m:	8.3
-4.8m:	8.2
-30.5m:	7.4
-30.8m:	7.5
Redox Potential	
-4.5m:	365.7 mV

24 Hours | 7 Days | 30 Days

Link

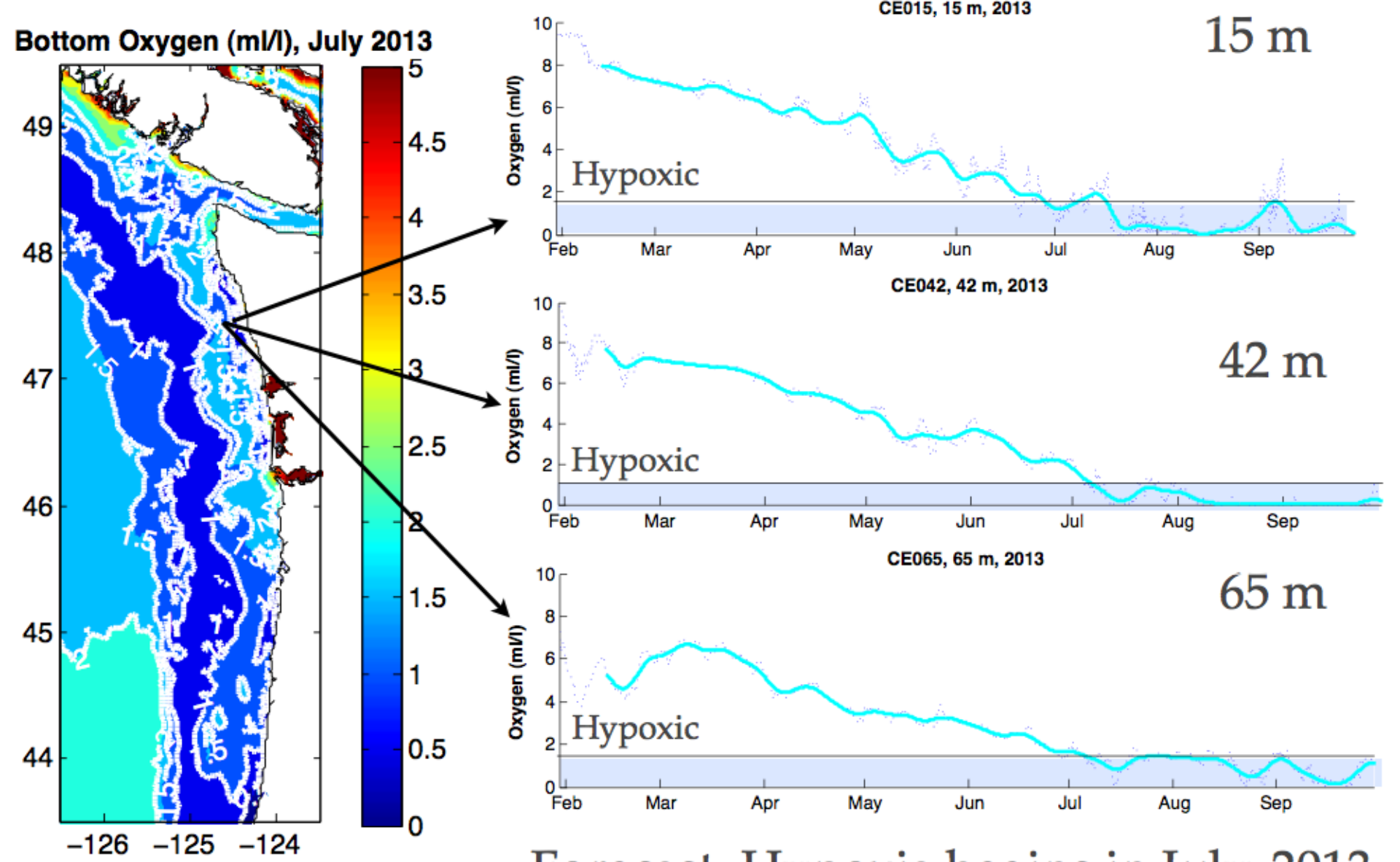


Version History • NANOOS Home

Accomplishments

The region is coming to NANOOS:

- HAB real-time “ESP” monitoring by NWFSC
  - Data on NVS (Mayorga)
- Puget Sound Institute & Puget Sound Partnership’s Encyclopedia Puget Sound
  - NANOOS data layers on ERMA PNW (Mayorga)
- J-SCOPE funded by NOAA FATE
  - JISAO, NOAA-NWFSC, UW, NOAA_PMEL, on NANOOS (Tanner, Newton, MacCready)



White contour outlines Hypoxic Zones (<1.5 ml/l)

Forecast: Hypoxia begins in July, 2013 for Cape Elizabeth region of WA coast

Oxygen model - Siedlecki et al, in prep


Photo credit:
Ellen Starr

Accomplishments

NANOOS is supporting the region:

- Supplied 5 letters of collaboration for OR & WA Sea Grant proposals
  - Primarily want data/data products on NVS & outreach
- Presented to NSF at CMOP Reverse Site Visit
  - "CMOP in the context of national priorities for ocean observing"
- West Coast Governors Alliance signed MOU with West Coast RAs
  - Fellowship to work with WC RAs to develop data products for WCGA on ocean acidification & marine debris, via Sea Grant

NANOOS: Northwest Association of Networked Ocean Observing Systems
1013 N.E. 40th Street
Seattle, WA 98105-6698
www.nanoos.org

The West Coast Ocean Observing Systems

July 8, 2013

Dear West Coast Governors Alliance on Ocean Health Executive Committee:

On behalf of the West Coast regional systems of the U.S. Integrated Ocean Observing System (IOOS), we write to affirm our intent to host a one-year fellowship in collaboration with, and with funding from, the WCGA's Regional Data Framework (RDF) Action Coordination Team (ACT) that will be administered by one of the West Coast Sea Grant offices.

The MOU between the WCGA and the West Coast OOS envisions collaboration on shared priority areas, leveraging human and financial resources to benefit our shared ecosystem. The proposed fellowship will achieve this by simultaneously furthering our organizations' objectives through a proven Sea Grant fellowship model.

Specifically, the proposed fellow will develop oceanographic data products for the West Coast that directly inform management questions being asked by the WCGA's ACTs. We anticipate that the fellow's work will address the issues of marine debris and ocean acidification, and that he or she will consult with the relevant ACTs and other experts in these areas. The products developed will be based on IOOS Data Management and

Accomplishments

NANOOS is relevant nationally:

- Newton asked to testify in Senate briefing on reauthorization of ICOOS and FOARAM Acts
- Two NANOOS PIs on IOOS Glider Plan
  - Lee, Barth
- One NANOOS PI on IOOS Modeling Comm.
  - Kurapov
- One NANOOS PI on IOOS HF Steering Team
  - Kosro

Accomplishments

NANOOS is relevant nationally:

- Baptista invited to co-chair “Developing a Science Plan for Estuarine Observing Systems: A National Workshop” in October 2013

- Newton asked to host OA Data Management workshop
  - Mayorga
  - Report at NODC
  - “Declaration of Interdependence”

NOAA NATIONAL OCEANOGRAPHIC DATA CENTER (NODC)
UNITED STATES DEPARTMENT OF COMMERCE

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Regional Science Officers
- NCDDC Regional Science Officers

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NODC Ocean Acidification Scientific Data Stewardship

The Federal Ocean Acidification Research and Monitoring (FOARAM) Act of 2009 mandates that NOAA establishes a monitoring and research program to document ocean acidification (OA) impacts. In general terms, ocean acidification refers to the net changes in seawater chemistry, including decreases in seawater pH, due to the ocean's absorption of atmospheric carbon dioxide (see what is ocean acidification?). A consensus research strategy has been developed for NOAA to advance the understanding of the impacts of ocean acidification and to address related challenges to local and national ecosystems and communities (NOAA Ocean Acidification Steering Committee, 2010). The NOAA Ocean Acidification Program was formally established in May 2011 to integrate and fund efforts across and external to NOAA that address Ocean Acidification (NOAA Ocean Acidification Program Director, Libby Jewett, Ph.D.).

The National Oceanographic Data Center (NODC) serves as the NOAA Ocean Acidification data management focal point through its Ocean Acidification Data Stewardship (OADS) project. The overarching goal of the OADS project is to serve the OA community by providing dedicated online data discovery, access to NODC-hosted and distributed authoritative data sources, long-term archival, coordinated data flow, and scientific stewardship for a diverse range of OA and other chemical, physical, and biological oceanographic data. OADS builds on a collaborative approach with shared responsibilities among scientists, data managers, and NODC. The principles for this collaborative data management are articulated in the Declaration of Interdependence of Ocean Acidification Data Management Activities in the U.S., resulting from the first Ocean Acidification Data Management Workshop in March 2012.

"Declaration of Interdependence of Ocean Acidification Data Management Activities in the U.S."

Therefore, be it resolved that the 31 participants of an OA Data Management workshop in Seattle, WA on 13-15 March 2012 … identified three necessary steps forward to achieve this vision:

1. **The endorsement of agency program directors and managers for collective use** of machine-to-machine cataloging and data retrieval protocols (including THREDDS/OPeNDAP) by each agency data center to provide synergistic, consolidated mechanisms for scientists to locate and acquire oceanographic data;
2. **The commitment of the scientific community to establish best practices for OA data collection** and metadata production, and the leadership to provide a means of gaining this consensus; and
3. **The endorsement of agency program directors and managers to direct data managers to collaborate to develop the system articulated above** and contribute to a single national web portal to provide an access point and visualization products for OA.

We, the undersigned, request your attention to this matter and commitment to bringing this vision to reality in the next five years for the benefit of our nation and contribution to the global understanding.

Accomplishments

NANOOS is relevant nationally:

- Three proposals from NANOOS to SURA for Community Modeling Testbed
  - MacCready-Baptista; Mooers et al., Kurapov et al.
- SURA may fund one for West Coast
  - Kurapov (NANOOS), Edwards (CeNCOOS), Chao (SCCOOS)
- NANOOS will be very visible at CERF 2013

Accomplishments

NANOOS leadership visible internationally:

- Global OA Observing Network
  - Newton asked to host first workshop in Seattle
    - » Accord of 62 people from 23 countries
  - Seattle Consensus Report “Toward a Global Ocean Acidification Observing Network” on-line
    - » http://www.pmel.noaa.gov/co2/GOA_ON/GOA-ON_Interim_Report_July2013.pdf
  - Attended second workshop in St. Andrews
    - » 87 people from 29 countries ratified Seattle report; worked to fill in biological measurements

Accomplishments

NANOOS leadership visible internationally:

- Martin on Ocean Network Canada International Science Advisory Board
  - Advise on scientific plans and progress
- Newton on Scientific Advisory Committee of the Joint European Research Infrastructure Network for Coastal Observatories (JERICO)
  - Review Trans National Access (TNA) proposals

Accomplishments

NANOOS exercised its governance:

- **NANOOS Governing Council amended NANOOS MOA: 8.8.13**
  - Clarified our intent to include Canada
    - Oceans Network Canada
    - Vancouver Island University
    - Humboldt State University

NANOOS Governing Council Members 8/2013

85 % Yea votes from 47 voting members

New member drive

- Feds:
- Tribes:
- State:
- Industry:
- NGOs:
- Academic/Research:

Opportunities

- More partnerships on many levels
- Diversify our funding portfolio
- User service (help, specialization, etc.)

Challenges

- Sustaining infrastructure on ~level funding

Accomplishments:

NANOOS sets bar high

The region is coming to NANOOS

NANOOS is supporting the region

NANOOS is relevant nationally

NANOOS leadership visible internationally

NANOOS uses its governance; is growing

NANOOS remains vital !

- "Why is NANOOS so good?"
  - The people: creativity
  - The spirit: cooperation
  - The concept: collaboration

Northwest Association of Networked Ocean Observing Systems

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

IOOS®
INTEGRATED OCEAN OBSERVING SYSTEM

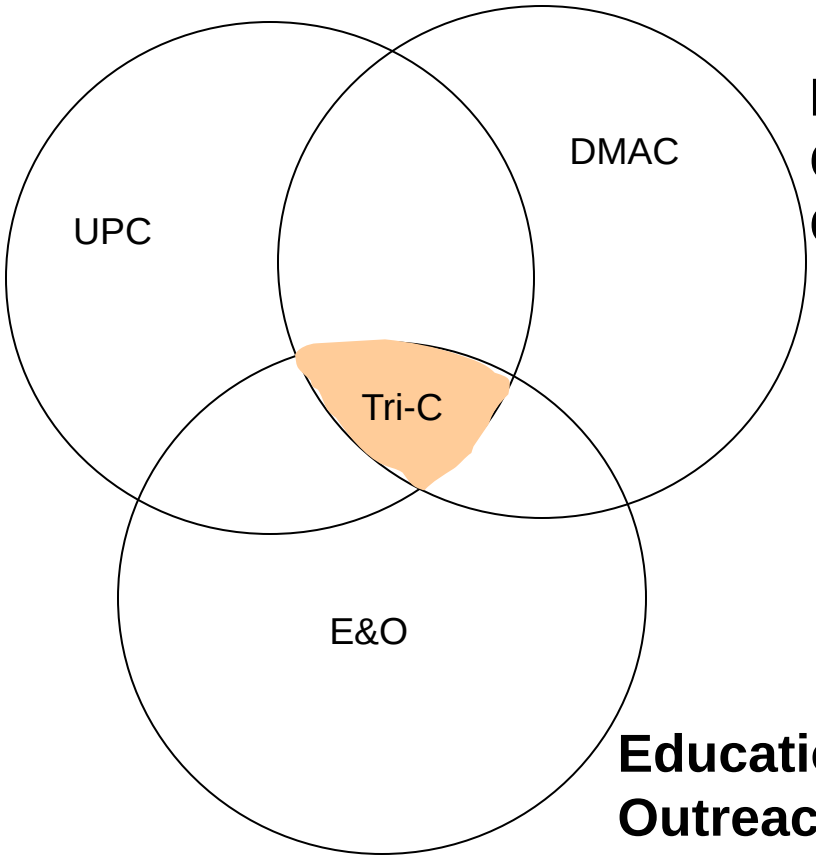
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

www.nanoos.org

5. NANOOS Standing Committees reports

NANOOS Standing Committees and integration

User Products Committee



Data Management and Communication Committee

Education and Outreach Committee

The three committees meet for "Tri-Committee" meetings to jointly establish priorities and activities; in addition, some members span more than one committee

