

NOAA



# ***The NOAA World of Science***

presented by

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and

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for the

**Washington State Science Teachers  
Association Conference**

October 2007

Tacoma Washington

# NOAA Science Camp

NOAA



- Weeklong science camp for middle school students
- Emphasizes hands-on learning and real-world application
- Campers learn first-hand what different NOAA offices do and how they work together
- Jointly coordinated by NOAA, Washington Sea Grant and JISAO

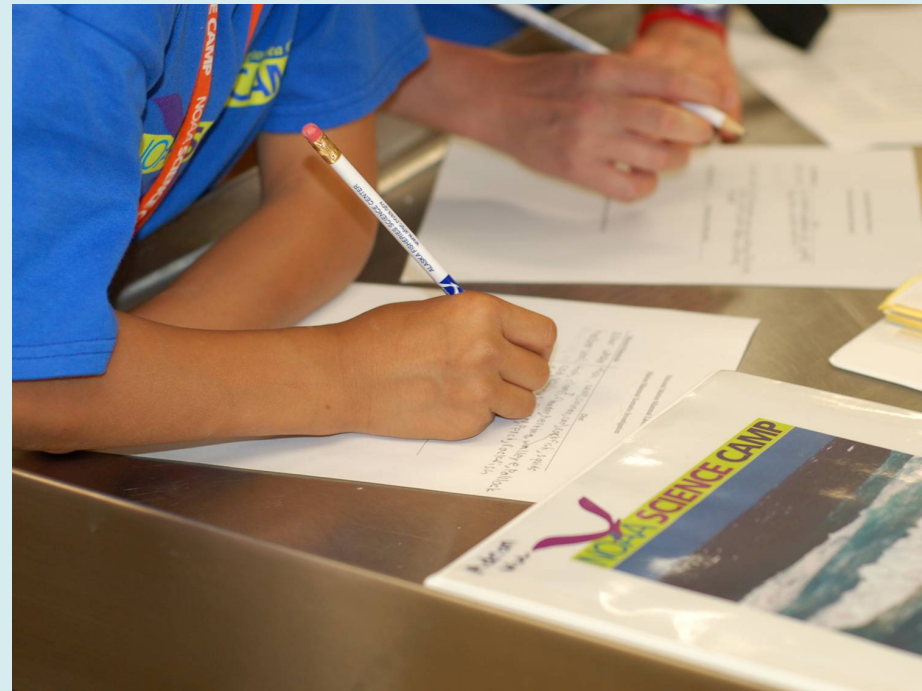
# NOAA Science Camp

NOAA



## How can you participate?

- Camp director position
- Camp coordinator position
- Educators – lead five camper groups
- Interns – assist educators
- Encourage middle school students to attend



[sciencecamp.seattle@noaa.gov](mailto:sciencecamp.seattle@noaa.gov)

# Regional NOAA Curricula

NOAA



- NOAA elementary school science curricula
  - Killer whales (testing 07-08 school year)
  - Sound (pilot program 07-08 school year)
  - Lisa Hiruki-Raring@noaa.gov
- Ecology by Inquiry curricula
  - Seven lessons, designed to teach fundamental ecological principles using an inquiry-based approach
  - Deborah.McArthur@noaa.gov
- Harmful Algal Bloom (HAB) curricula
  - *Science at Sea: The Hunt for Killer Algae* 20-minute film
  - HAB Hunter's Handbook – a 43-page curriculum guide highlighting a research cruise
  - Deborah.McArthur@noaa.gov



# Upcoming Events

# NOAA



- Pacific Science Center Teacher Workshop (Oct. 26, 2007)
- Orca Bowl - Washington State Ocean Sciences Bowl (Feb. 9, 2008)



# Northwest Fisheries Science Center (NWFSC) Education Opportunities




- Web sites
- Tours
- Internships
- Water festivals
- Presentations for classrooms
- Teacher workshops – in partnership with the Seattle Aquarium
- *Econauts in the Estuary* (field research pilot program)
- [Deborah.McArthur@noaa.gov](mailto:Deborah.McArthur@noaa.gov)