NANOOS
User Products

Jonathan Allan

IOOS®
INTEGRATED OCEAN OBSERVING SYSTEM

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

NANOOS

UPC Committee Members

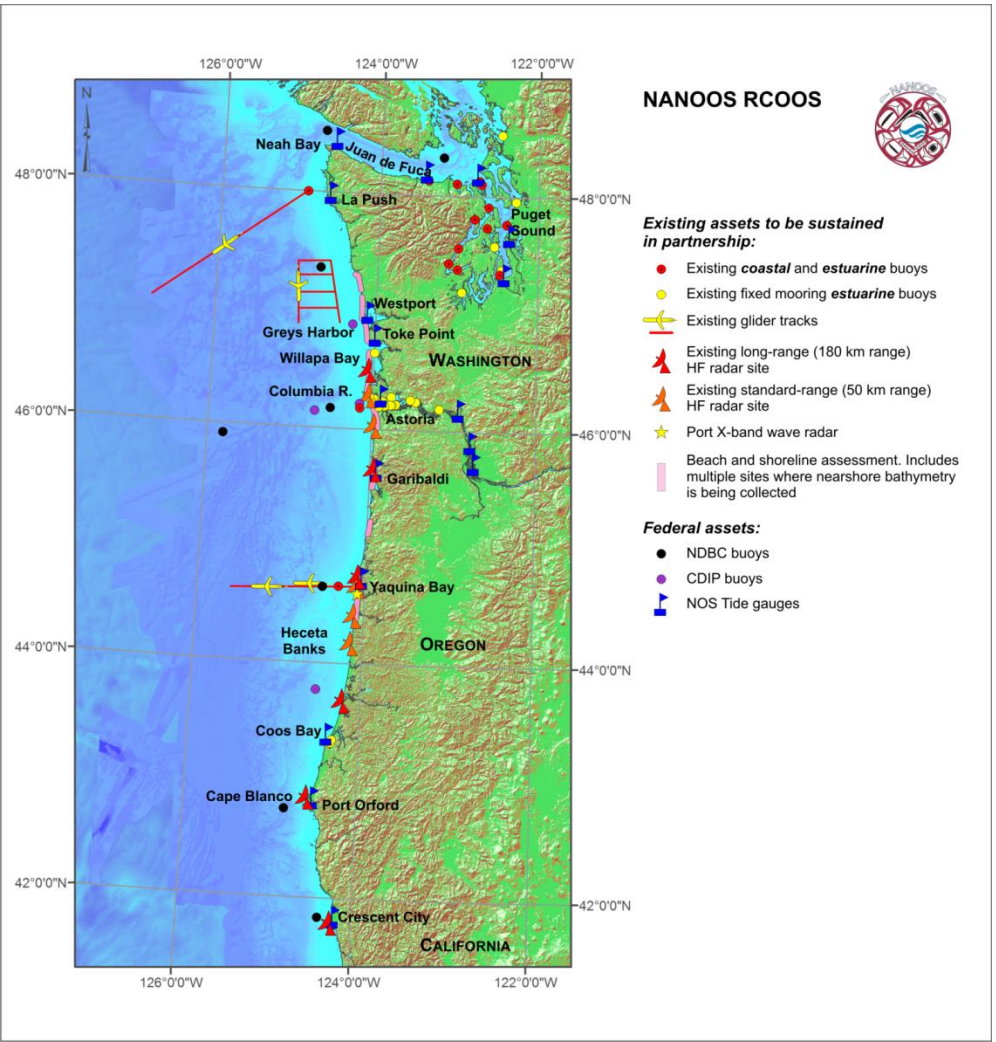
- Jon Allan (DOGAMI), Chair
- Rick Blair (Boeing), DMAC
- Pat Corcoran (OR Sea Grant)
- Dave Foley (NOAA)
- David Jones (APL, UW), Web/DMAC
- Mike Kosro (COAS, OSU)
- Emilio Mayorga (APL, UW), DMAC co Chair
- Jan Newton (NANOOS, APL, UW)
- Craig Risien (COAS, OSU), DMAC
- Charles Seaton, (CMOP, OHSU), DMAC
- Amy Sprenger (NANOOS), E&O
- Ted Strub (COAS, OSU)
- Troy Tanner (APL, UW), Web/DMAC
- Jenifer Rhoades (IOOS)

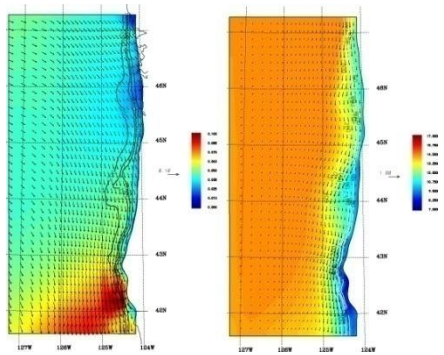
Sub-working group members

The Challenge - Many Stakeholders

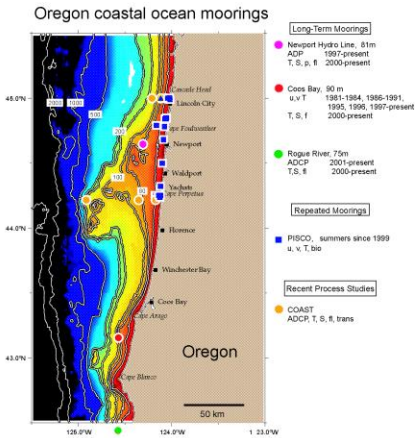
- State (e.g. ODFW, WADOE, DSL,…) and Federal agencies (NOAA, NWS, FEMA, US Coast Guard,...),
- Cities and Counties
- Ocean engineering (instruments, wave energy, telecommunication),
- NGO's,
- Ports,
- Bar pilots,
- Fishers (recreational and commercial),
- Shellfish growers,
- Recreational boaters,
- Tribes,
- Geotechnical consultants,
- Universities/researchers,
- Schools (k-12),
- Public-at-large,
- and many others…

Many Data Types

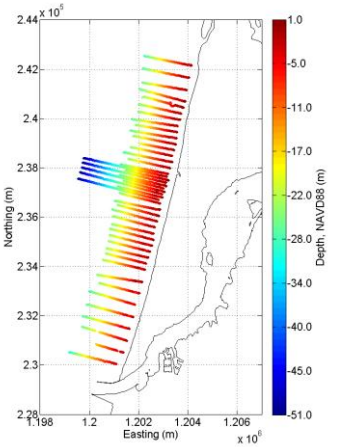




Overlays (Satellite, Models, & other geospatial data)



Shelf moorings & gliders



Shorelines & Bathymetry

NANOOS

Northwest Association of Networked Ocean Observing Systems

Apps | Settings | Log In

NVS

NANOOS Visualization System

v3.1 | Contact | NANOOS

(All NANOOS assets and Data streams)

Data Explorer

(Hazards)

Tsunami Evacuation Zones

(Ocean conditions, Fisheries)

Tuna Fishers

(Shellfish Industry)

Shellfish Growers

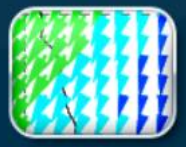
(Hazards, Climate Change)

Beach and Shoreline Changes

(Hazards, Maritime Operations, Climate, Fisheries)

Maritime Operations

(Ocean conditions)



High Frequency Radar

(Ocean conditions)

Cruises

(Ocean conditions)

Gliders

Additions & Updates

View Last 3 Months

NWFSC ESPSamish — *Added on 7 Aug 2013*

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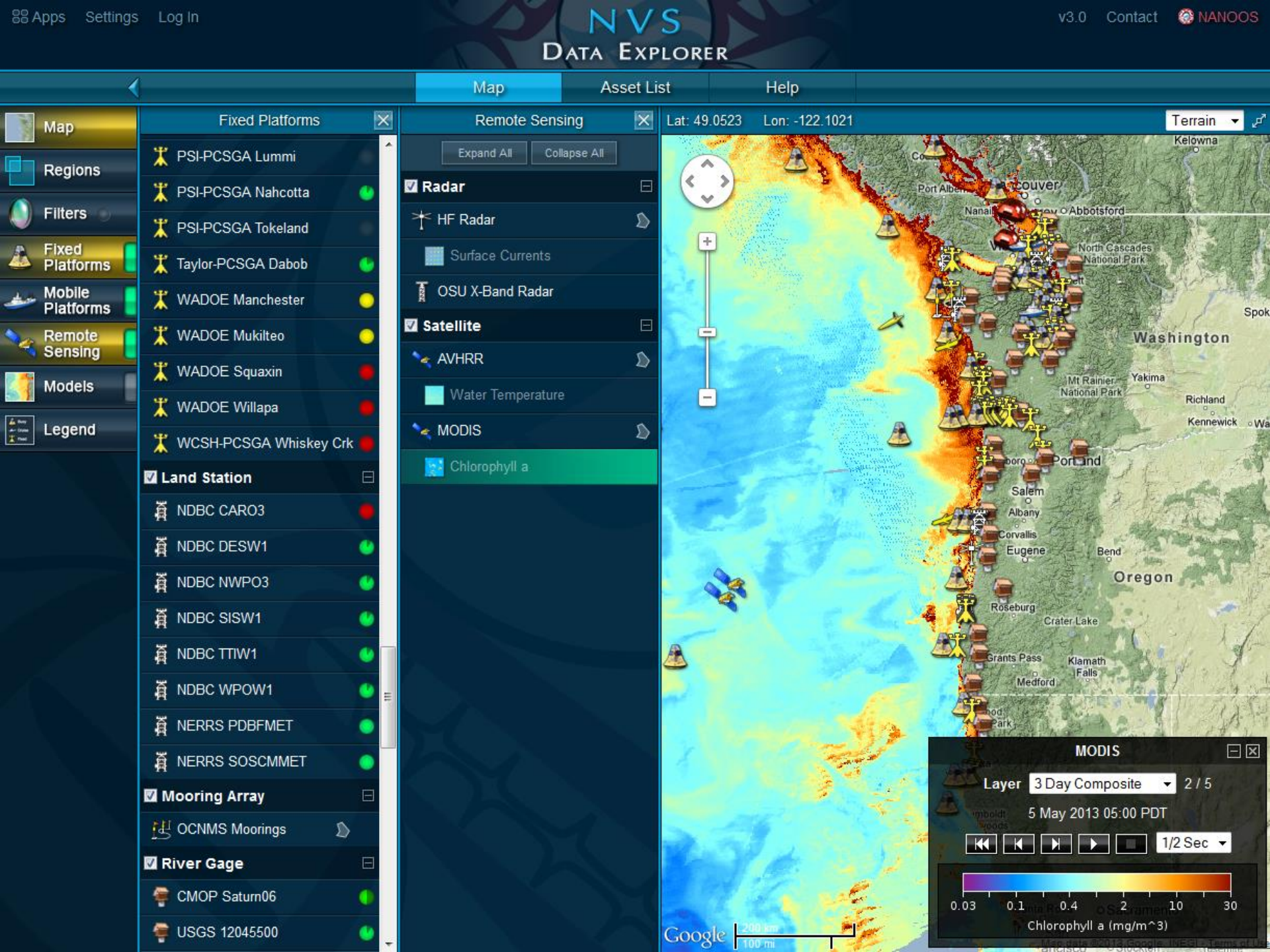

Apps
Settings
Log In
NVS
Data Explorer
v3.0
Contact
NANOOS
Map
Asset List
Help
Map
Regions
Filters
Fixed Platforms
Mobile Platforms
Remote Sensing
Models
Legend
Fixed Platforms
PSI-PCSGA Lummi
PSI-PCSGA Nahcotta
PSI-PCSGA Tokeland
Taylor-PCSGA Dabob
WADOE Manchester
WADOE Mukilteo
WADOE Squaxin
WADOE Willapa
WCSH-PCSGA Whiskey Crk
Land Station
NDBC CARO3
NDBC DESW1
NDBC NWPO3
NDBC SISW1
NDBC TTIW1
NDBC WPOW1
NERRS PDBFMET
NERRS SOSCMMET
Mooring Array
OCNMS Moorings
River Gage
CMOP Saturn06
USGS 12045500
Remote Sensing
Expand All
Collapse All
Radar
HF Radar
Surface Currents
OSU X-Band Radar
Satellite
AVHRR
Water Temperature
MODIS
Chlorophyll a
Lat: 49.0523
Lon: -122.1021
Terrain
Kelowna
Abbotsford
North Cascades National Park
Washington
Mt Rainier National Park
Yakima
Richland
Kennewick
Portland
Salem
Albany
Corvallis
Eugene
Bend
Oregon
Roseburg
Crater Lake
Grants Pass
Klamath Falls
Medford
MODIS
Layer
3 Day Composite
2 / 5
5 May 2013 05:00 PDT
1/2 Sec
0.03
0.1
0.4
2
10
30
Chlorophyll a (mg/m^3)
Google
200 km
100 mi

NVS History and Status:

Mar. 2010 - v1.5 released (added forecast capabilities, access to gliders and cruise data)

May 2010 - v1.6 released (added access to various map image overlays e.g. HF radar, satellite imagery, and ocean models). v1.0 iPhone NVS mobile app released

Aug 2010 - v2.0 released (added comparator (model vs measured time series) and forecast overlays). v1.0 Android NVS mobile app released

Mar 2011 - v2.5 released (added MyNANOOS option, customized units and settings)

Apr 2011 – v1.5 iPhone NVS released

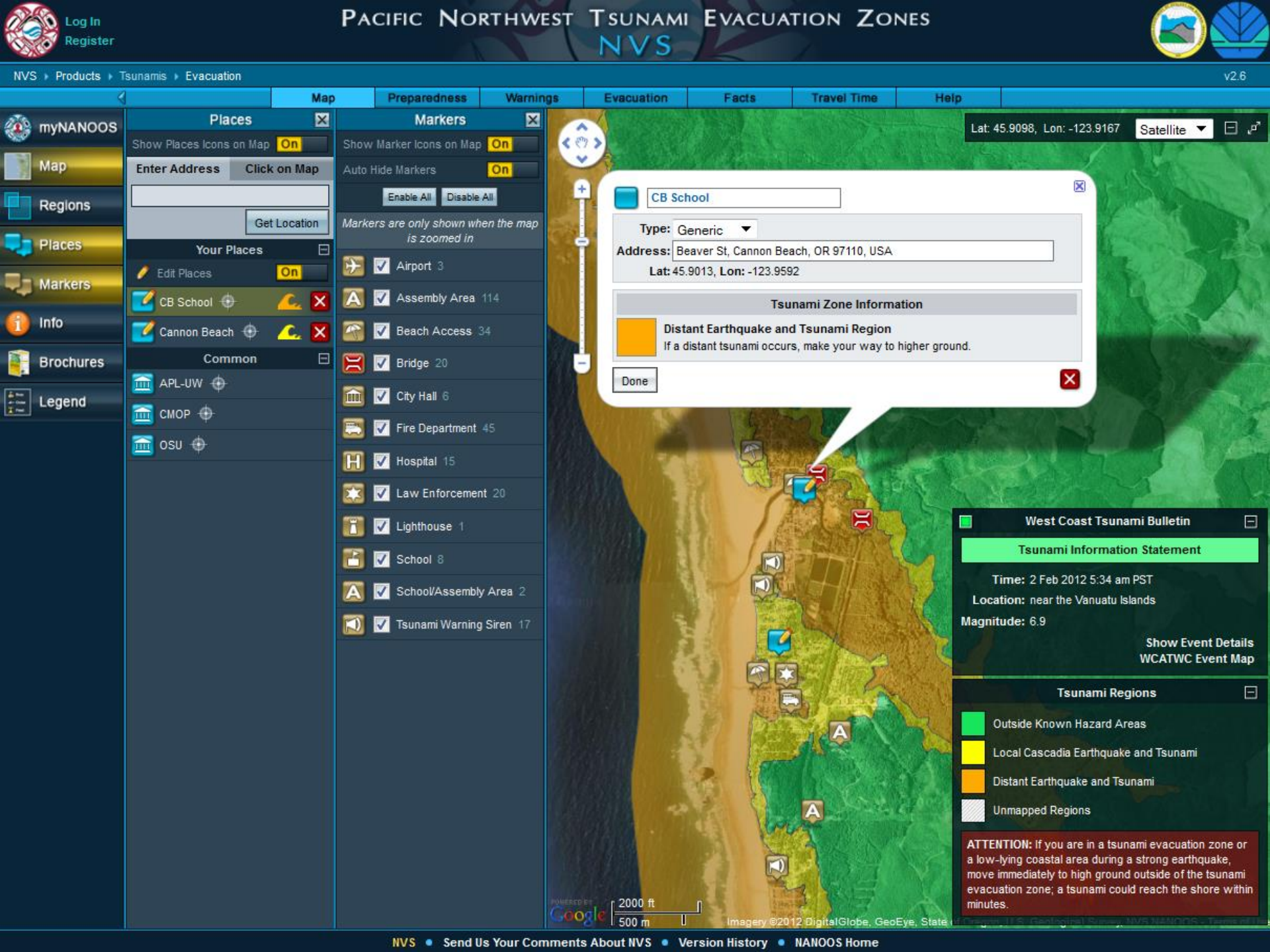
Jun 2011 - v. 2.0 iPhone NVS released (Android Sep 2011)

Nov 2011 - v2.6 released (added Tsunami evacuation zones NVAP, and user created places)

Nov 2011 - v. 1.0 iPhone TsunamiNW-Evac app released (Android Jan 2012)

Mar 2013 – v3.0 released (v3.1 in June)

Jun 2013 – v3.1 iPhone/Android NVS released


Log In
Register
Pacific Northwest Tsunami Evacuation Zones
NVS
NVS ▸ Products ▸ Tsunamis ▸ Evacuation
v2.6
Map
Preparedness
Warnings
Evacuation
Facts
Travel Time
Help
myNANOOS
Map
Regions
Places
Markers
Info
Brochures
Legend
Places
Show Places Icons on Map On
Enter Address
Click on Map
Get Location
Your Places
Edit Places On
CB School
Cannon Beach
Common
APL-UW
CMOP
OSU
Markers
Show Marker Icons on Map On
Auto Hide Markers On
Enable All
Disable All
Markers are only shown when the map is zoomed in
Airport 3
Assembly Area 114
Beach Access 34
Bridge 20
City Hall 6
Fire Department 45
Hospital 15
Law Enforcement 20
Lighthouse 1
School 8
School/Assembly Area 2
Tsunami Warning Siren 17
Lat: 45.9098, Lon: -123.9167
Satellite
CB School
Type: Generic
Address: Beaver St, Cannon Beach, OR 97110, USA
Lat: 45.9013, Lon: -123.9592
Tsunami Zone Information
Distant Earthquake and Tsunami Region
If a distant tsunami occurs, make your way to higher ground.
Done
West Coast Tsunami Bulletin
Tsunami Information Statement
Time: 2 Feb 2012 5:34 am PST
Location: near the Vanuatu Islands
Magnitude: 6.9
Show Event Details
WCATWC Event Map
Tsunami Regions
Outside Known Hazard Areas
Local Cascadia Earthquake and Tsunami
Distant Earthquake and Tsunami
Unmapped Regions
ATTENTION: If you are in a tsunami evacuation zone or a low-lying coastal area during a strong earthquake, move immediately to high ground outside of the tsunami evacuation zone; a tsunami could reach the shore within minutes.
2000 ft
500 m
Imagery ©2012 DigitalGlobe, GeoEye, State
NVS • Send Us Your Comments About NVS • Version History • NANOOS Home

NANOOS

NORTHWEST ASSOCIATION OF NETWORKED OCEAN OBSERVING SYSTEMS

IOOS INTEGRATED OCEAN OBSERVING SYSTEM

Apps | Settings | Log In | v3.1 | Contact | NANOOS

NVS

NANOOS VISUALIZATION SYSTEM


Data Explorer

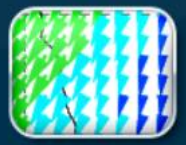

Tsunami Evacuation Zones


Tuna Fishers


Shellfish Growers


Beach and Shoreline Changes


Maritime Operations


High Frequency Radar


Cruises


Gliders

ADDITIONS & UPDATES

View Last 3 Months

NWFSC ESPSamish — *Added on 7 Aug 2013*

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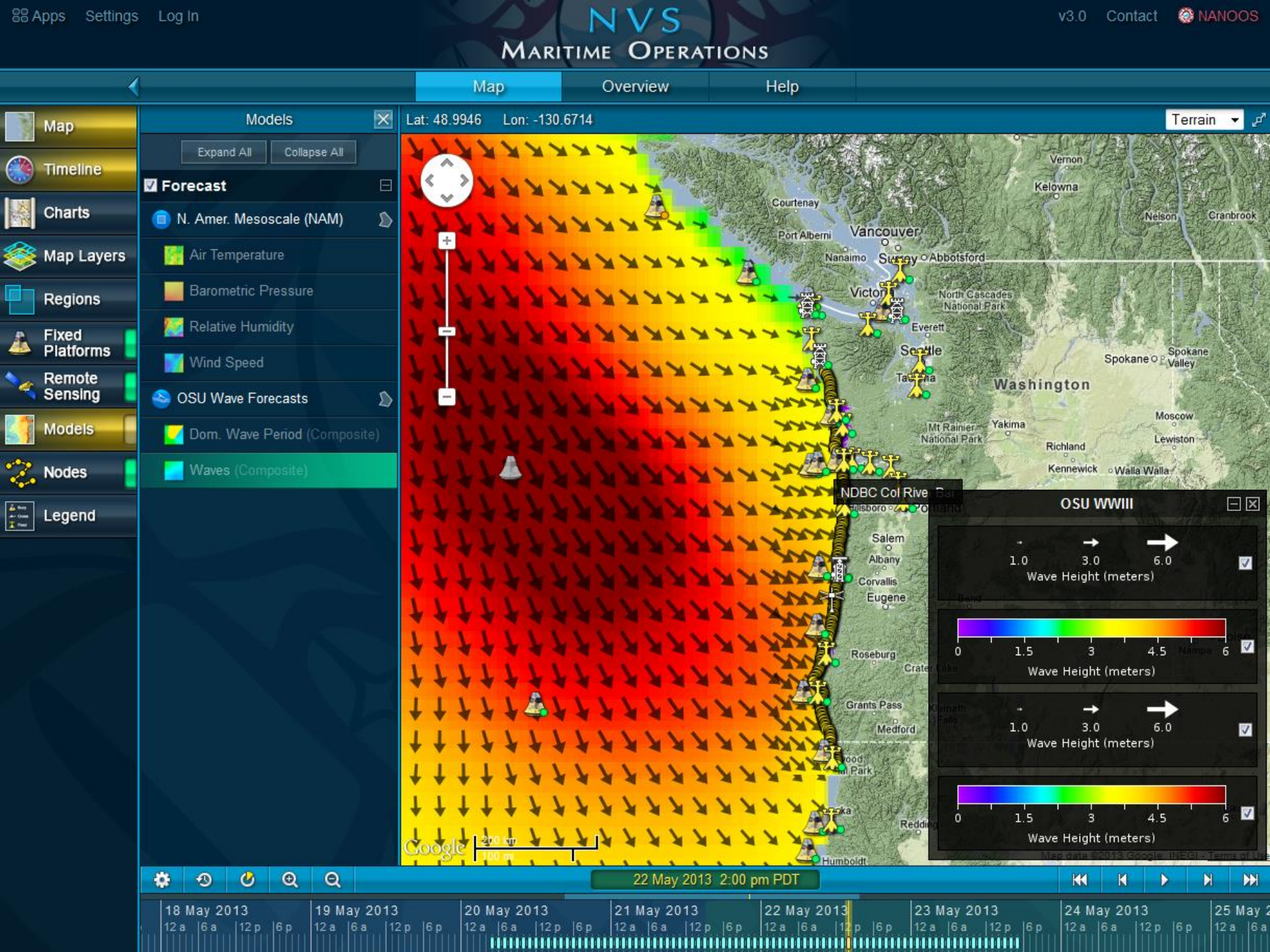

Apps
Settings
Log In
NVS
Maritime Operations
v3.0
Contact
NANOOS
Map
Overview
Help
Map
Timeline
Charts
Map Layers
Regions
Fixed Platforms
Remote Sensing
Models
Nodes
Legend
Models
Expand All
Collapse All
Forecast
N. Amer. Mesoscale (NAM)
Air Temperature
Barometric Pressure
Relative Humidity
Wind Speed
OSU Wave Forecasts
Dom. Wave Period (Composite)
Waves (Composite)
Lat: 48.9946
Lon: -130.6714
Terrain
Vancouver
Seattle
Washington
Spokane
Portland
Salem
Albany
Corvallis
Eugene
Roseburg
Grants Pass
Medford
Humboldt
NDBC Col Rive
OSU WWIII
1.0
3.0
6.0
Wave Height (meters)
0
1.5
3
4.5
6
Wave Height (meters)
1.0
3.0
6.0
Wave Height (meters)
0
1.5
3
4.5
6
Wave Height (meters)
Google
22 May 2013 2:00 pm PDT
18 May 2013
19 May 2013
20 May 2013
21 May 2013
22 May 2013
23 May 2013
24 May 2013
25 May
12 a
6 a
12 p
6 p

Map
Timeline
Charts
Map Layers
Regions
Fixed Platforms
Remote Sensing
Models
Nodes
Legend

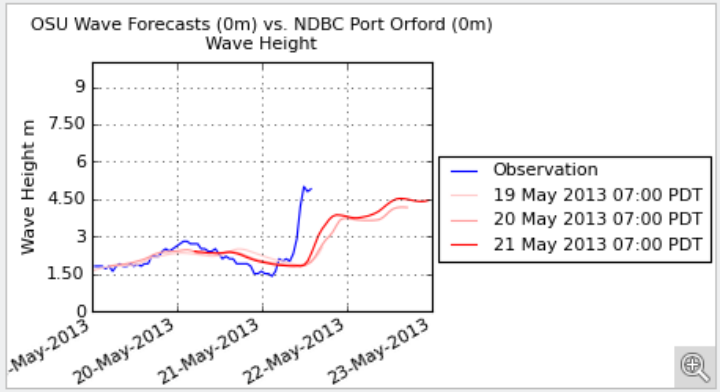
Lat: 43.8107 Lon: -125.6067

Terrain

Station 46015 (LLNR 590) - Port Orford

Observations Forecasts Comparator Details History

NAM OSU WWIII



Dominant Wave Period
Wave Height
Wave Mean Direction

Link

Humbug Mountain State Park

Google 20 km 10 mi

OSU WWIII

22 May 2013 2:00 pm PDT

18 May 2013 19 May 2013 20 May 2013 21 May 2013 22 May 2013 23 May 2013 24 May 2013 25 May 2
12 a 6 a 12 p 6 p

Apps Settings Log In

NVS
Maritime Operations

v3.0 Contact NANOOS

Map | Overview | Help

Map
Timeline
Charts
Map Layers
Regions
Fixed Platforms
Remote Sensing
Models
Nodes
Legend

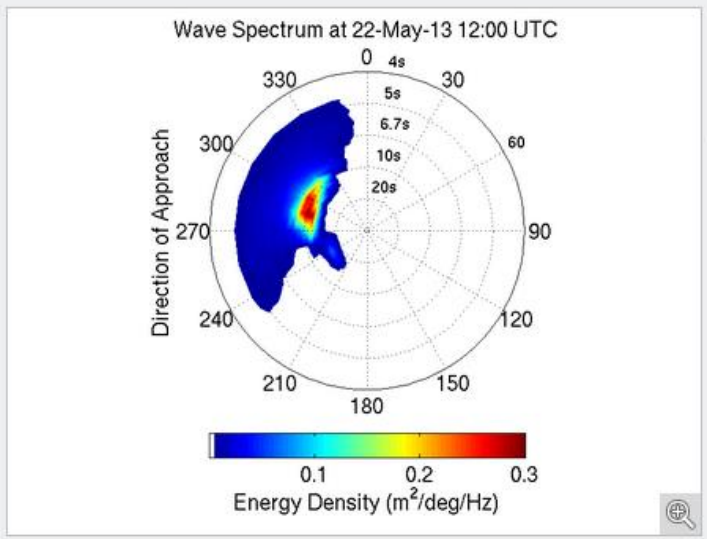
Lat: 44.375 Lon: -124.1151

Terrain

OSU WWIII Forecasts - 25 meters - Location 120

Plots | Details

Reference | Time Series | Spectra | Polar



FH0
FH24
FH49
FH72

Link

Albany
Corvallis
Lebanon
Eugene
Bend
Oregon
North Cascades
Lake Chelan State Park
Wenatchee
Wash

Google 100 km 50 mi

OSU WWIII

22 May 2013 2:00 pm PDT

18 May 2013 | 19 May 2013 | 20 May 2013 | 21 May 2013 | 22 May 2013 | 23 May 2013 | 24 May 2013 | 25 May
12 a 6 a 12 p 6 p