# National Ocean Service Discovery Kits

NOAA



- Discovery Kits contain: tutorial, resources, lesson plans
- Describe the basic scientific principles underlying the applied science and activities of NOAA's National Ocean Service (NOS) 
- Designed for educators and students at the high school level, written in non-technical language, and focused on the themes of oceans, coasts, and charting and navigation
- Incorporate many multimedia features (audio, video, and animations)

Available at: [oceanservice.noaa.gov/education/kits/welcome](https://oceanservice.noaa.gov/education/kits/welcome)

NOS education discovery kits



# Resources for Students and Teachers

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## **Example: Where does your drinking water come from?**

(Role-playing exercise as a molecule of water)

- Nine different compartments of the water cycle
- More realistic depiction of water cycle
- Complete experiential lesson plan
- Scaleable to grade level
- Optional pollution component

Available at:

[response.restoration.noaa.gov](https://response.restoration.noaa.gov)





# National Weather Service



- Primary mission: protection of life and property
- weather.gov
  - Doppler weather radar
  - Satellite imagery
  - Latest forecasts
  - Current conditions
  - Past weather data
  - Weather educational info, and much more
- Updated weather information
- Daily use in the classroom
- Works with your school's NOAA weather radio receiver

A screenshot of the National Weather Service website for Seattle, WA, viewed in Internet Explorer. The browser address bar shows 'http://www.wrh.noaa.gov/seo/'. The page header includes the NOAA logo and the text 'National Weather Service Forecast Office Seattle, WA'. Below the header are navigation tabs for 'HOME', 'NEWS', and 'ORGANIZATION'. A search box for 'Local Forecast By City, St' is visible. The main content area features a 'Regional News and Information' section with several news items, including 'Voluntary Recall of Some Oregon Scientific Weather Radios' and 'September is Weather Radio Awareness Month in Washington'. Below the news is a 'Forecast by City' dropdown menu and a 'Last 30 Products Issued' section. A map of Northwest Washington is displayed, with a 'Click on the map below for the latest forecast.' instruction. The map shows various cities including Bellingham, Forks, Port Angeles, Everett, Seattle, Tacoma, Olympia, Hoquiam, and Centralia. A 'Zoom Out' button is located to the right of the map. The left sidebar contains a list of links for 'Forecasts', 'Experimental...', 'Climate', and 'Model Data'.

# Online Weather Educational Slide Shows

NOAA



## Local Topics:

- Pacific Northwest Windstorms
- Puget Sound Convergence Zone
- Pineapple Express
- Heat Waves
- Less than 15 min. long
- Great for home, work, or the classroom

A screenshot of a Windows Internet Explorer browser window. The address bar shows the URL: http://www.wr.noaa.gov/sew/PacificNorthwestWindstormsPresentation/player.html. The browser's address bar and search bar are visible. The main content area displays a presentation slide titled "Pacific Northwest Windstorms" with a blue background and a grid pattern. The slide features three images: a weather vane, a satellite image of a cyclone, and a weather map showing a low-pressure system. A sidebar on the left contains an outline of the presentation with 12 items. The presentation player interface at the bottom shows "articiulate POWERED PRESENTATION" and "SLIDE 1 OF 12 PAUSED 00:15 / 00:15".

Available at: [weather.gov/seattle](http://weather.gov/seattle)

# AMS Datastreme: Atmosphere

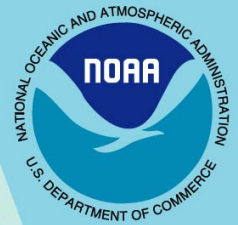
NOAA



- Funded by AMS and NOAA, including local assistance from NWS offices
- Online coursework
- Provides an introduction to the workings of the atmosphere
- Teaches the basics of weather, including terminology, weather maps, processes within pressure systems, rudimentary forecasting methods
- Aimed at pre-college teachers with the purpose of *“...promoting the teaching of science, mathematics and technology using weather as a vehicle, across the K-12 curriculum in their home school districts”*



# NOAA Watch



- “One-stop shopping” live NOAA data resource
- Updated daily
- Provides the latest information regarding:
  - Weather
  - Earthquakes
  - Volcanoes
  - Tsunamis
  - Algal blooms
  - Space weather
  - Everyday classroom use

Available at: [noaawatch.gov](http://noaawatch.gov)