Apps Settings Log In

NVS
Maritime Operations

v3.0 Contact NANOOS

Map | Overview | Help

Map
Timeline
Charts
Map Layers
Regions
Fixed Platforms
Remote Sensing
Models
Nodes
Legend

Charts

Seamless Nautical Charts
- NOAA Nautical Charts

Washington Nautical Charts

Oregon Nautical Charts
- Cape Blanco - Yaquina Bay
- Cape Sebastian - Humbug Mt.
- Coquille River (Entrance)
- Coos Bay
- Depoe Bay - Alsea Bay
- Nehalem River
- Port Orford - Cape Blanco
- Pyramid Point - Cape Sebastian
- Siuslaw River
- Trinidad Head - Cape Blanco
- Tillamook Bay
- Umqua River - Entrance
- Yaquina Bay - Columbia River
- Yaquina Bay & River

California Nautical Charts

Other Nautical Charts

Lat: 44.6324 Lon: -124.1059

Terrain

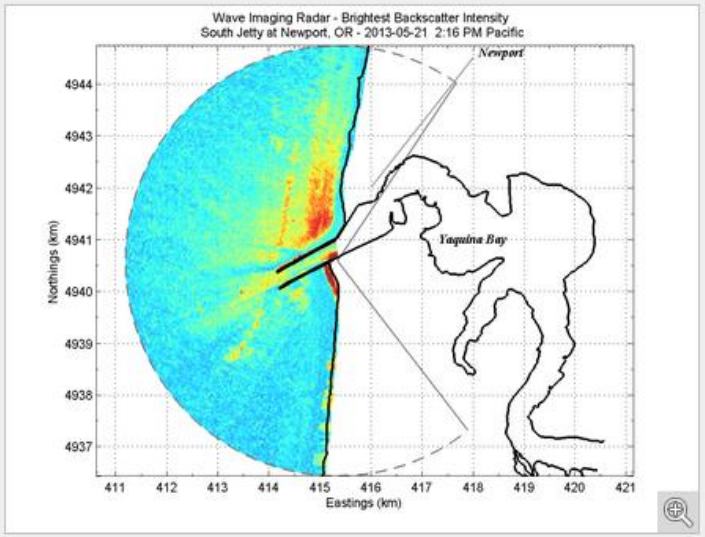
Click to zoom

O R T H
C I F I C
C E A N

X-Band Wave Imaging Marine Radar

Plots | Details | History

Imagery | Spectra | Time Series



- Single Rotation
- Average Intensity
- Brightest Intensity
- Standard Deviation of Intensity

Link

Google

Map data ©2013 Google - Terms of Use Report a map error

22 May 2013 2:00 pm PDT

18 May 2013 | 19 May 2013 | 20 May 2013 | 21 May 2013 | 22 May 2013 | 23 May 2013 | 24 May 2013 | 25 May 2
12 a 6 a 12 p 6 p

NANOOS

Northwest Association of Networked Ocean Observing Systems

Apps | Settings | Log In | v3.1 | Contact | NANOOS

NVS

NANOOS Visualization System


Data Explorer


Tsunami Evacuation Zones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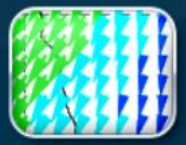
High Frequency Radar


Cruises


Gliders

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NANOOS

Northwest Association of Networked Ocean Observing Systems

IOOS Integrated Ocean Observing System

Apps | Settings | Log In

NVS Shellfish Growers

v3.1 | Contact | NANOOS

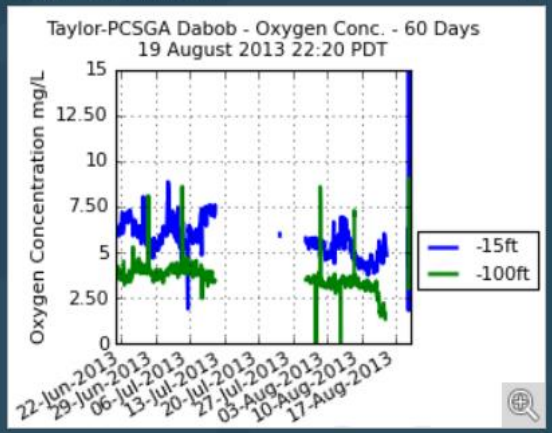
Map | About | Reference | Help

- Map
- Timeline
- Regions
- Fixed Platforms
- Remote Sensing
- Plots
- Legend

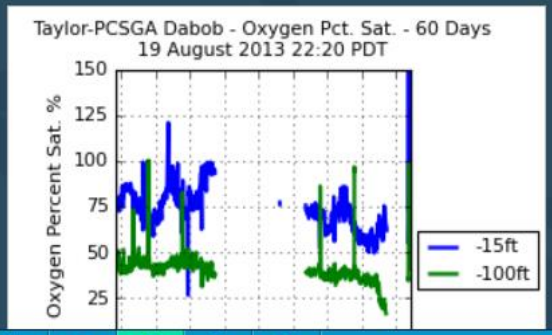
Plots

Taylor-PCSGA Dabob

Oxygen Concentration



Oxygen Percent Sat.



Lat: 49.5744 Lon: -124.7443

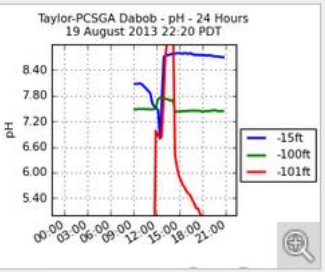
Terrain

PCSGA - Taylor Shellfish Hatchery intakes, Dabob Bay

Observations | Details | History | Credits

Provider: TaylorShellfish

Data Updated: 19 Aug 2013 20:41 PDT



24 Hours | 7 Days | 30 Days | 60 Days

Oxygen Conc.		
-15ft:	4.9	mg/L
-100ft:	3.7	mg/L
-101ft:	4.5	mg/L
Oxygen Pct. Sat.		
-15ft:	63.9	%
-100ft:	40.8	%
pH		
-15ft:	8.7	
-100ft:	7.4	
-101ft:	7.4	
Salinity		
-15ft:	28.2	PSU
-100ft:	30.4	PSU
Water Temp.		
-15ft:	67.4	°F

Link

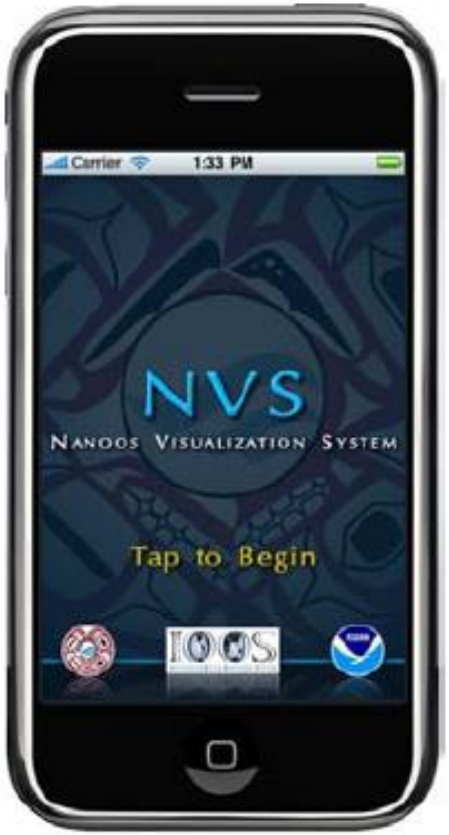
Google

Map data ©2013 Google | 20 km | Terms of Use | Report a map error

19 August 2013 10:20 pm PDT

013 | 17 Aug 2013 | 18 Aug 2013 | 19 Aug 2013 | 20 Aug 2013 | 21 Aug 2013 | 22 Aug 2013 | 23 Aug 20

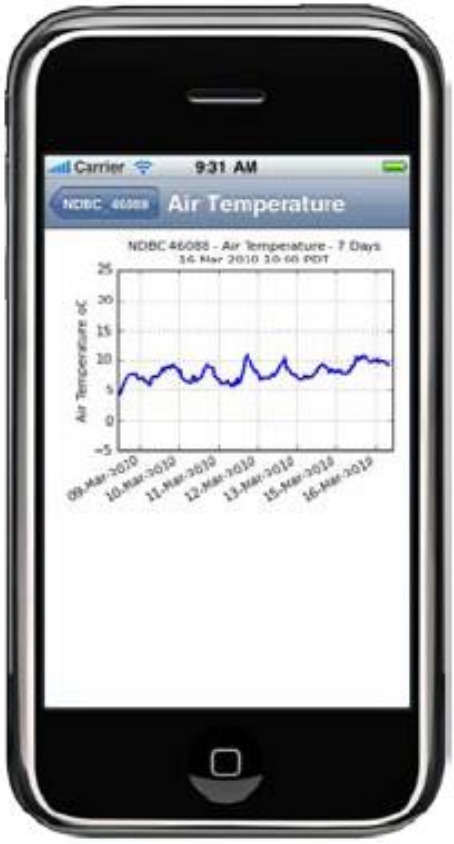
NVS iPhone/iPad App (and Android): info in the field



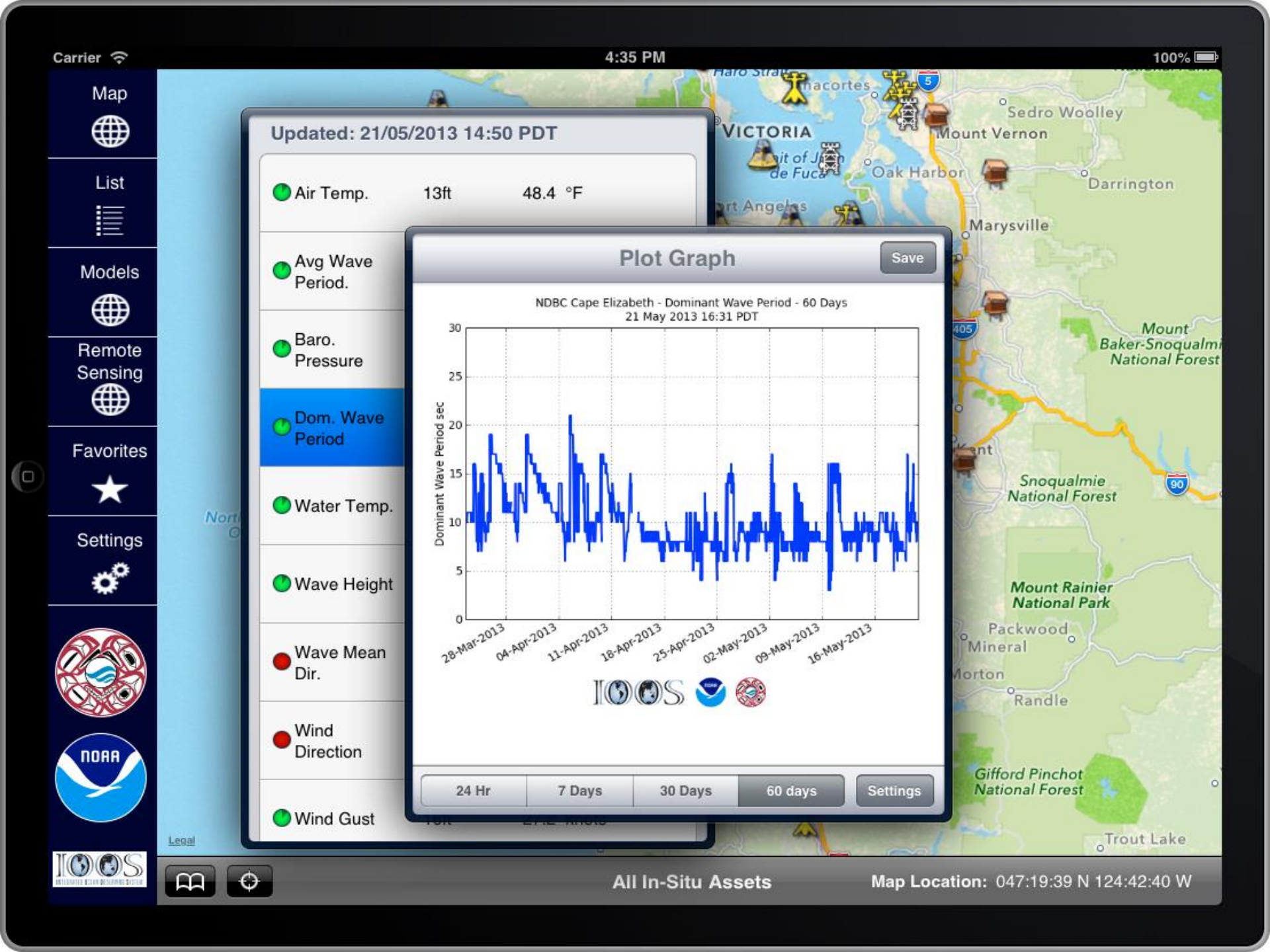
NVS iPhone App

Assets on Google Map

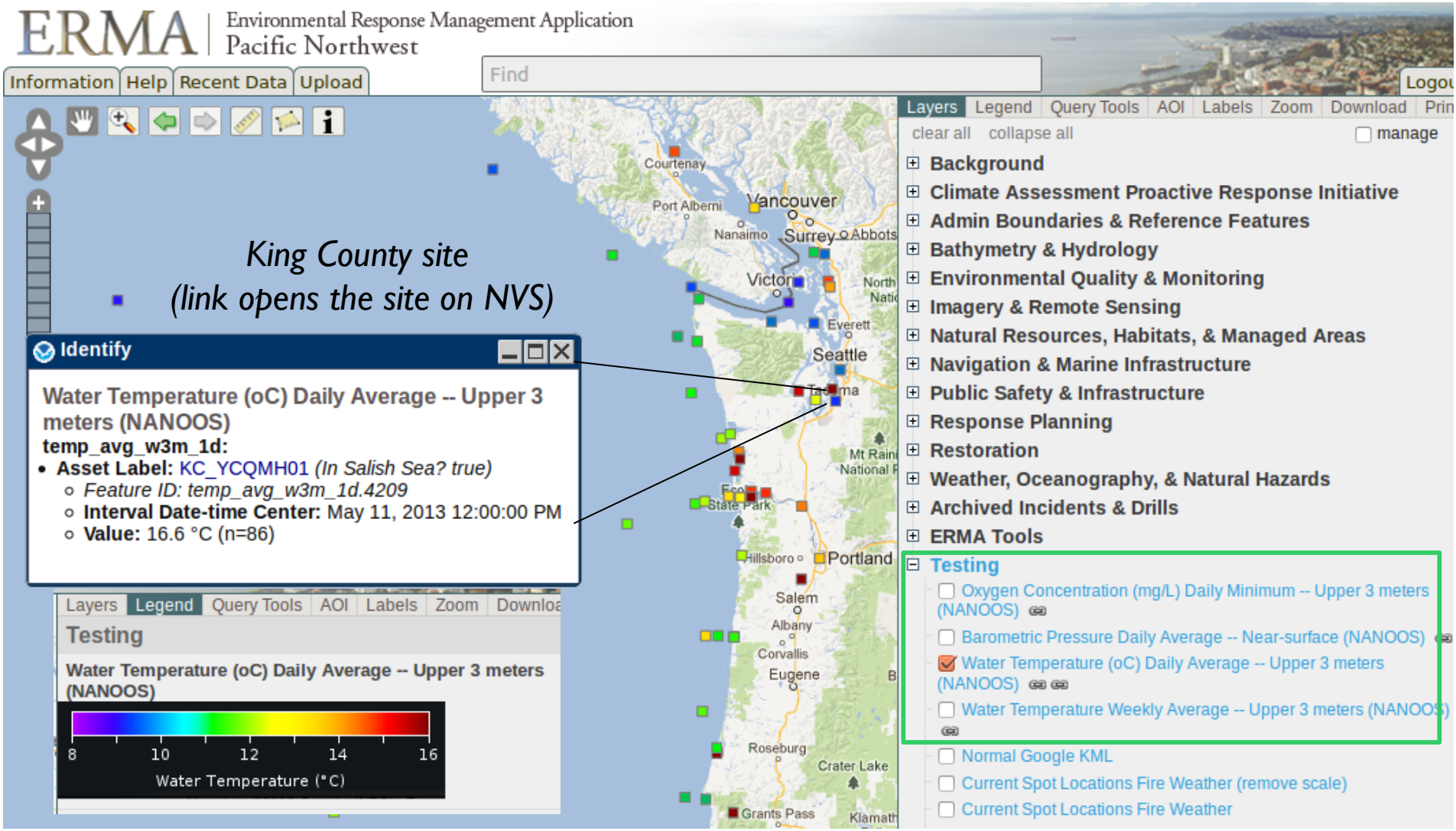
Sensor Data Values



Weekly Trends


Carrier
4:35 PM
100%
Map
List
Models
Remote Sensing
Favorites
Settings
NOAA
IOOS
Updated: 21/05/2013 14:50 PDT
Air Temp. 13ft 48.4 °F
Avg Wave Period.
Baro. Pressure
Dom. Wave Period
Water Temp.
Wave Height
Wave Mean Dir.
Wind Direction
Wind Gust
Plot Graph
Save
NDBC Cape Elizabeth - Dominant Wave Period - 60 Days
21 May 2013 16:31 PDT
Dominant Wave Period sec
30
25
20
15
10
5
0
28-Mar-2013
04-Apr-2013
11-Apr-2013
18-Apr-2013
25-Apr-2013
02-May-2013
09-May-2013
16-May-2013
IOOS
24 Hr
7 Days
30 Days
60 days
Settings
Legal
All In-Situ Assets
Map Location: 047:19:39 N 124:42:40 W
VICTORIA
Sedro Woolley
Mount Vernon
Oak Harbor
Darrington
Marysville
Mount Baker-Snoqualmie National Forest
Snoqualmie National Forest
Mount Rainier National Park
Packwood
Mineral
Randle
Gifford Pinchot National Forest
Trout Lake

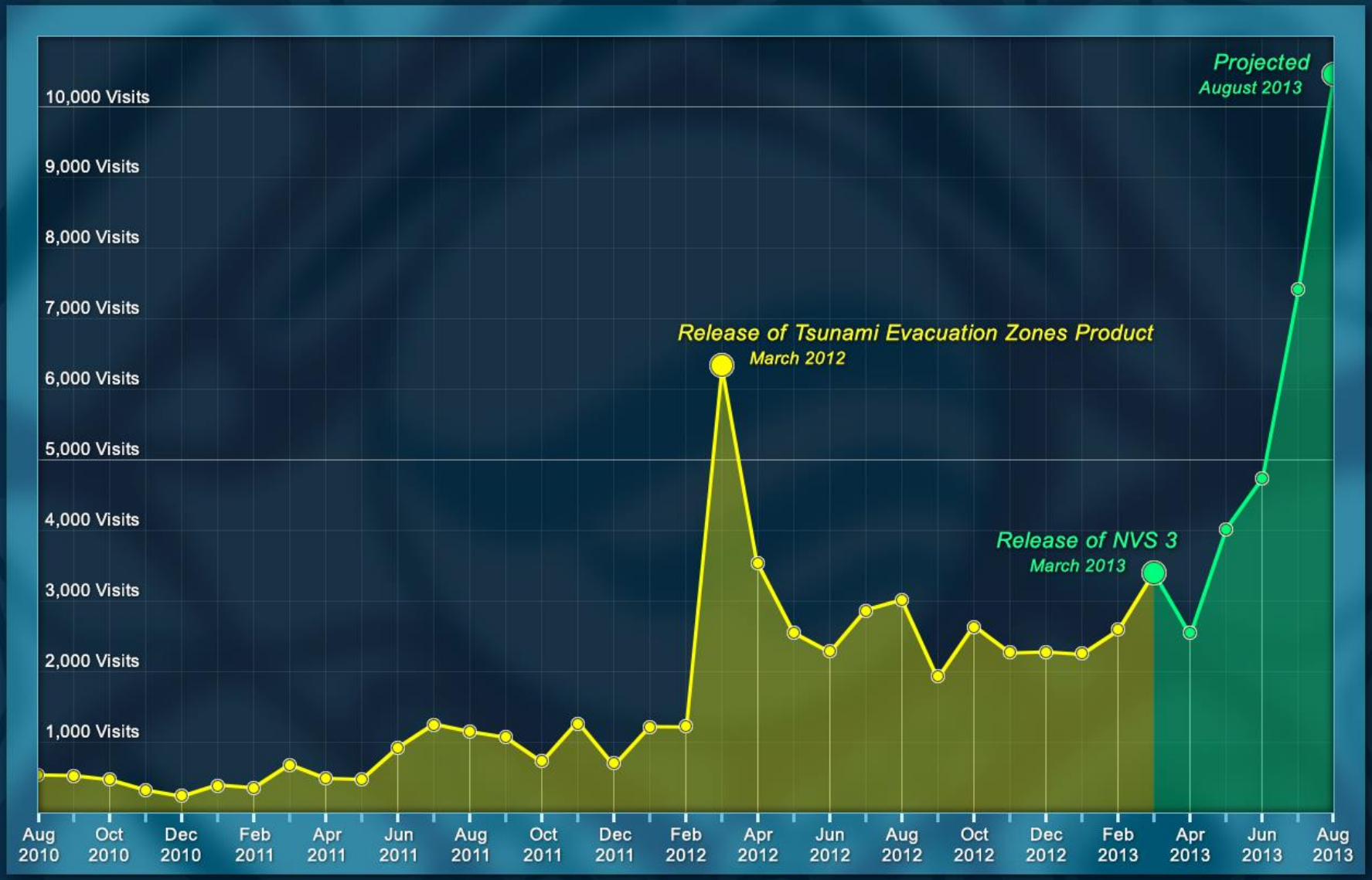
"Encyclopedia of Puget Sound & ERMA PNW" now have NVS Situational Awareness maps



URL's for live systems: EoPS: http://www.eopugetsound.org/
ERMA PNW: https://www.erma.unh.edu/northwest/erma.html

NVS

Visitor Counts: August 2010 - August 2013

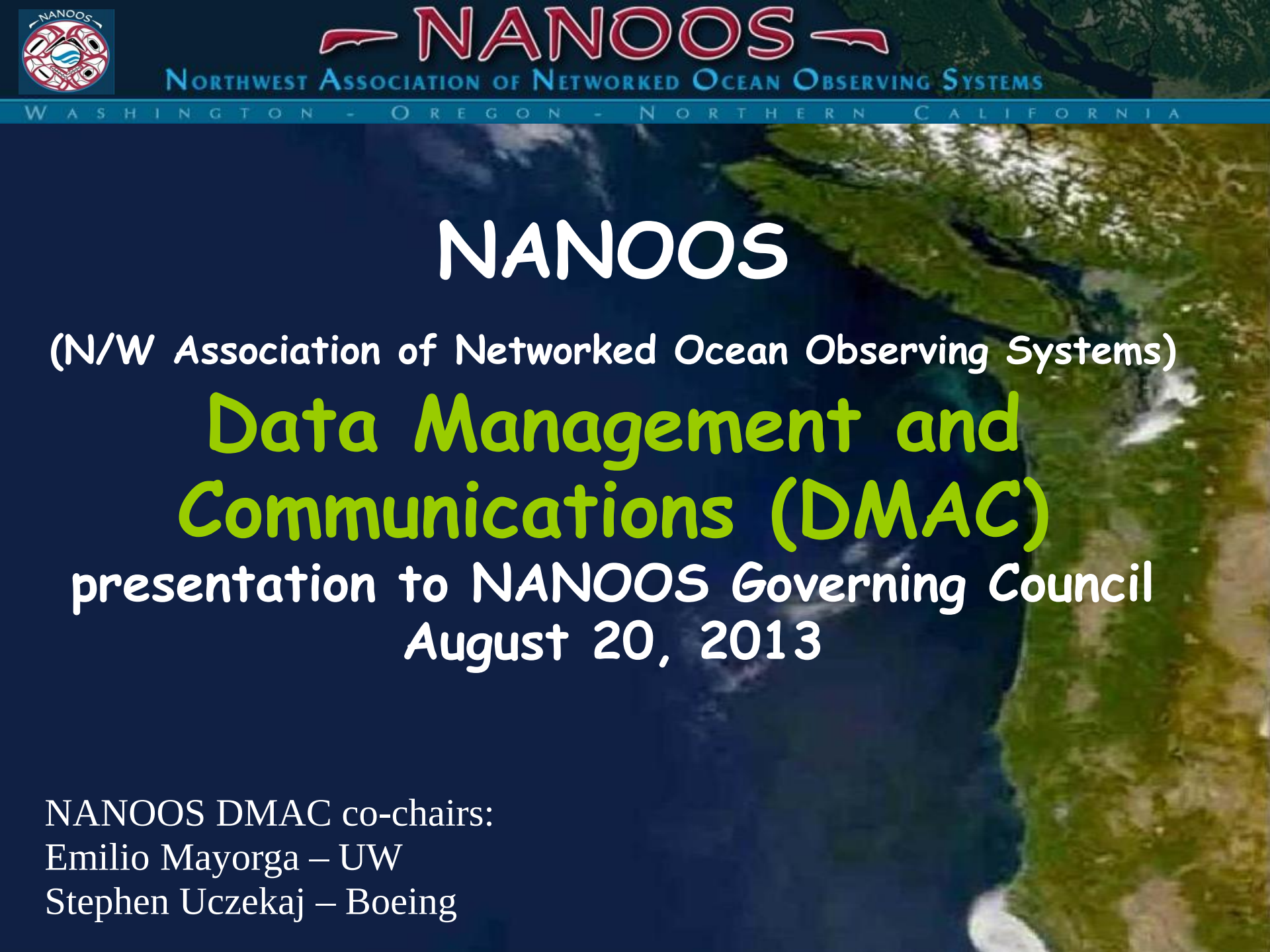


Statistics provided by Google Analytics

Troy Tanner, APL-UW

19 August 2013

Questions?



NANOOS

(N/W Association of Networked Ocean Observing Systems)

Data Management and Communications (DMAC)

presentation to NANOOS Governing Council

August 20, 2013

NANOOS DMAC co-chairs:
Emilio Mayorga – UW
Stephen Uczekaj – Boeing

Outline

- DMAC Team and Activities
- DMAC and NVS System Architecture
- 2013 DMAC Progress
- Significant Accomplishments
- Next Steps

DMAC Core Team

Stephen Uczekaj – Boeing, Co-Chair, Architecture
Emilio Mayorga – UW, Co-Chair, Data Collection, Data Provider Services

Rick Blair – Boeing, Infrastructure and Standards
Charles Seaton – OHSU, Data Provider Services
Craig Risien – OSU, Data Provider Services
Troy Tanner – UW, Portal Services
Jonathan Allan – DOGAMI OR, User Products Chair

DMAC Activities

- Weekly NANOOS DMAC Core Team
- Bi-Weekly IOOS Regional DMAC Implementation (IOOS Dev)
- Quarterly IOOS DMAC Steering Committee
- Annual NANOOS Tri-Committee Meeting (Apr 18-19)
- Annual NANOOS GC/PI Meeting (Aug 19-20)
- Annual IOOS DMAC Workshop (Sept 10-12)
- IOOS SOS Reference Implementation