The screenshot shows the NOAA Watch website in an Internet Explorer browser window. The browser's address bar shows the URL "http://www.noaawatch.gov/". The website header includes the NOAA logo and the text "United States Department of Commerce" and "National Oceanic and Atmospheric Administration". Below the header, there are navigation links for "NOAA Home", "Weather", "Oceans", "Satellites", "Fisheries", "Climate", "Research", "Education", and "Aircraft/Ships". The main content area is divided into several sections: "Current Conditions", "NOAA Watch", and "NOAA's All Hazard Monitor". The "Current Conditions" section includes a "Local forecast by City, State" search box, "Weather Warnings" with a map of the United States, "Doppler Radar", "River and Lake Levels", "Event Imagery", "Drought Outlook", and "Surface Weather Charts". The "NOAA Watch" section features a "Weather Outlook for Wednesday" with a map of the Gulf of Mexico and text about a stalled front. Below this, there are two "Tropical Depression" alerts: "Tropical Depression NINE forms in the northwestern Gulf of Mexico" and "Tropical Depression EIGHT forms in the Atlantic", each with a map and text describing the storm's location and characteristics. The "NOAA's All Hazard Monitor" section on the right lists various hazards: Air Quality, Coral Bleaching, Droughts, Earthquakes, Excessive Heat, Fire Weather, Flooding, Harmful Algal Blooms (HABs), Hurricanes/Tropical Weather, Oil Spills, Rip Currents, Severe Weather, Space Weather, Tsunamis, and Volcanoes.

# The Bridge

Sea Grant Ocean Sciences Education Center

NOAA



- A growing collection of the best marine education resources available online
- Source of accurate and useful information on global, national, and regional marine science topics for educators
- Provides educational contacts for researchers
- Supported by the National Sea Grant Office, the National Oceanographic Partnership Program (NOPP), and the National Marine Educators Association
- TROLL Patrol – Teacher Reviewer of Online Learning
  - Teachers review marine education Web sites and share their comments with educators worldwide through the Bridge Web site



# The Bridge

Sea Grant Ocean Sciences Education Center

NOAA



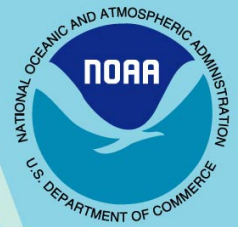
- *Scuttlebutt*, the Bridge discussion list, provides a forum for marine educators to talk informally about marine education ideas, issues, and questions
- Lesson plans
- Research and data connection
- Professional development
- Student guidance – careers, universities, educational programs, etc.
- New NOAA collection on the Bridge - NOAA resources, reviewed by educators



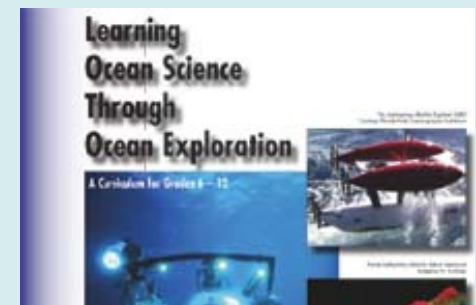
Available at: [www.vims.edu/bridge](http://www.vims.edu/bridge)

# Ocean Explorer

NOAA



- The NOAA Ocean Explorer education program provides direct access to over 240 lesson plans, offers professional development opportunities for educators, and has an ocean career component
- Lesson plans
- Expedition Education Modules
- Multimedia learning objects: a series of 15 interactive multimedia presentations
- Curriculum: *Learning Ocean Science through Ocean Exploration*



Available at: [oceanexplorer.noaa.gov/edu/welcome](http://oceanexplorer.noaa.gov/edu/welcome)

# Ocean Explorer

NOAA



- Professional development
- Education alliances *Learning Ocean Science through Ocean Exploration*
- NOAA Ocean Explorer Field Season CD
- OceanAGE careers
- CoRIS glossary
- Ocean challenge puzzle