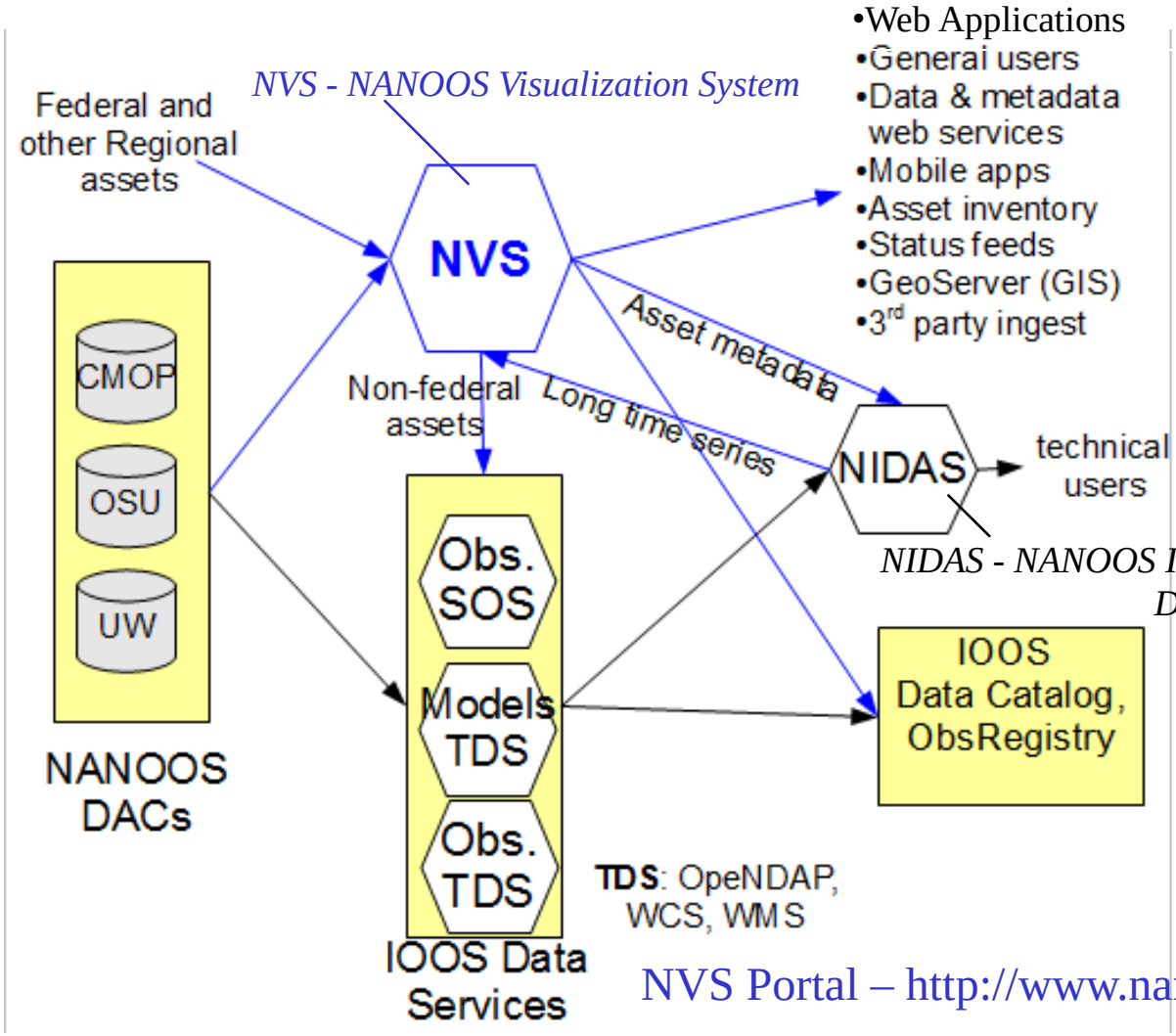
DMAC Activities (cont.)

- **Special IOOS supported DMAC projects:**
  - "EyeOnEarth" application, SECOORA-NANOOS-IOOS collaboration
  - Animal Acoustic Telemetry Data project

- **Situational Awareness Map Products & Services:** Based on NVS data store, supported by Encyclopedia of Puget Sound, and in collaboration with NOAA ERMA team

- **CMSP activities and support at state and regional (West Coast) levels**

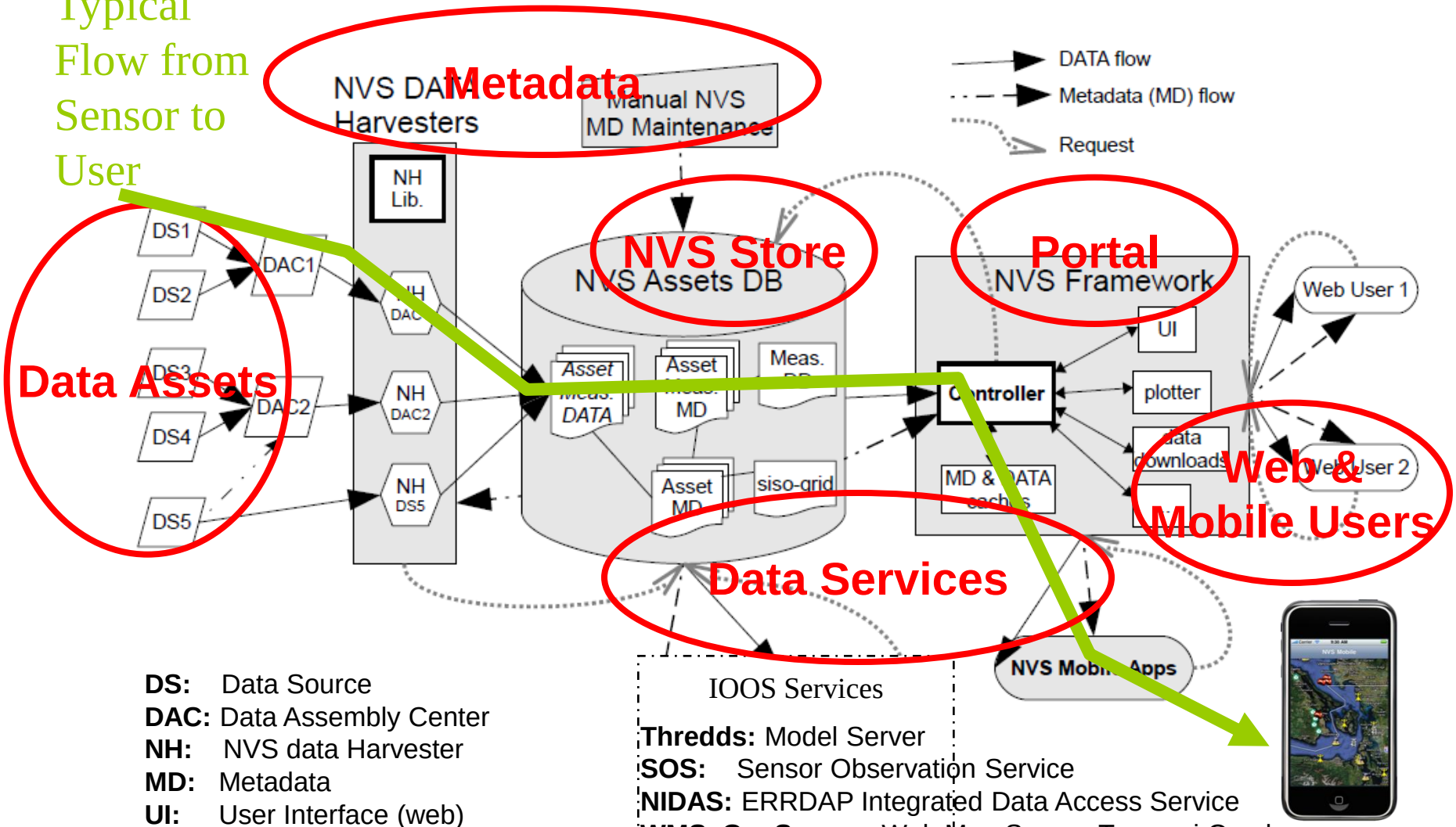
NANOOS DMAC System Architecture



NVS Portal – http://www.nanoos.org/nvs

NVS System Architecture

Typical Flow from Sensor to User



DS: Data Source
DAC: Data Assembly Center
NH: NVS data Harvester
MD: Metadata
UI: User Interface (web)

IOOS Services

Thredds: Model Server
SOS: Sensor Observation Service
NIDAS: ERRDAP Integrated Data Access Service
WMS, GeoServer : Web Map Server, Tsunami Overlay

2013 DMAC Progress

NVS DMAC Services
- New Data Sets
- Web Data Apps
- Mobile Data Apps

IOOS DMAC Services
- Data Services and Content Standards
- Catalog Service Registration
- SOS Reference Implementation Status

New Data Sets

1. Biological Data. NANOOS, IOOS and their regional, national and international project partners made steady progress on the IOOS-supported project addressing animal acoustic tracking data.

2. West-Coast Coastal and Marine Geospatial Data. NANOOS continued to coordinate with SCCOOS and CeNCOOS (Patterson et al. 2012) in support of the West Coast Governors Alliance (WCGA) Regional Data Framework project, including Phases 1 and 2 of its work plan and ongoing coordination of the IT working group.

3. Ocean Acidification (OA) Data. Completion of the first release of the West Coast OA monitoring asset inventory. NANOOS also continued to support the data dissemination and access needs of the regional shellfish aquaculture industry (Mayorga et al. 2012).

4) **Several near-real-time in-situ monitoring assets** (Stillaguamish Tribe Port Susan buoy, NOAA NWFSC Samish ESP bio-monitoring system site, Whiskey Creek Shellfish Hatchery, EPA & Hatfield Marine Science Center site, new South Slough NERRS site, new VENUS site, UW WRF weather forecast model).

5) **New inventory-mode asset** (Olympic Coast National Marine Sanctuary)

6) **New presentation of navigation charts**, with NVS 3

7) **Many redeployments and enhancements** to existing assets.

NVS Web Data Apps

Data Explorer

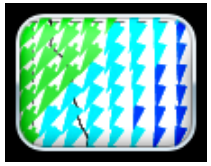
Tsunami Evacuation Zones

Tuna Fishers

Shellfish Growers

Beach and Shoreline Changes

Maritime Operations



High Frequency Radar

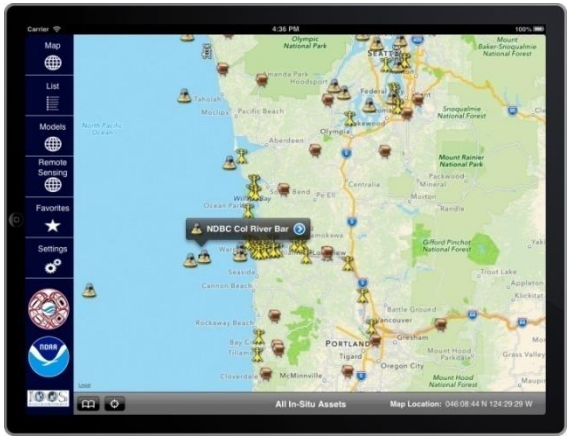
Cruises

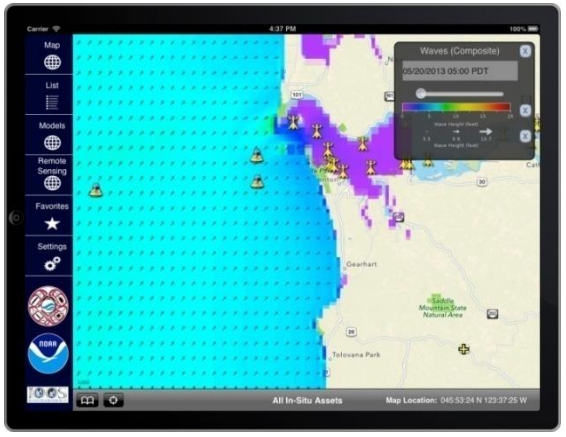
Gliders

http://nvs.nanoos.org

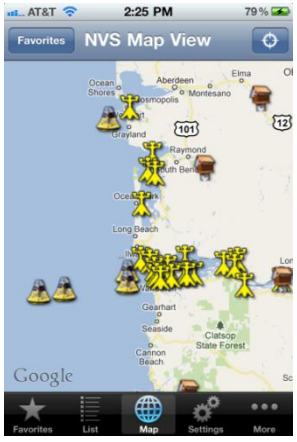
NVS Mobile Data APPS

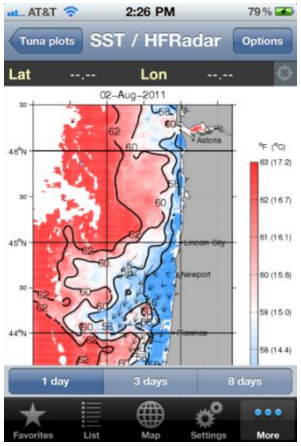
http://www.nanoos.org/mobile_apps/index.php





NVS iPad





NVS iPhone/Android

Tsunami Warning iPhone/Android

IOOS Data Service and Content Standards

• IOOS DMAC Wiki - This wiki describes the architecture of the Data Management and Communications subsystem of the Integrated Ocean Observing System (http://code.google.com/p/ioostech/).

DataAccessServices
- SOS
  - SOSGuidelines (IDD)
  - SOSClients
  - Information and Tools to enable testing IOOS SOS services

Controlled Vocabularies
- PlatformVocabulary
- OAVocabularies

Metadata

QualityControl
- QualityControlResultsSOS

ServiceRegistry

Data Catalog and System Viewer

AssetInventory

SystemMonitor

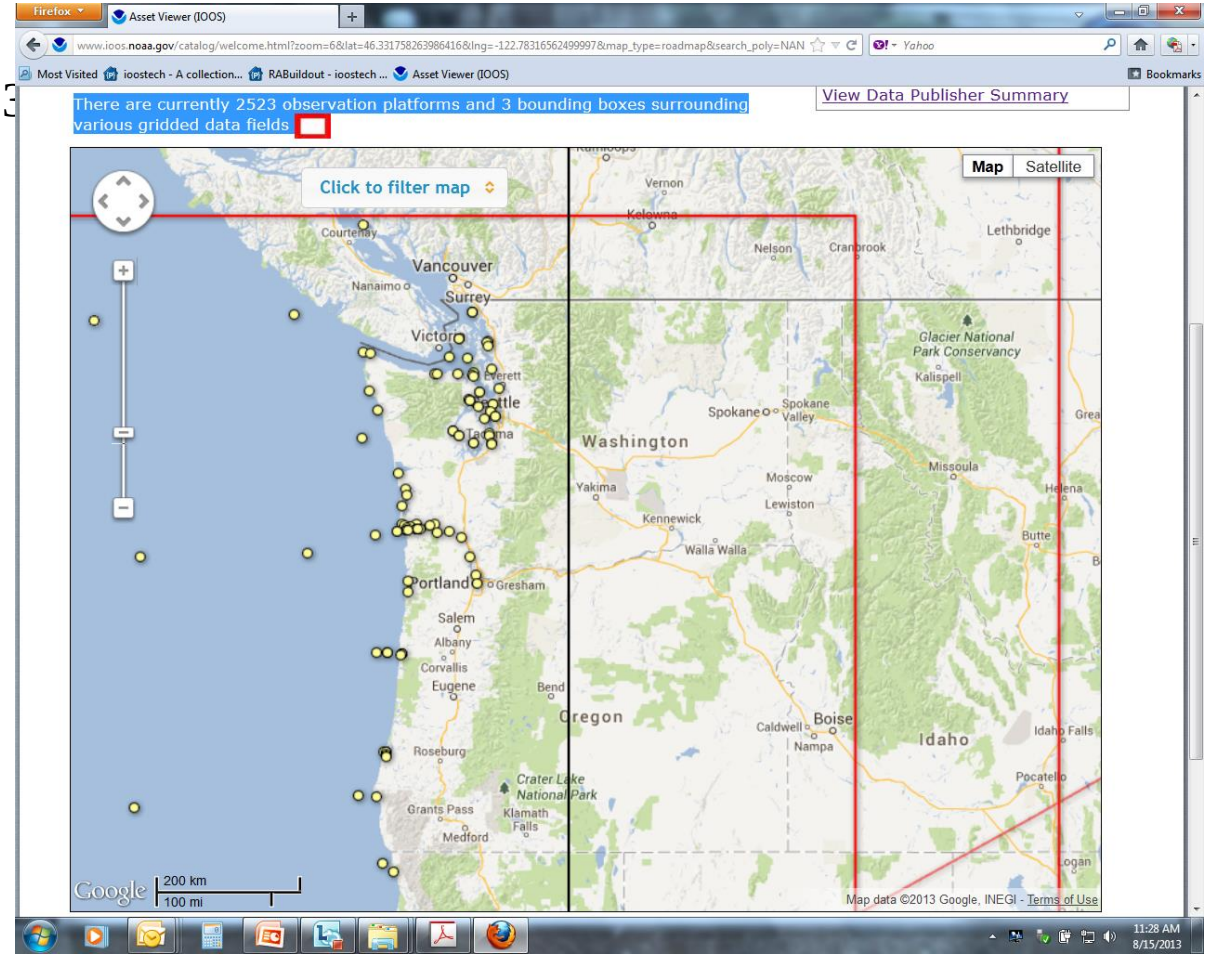
References and GlossaryAcronyms

Regional Association SOS Deployment Status

IOOS Catalog Service Registration

IOOS Data Catalog and Asset Viewer (http://www.ioos.noaa.gov/catalog/)

- there are currently 175 observation platforms and 3 bounding boxes surrounding various gridded data fields



IOOS SOS Reference Implementation Status

SOS 1.0 Fielding Plan

RA/ Partner	52N	ncSOS	Other	Target Install Date	Test Date	Complete	Notes
AOOS	●			7/1/13		50%	Confirm date w/Shane, Lance. Beta server published on 7/23 sos2.axiomalaska.com
CaRA						0%	Derrick needs to contact. Jorge contacted me in May.
CeNCOOS	●	●		52N - 8/2013 ncSOS - ???		10%	Initial test with ncSOS. Axiom now involved. Likely to follow right after AOOS.
GCOOS	●			8/31/13		10%	6/17/13 email from Felimon
GLOS	●	●		8/1/13 for 52N		50%	Currently testing 52North enhancements. Still on track for 8/1.
MARACOOS		●		CBIBS 12/2013? Other TBD		0%	Waiting for Glider DAC. Other data types TBD. CBIBS?
NANOOS			●	12/2013		30%	Emilio to provide firmer date after SciPy mtg 7/15/2013.
NERACOOS		●		10/31/13		0%	NERACOOS plan being drafted by board. Dates unknown.
PacIOOS		●		7/1/13		70%	Identified issue with Unidata/THREDDS. ASA is investigating. Second bug submitted and underway in next ASA iteration
SCCOOS		●				0%	No dates yet. Introduced the project to Darren on 7/15.
SECOORA			●	8/31/13		50%	In-progress. Follow-up mid-July.

IOOS®

● - complete ● - pending ● - in progress

7/23/2013

DMAC Significant Accomplishments

- Overall DMAC System
  - Large overhauls: new servers, re-balancing components across servers, major operating system and database upgrades, software development
  - Restructured NANOOS data flows and services (CMOP SOS, WADOE telemetry and data handling, ORCA+NPB weather data, models, etc)
- NVS DMAC
  - Lots of new assets! Rapid response to new deployments.
  - Database overhauls: consistent unit handling; image overlays; asset status updates; etc
  - Overhaul of NVS web services, expanded use in the region: NVS mobile apps, Web Apps, Model and Remote Sensing data services.
- IOOS DMAC
  - SOS Reference Implementation v1.0 30% complete
  - SOS Reference implementation IDD released
  - Vocabulary development started

DMAC Next Steps

- Regional Data Services
  - NVS: Global NANOOS metadata; Updated mobile apps
  - Alert Architecture – set alert conditions on any NANOOS data asset variable (<,=,>).
  - Creation of new NANOOS portal web page describing NANOOS DMAC efforts and resources
  - Handling of long time series data in NVS and data services
  - Overhaul of netcdf and THREDDS-based data storage and distribution at OHSU-CMOP and OSU, to the IOOS-compliant TimeSeries Discrete Feature Data Type scheme. Will facilitate transition to NODC archiving.

- National Data Services
  - IOOS Catalog and obsRegistry full compliance.
  - IOOS SOS 1.0 reference implementation full compliance.
  - IOOS-supported SECOORA-NANOOS collaboration on enhancement of Python-based IOOS SOS data integrator and access client

DMAC Next Steps (cont)

- Ocean Acidification (OA), CMSP/geospatial data community
  - New West Coast Gov Alliance on Ocean Health fellow to work with the 3 WC RA's, partly on making OA-related data more accessible to CMSP and geospatial data community
  - IOOS-funded WC OA data integration and NVS-based presentation
- System maintenance and monitoring
  - Continued hardware and software maintenance
  - Enable metrics and rapid response to outages - Expansion of system monitoring and alerting tools, including: ERRDAPP, IOOS DMAC services, NVS asset/provider monitoring
- Challenges
  - The more tools and systems we build, the more effort it takes to maintain them

Serious funding constraint on our capacity to expand functionality, maintain robust systems

NANOOS Education & Outreach Update

NANOOS Joint PI and Governing Council Meeting

August 20, 2011

Amy Sprenger, Education & Outreach Coordinator

E&O Committee

- Amy Sprenger, E&O Chair, NANOOS E&O Coordinator, UW
- Cathy Angell, Padilla Bay Natl. Estuarine Research Reserve
- Pat Corcoran, Oregon Sea Grant
- Tom Gaskill, South Slough Natl. Estuarine Research Reserve
- Coral Gehrke, COSEE Pacific Partnerships
- Vanessa Green, CMOP
- Dan Hannafious, At-large
- Nancee Hunter, Oregon Sea Grant, OSU
- Mike Kosro, OSU
- Andy Lanier, OR Dept. of Land Conservation & Development
- Jacqueline Laverdure, Olympic Coast National Marine Sanctuary
- Jan Newton, UW, NANOOS
- Craig Risien, OSU
- Fritz Stahr, Ocean Inquiry Project

Scope of Work

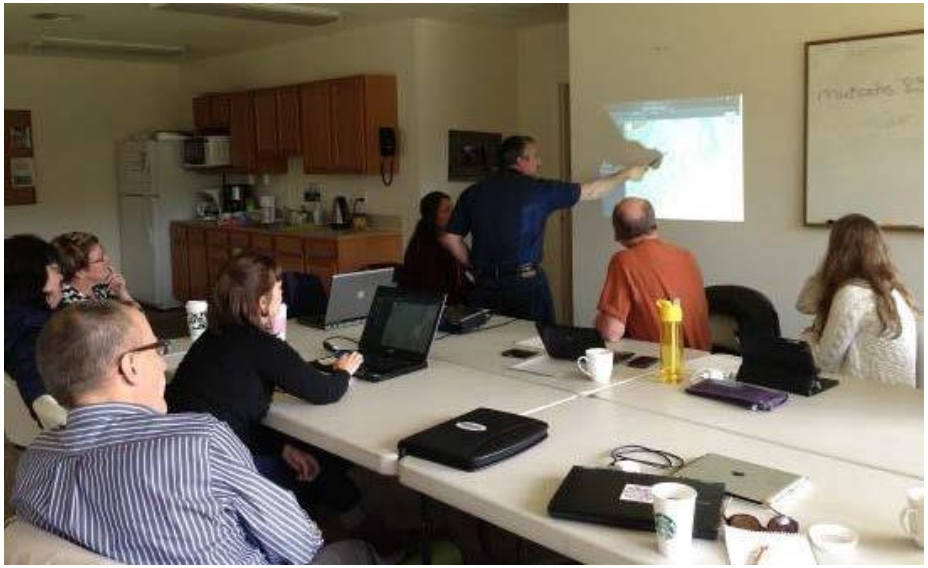
RCOOS Y6

Product Development	Work with DMAC and User Products Committees on tailored product development, increase usability of NVS
User Engagement	Conduct trainings to select user groups as resources permit
Networking	Maintain existing and build new relationships with NANOOS priority area users and the education community

Target Groups for 2012/2013

- Shellfish Growers
- K-12 Teachers and Students
- Maritime Operations Community

Target Group: Shellfish Growers



E&O Efforts:

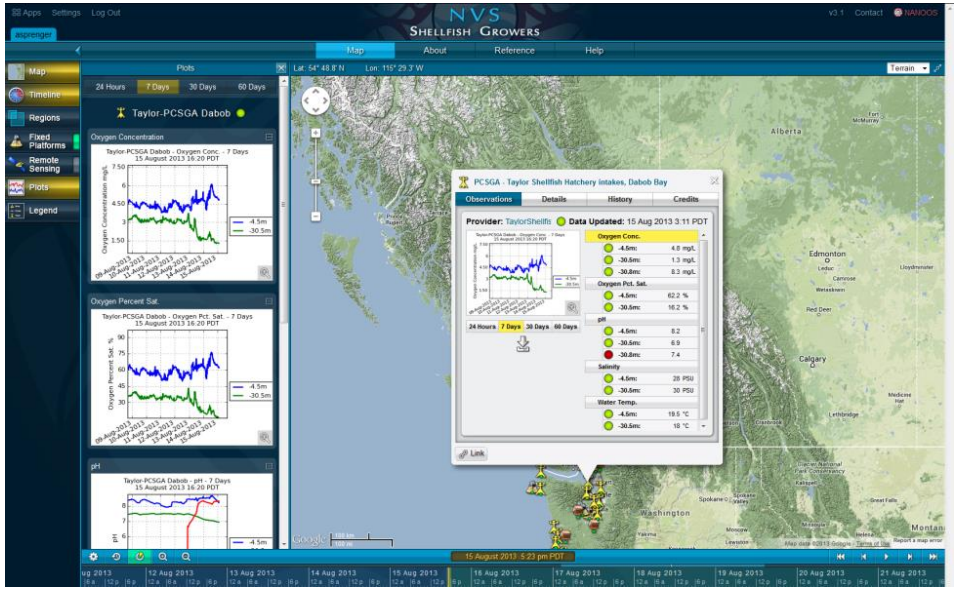
Convened workgroup spearheaded by Cathy Angell

Pacific Coast Shellfish Growers Association Meeting
Sept 2012

WSG Shellfish Growers Conference
January 2013

Focus group hosted by Little Skookum Shellfish Growers
April 2013

Target Group: Shellfish Growers

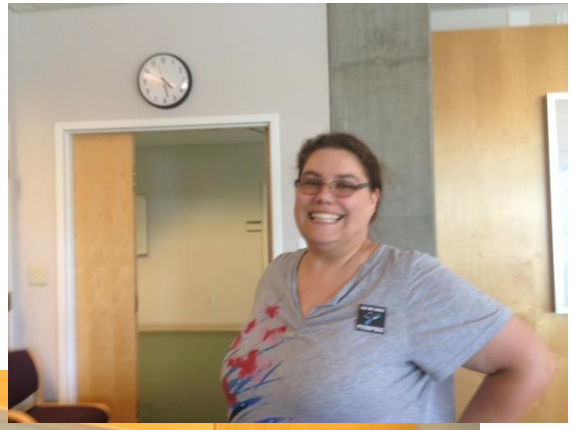


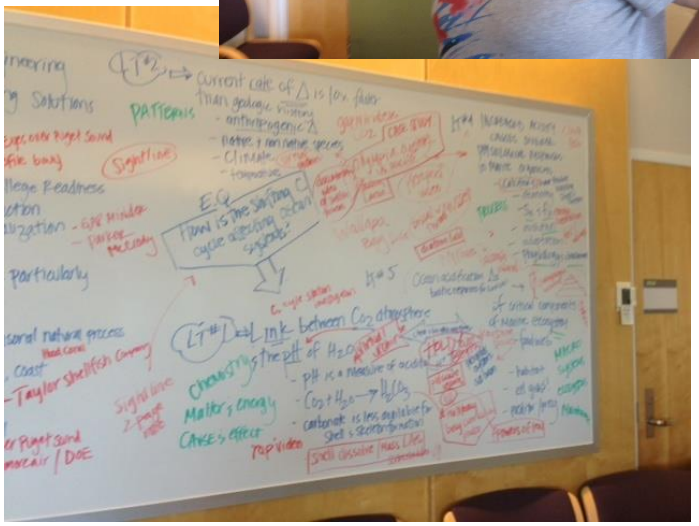
Results:

- Web App!
  nvs.nanoos.org/ShellfishGrowers

- Invited presentation for upcoming PCSGA meeting in Sept 2013

Target Group: Educators





E&O Efforts:

Ocean acidification workgroup, Blue Ribbon Panel

Ocean acidification teacher workshop

NAME/WSTA/NSTA/Soundwaters Conferences

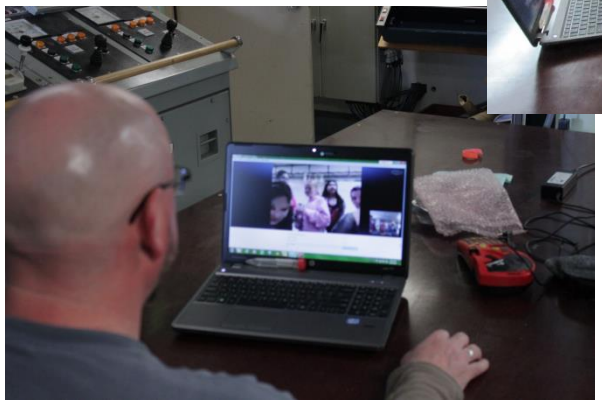
Boat based educators workshop on water quality