**EXPLORE** 



# Teacher at Sea Program

# NOAA



- Barney Peterson



# Teacher at Sea Program

# NOAA



## Teamwork experiences



# Teacher at Sea Program

# NOAA



Seeing and learning new things and building lasting relationships



# Teacher at Sea Personal Log

NOAA

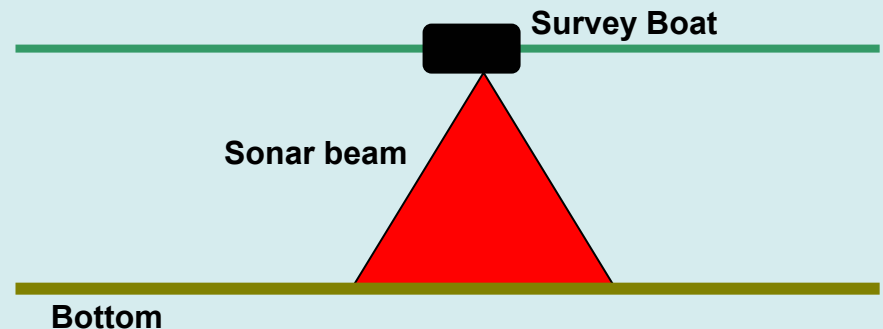


*This evening I got to go out in a kayak with the XO. We paddled away from the ship and followed the shoreline north around the island until we entered the next bay. The waves were small, but sometimes there was a pretty good gust of wind so I really had to pay attention as I was getting used to the feel of the little boat. About 100 yards from the ship a sudden gust caught my hat and took it off into the water. We were not able to recover it because the waves and the current moved it away too fast and it sank before I could get to it.*

*The view from the surface of the water is very different than from the ship. You can see quite a ways into the clear water. Near the shore I could see rocks with barnacles, jelly fish, and lots of sea birds. We were mainly sharing this area with Horned Puffins, Black Oystercatchers, Pigeon Guillemots, and gulls of several kinds. On the cliffs above the second bay we spotted Bald Eagles. One of the eagles was really concerned about what we were doing and either circled over us or sat on the high bluff and watched us the whole time we were in the area. Its mate flew back and forth through the area calling to it as it watched us.*

*We were hoping to see a waterfall that we had heard came down the side into this bay, but we never did sight it. The shoreline was beautiful with steep rock walls or narrow rocky beaches and mountains rising right up from the edge. The hillsides look like they would be smooth and easy to walk on, but the vegetation is actually thick, deep, brush and provides very uneven footing.*

Barney Peterson  
Teacher At Sea  
NOAA ship RAINIER



# Resources for topics presented

NOAA



## **NOAA Science Camp:**

[www.nwfsc.noaa.gov/education/sciencecamp/sciencecamp.cfm](http://www.nwfsc.noaa.gov/education/sciencecamp/sciencecamp.cfm)  
[sciencecamp.seattle@noaa.gov](mailto:sciencecamp.seattle@noaa.gov)

**Resources for Students and Teachers:** [response.restoration.noaa.gov](http://response.restoration.noaa.gov)

**Regional NOAA Curricula and Resources:** [www.nwfsc.noaa.gov](http://www.nwfsc.noaa.gov)

[Lisa Hiruki-Raring@noaa.gov](mailto:Lisa.Hiruki-Raring@noaa.gov)

[Deborah.McArthur@noaa.gov](mailto:Deborah.McArthur@noaa.gov)

**Discovery Kits:** [oceanservice.noaa.gov/education/kits/welcome](http://oceanservice.noaa.gov/education/kits/welcome)

**NOAA's National Weather Service:** [www.nws.noaa.gov](http://www.nws.noaa.gov)

[weather.gov/seattle](http://weather.gov/seattle)

[noaawatch.gov](http://noaawatch.gov)

**The Bridge:** [vims.edu/bridge](http://vims.edu/bridge)

**Ocean Explorer:** [oceanexplorer.noaa.gov/edu/welcome](http://oceanexplorer.noaa.gov/edu/welcome)

**Teacher at Sea:** [teacheratsea.noaa.gov](http://teacheratsea.noaa.gov)

# NOAA Educational Resources

NOAA



## [education.noaa.gov](https://www.noaa.gov/education)

NOAA has many educational activities distributed across the entire agency.

The [education.noaa.gov](https://www.noaa.gov/education) website is a clearing house for teachers, students, librarians, and the general public to access educational material and publications that have been produced by many of NOAA's offices.

The site includes links for teacher training opportunities and student contests.