Earth Day Cha'ba Cruise

Salish Seas Science Symposium

LASER/Pacific Science Center STEM program

IOOS Earth Day Focus Cha'ba Cruise



Target Group: Students

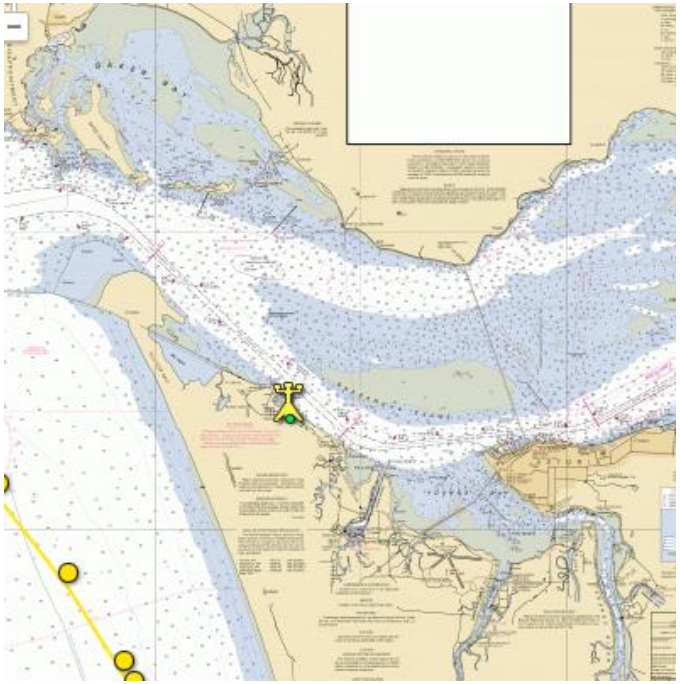
E&O Efforts:

NOAA Science Camp

Upcoming NSTA presentation

Salish Seas Science Symposium

Target Group: Maritime Operations



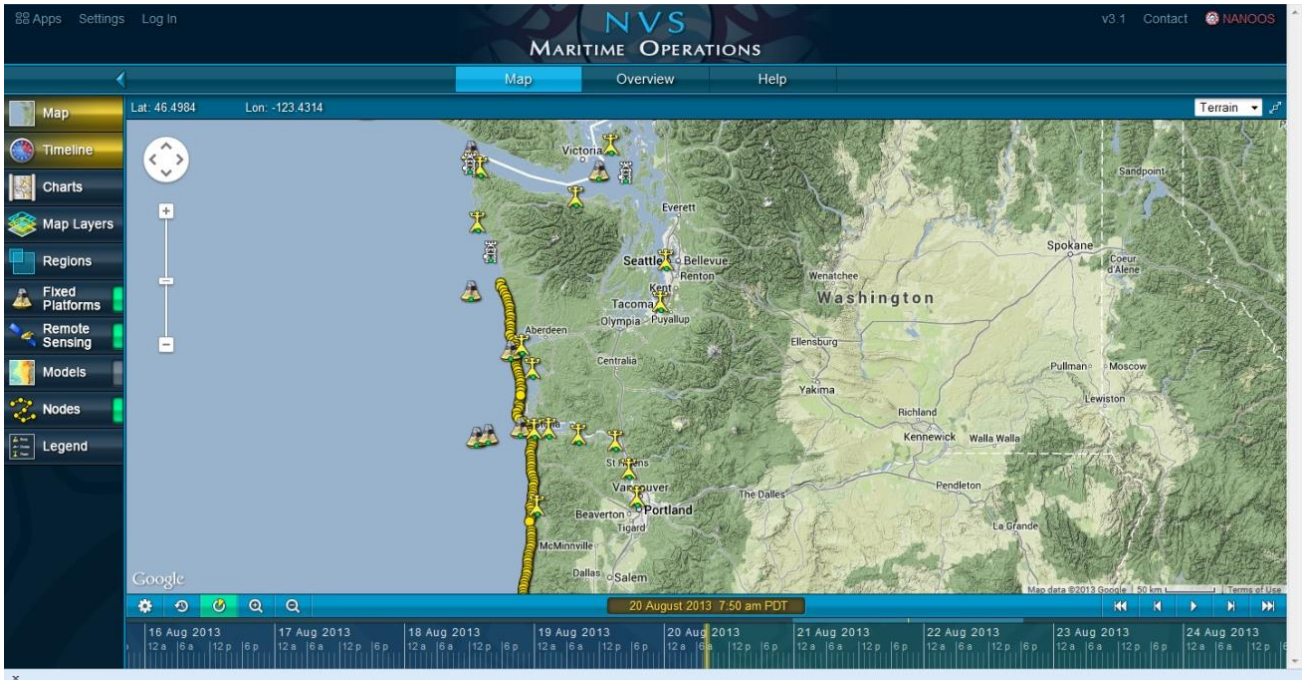
E&O Efforts:

Yaquina Bay OO Initiative, April 2013- Kosro

Northwest Navy -Tribal Council, Naval Air Station, Whidbey Island, WA, November, 2012 - Newton

Tools Café at Working Waterfronts Symposium, Tacoma WA

NW Power and Conservation Council – Baptista and Newton



Results:

- Web App!

http://nvs.nanoos.org/ShellfishGrowers

- Worked with John Veentjer, ME, Capt Dan Jordan, Columbia River Bar Pilots

Product Development: Tutorial Videos

YouTube Channel name: NANOOSpnw

NANOOS Visualization System (NVS) Introduction Series

Chapter 1: Introduction
Chapter 2: Fixed Platforms
Chapter 3: Mobile Platforms
Chapter 4: Remote Sensing and Models

NVS TunaFisher Web App

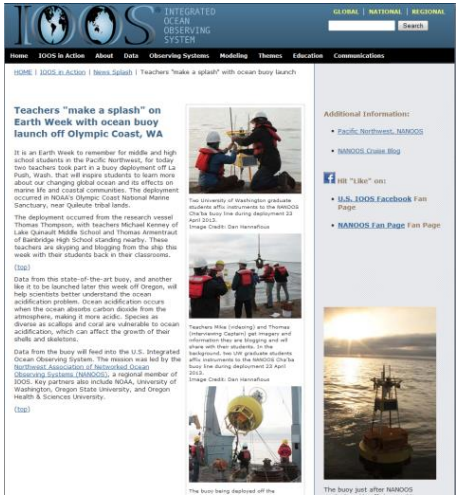
Tuna Fisher Web App Tour

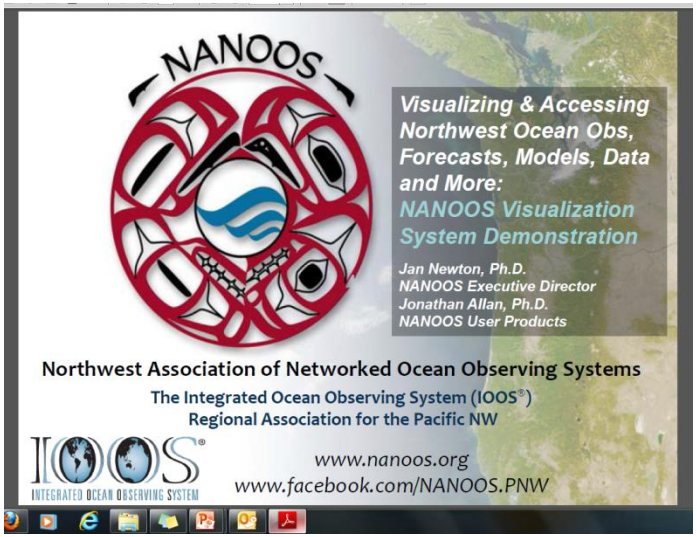
NOAA and IOOS activities

OneNOAA Webinar
-Allan, Blair, Newton, Tanner

IOOS Ocean Acidification Video

Earth Day IOOS Photo Press Release





Other Outreach of Note

Tsunami Debris talk
Friends of the San Juans
Orcas, Lopez, San Juan Islands, WA
June 2012 – Newton

Seagrasses in Changing Climate Workshop
Friday Harbor Labs, Friday Harbor, WA
February 2013 - Newton

Whitely Lecture
Friday Harbor Labs, Friday Harbor, WA
Winter 2012 - Newton

Beach Watchers Marine Debris Talk
Anacortes, WA
March 2013 - Newton

Heceta Head Conference
Florence, OR
October 2012 – Messier

Sidelights Articles:
Mapping the Wave Climate in the Nearshore Waters of the Pacific Northwest Coast, Council of American Master Mariners, Inc

Facebook:
https://www.facebook.com/NANOOS.PNW

Planning for Y7

Expanding Education Efforts

- Ocean acidification curricula
- Needs assessment re data use in classroom
  - Strategize classroom resource needs for teaching using real-time data, etc.

Outreach/Communications

- NANOOS theme pages
  - HABs
  - Revamp OA
- Assist with development of new web and mobile apps

6. Round Table for announcements from GC members

2012-16 NANOOS GC Board

Academic:

- David Martin, Governing Council Board Member for UW
- Mike Kosro, Governing Council Board Member for OSU
- Antonio Baptista, Governing Council Board Member for OHSU

State:

- Carol Maloy, Governing Council Board Member for Washington State Agencies
- Vicki McConnell, Governing Council Board Member for Oregon State Agencies

Tribes:

- Paul McCollum, Governing Council Board Member for Tribes
- Joe Schumacker, Governing Council Board Member for Tribes

Federal:

- John Stein, Governing Council Board Member for Washington Federal Offices
- Andy Lanier, Acting Member, Governing Council Board Member for Oregon Federal Offices

Industry:

- Casey Moore, Governing Council Board Member for Industry
- Steve Uczekaj, Governing Council Board Member for Industry

NGO:

- Fritz Stahr, Governing Council Board Member for Non-Governmental Organizations
- Need to fill vacancy

At Large:

- Rich Chwaszczewski, Governing Council Board Member At-Large
- Chris Mooers, Governing Council Board Member At-Large

7. Positioning NANOOS for the future (Y10-14): view from the IOOS Summit


IOOS®
INTEGRATED OCEAN OBSERVING SYSTEM
SUMMIT 2012
A New Decade for an Integrated and Sustained Ocean Observing System
November, 13-16 2012
Hyatt Dulles
2300 Dulles Corner Blvd.
Herndon, Virginia, USA 20171
FOR MORE INFORMATION VISIT: WWW.IOOC.US/SUMMIT

U.S. IOOS Summit (2012)

During the week of November 13, 2012 approximately 200 representatives of the US Integrated Ocean Observing System (IOOS) community convened in Herndon, VA to develop a strategy for the next decade. Over four days, the workshop participants reviewed the progress of the last decade and identified opportunities for the coming ten years. The first result of this effort is the US IOOS Summit Declaration which is available below for your review. Many of the Summit attendees have already signed onto this declaration and we invite you to do the same. If you would like to endorse this statement simply enter your name, affiliation (optional), and email address below. If you have questions about the IOOS Summit Declaration please contact Josh Young (jyoung@oceanleadership.org) at the Support Office for the Interagency Ocean Observation Committee. If you would like to learn more about US IOOS please visit www.ioos.gov.

» Download/view US IOOS Summit Declaration (Adobe PDF)

« IOOC Home | « Previous Page

Section Contents

Major Activities

- U.S. IOOS Summit (2012)
- IOOS Summit Report
- Participation Criteria
- Organizer Roles
- Protected: Meeting Documents
  - Steering Committee Docs
  - Communication Materials
- Updates and Contact Info

News »

US IOOS Summit Meeting Materials Now Available

Tweet

The US IOOS Summit meeting materials are now available here These materials include the fina agenda, as well as, logistics for attendees. The US IOOS Summit brings together ocean observer researchers, policy experts, and other ...

More articl

IOOS Summit Declaration

INTERAGENCY OCEAN OBSERVING COMMITTEE

INTEGRATED OCEAN OBSERVING SYSTEM (IOOS)

IOOS SUMMIT 2012 DECLARATION

In the United States, critical decisions affecting our lives, livelihoods and quality of life depend on successful communication and understanding of accurate and reliable scientific information about our oceans, coasts and Great Lakes. The U.S. Integrated Ocean Observing System (IOOS®) is a coordinated national, international, regional and local network of observations, modeling, data management and communications that provides the knowledge needed by society to protect life and property, to sustain a growing economic vitality, to safeguard ecosystems, and to advance quality of life for all people. Building upon progress over the past several decades, we must continue to expand, improve, and sustain the system to address the growing societal needs for ocean observations and information.

BACKGROUND

The Interagency Ocean Observing Committee convened an IOOS Summit, on November 13-16, 2012, ten years after an initial workshop defining IOOS requirements. The participants at the Summit reviewed progress in the design and implementation of IOOS. They identified the notable successes in developing a functioning system, as well as the technical and practical challenges and opportunities that IOOS will face in the coming decade. This Declaration captures and emphasizes the findings and commitments of the participants in the Summit.

IOOS is a national endeavor that is endorsed by federal and state agencies, tribes, academia, industry and NGOs; and is a partnership at the national and regional levels through the federal agencies and the IOOS Regional Associations. The past ten years have seen substantial progress in designing and implementing U.S. IOOS. We are delivering real value to the American public and foresee even greater contributions in the coming decades.

UNDERSTANDING OF THE NEED FOR IOOS

Recent events underscore the importance of IOOS to the economic, security and environmental interests of the United States.

NANOOS priorities:

Ecosystem Assessment

Fisheries & Biodiversity

Maritime Operations

Coastal Hazards

Climate & Weather

1. Observing Capability

- All IOOS components currently under-observe their target phenomena. IOOS will seek to encompass deep-ocean observations, nearshore and estuarine observations, biological and chemical variables, ecosystem variables; to better integrate remote sensing; and to meet spatial (including sub-surface) and temporal requirements for ocean data, addressing user needs.

  This will build on the successes of the coordinated global ocean, terrestrial, atmospheric observing systems.

2. Technology & Workforce

- IOOS will promote leading edge technology development capabilities. IOOS will incorporate emerging technologies as a standard operating procedure, in particular leveraging the development of the Ocean Observatories Initiative. IOOS will foster the development of a workforce for the future, adept at developing, using and furthering these technologies.

3. Modeling and Predictive Capability

- Models and observations will work together to provide the information needed by user communities. Improved and more sophisticated models will better exploit IOOS observations, leading to more precise and accurate predictions to aid in making economic, environmental and societal decisions.

4. Information Products

- IOOS plays a foundational role by providing reliable access to quality-controlled data and information products that support critical decision making for multiple uses. The system preserves the value of the information now and for future generations. This information plays a critical role in ocean literacy and education at all levels.

5. Partnerships

- IOOS will continue to succeed as a collaborative effort among federal and state government agencies, tribes, regional partnerships, the academic community, and the private commercial and environmental communities.

  The U.S. collaborative will help to sustain global efforts, as well as derive understanding and context from parallel efforts around the globe.

6. User Communities

- As the demand for economic growth and stability in sectors influenced by marine resources grows, it becomes more imperative to support an increasingly diverse user community.

7. Resources

- Federal support has been and will continue to be critical to the success of IOOS. New approaches to product development and distribution need to consider a broadening of funding support, additional funding sources, and innovative public-private partnership.

8. Wrap-up, Action Item review, and Adjourn