

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**INFORMATION EXCHANGE FOR MARINE EDUCATORS**

**SEPTEMBER 2009**

This update is funded by the National Marine Sanctuaries Foundation in partnership with NOAA's Ocean Exploration and Research Program, with additional support from the Office of Education and the National Marine Protected Areas Center, to share information pertinent to the marine educator community. It is intended to encourage exchange of information and programs. We hope that it will also promote collaboration among the different educators addressing similar issues in their programs.

Please share this email with your colleagues and constituents. If you request materials or respond to a request for information, please mention that you learned about it from NOAA's Information Exchange.

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Collected archives of the information presented in past newsletters are available at [http://mpa.gov/helpful\\_resources/education\\_training.html](http://mpa.gov/helpful_resources/education_training.html). Contact the editor directly at [phyllis.dermer@noaa.gov](mailto:phyllis.dermer@noaa.gov), or by phone at (865) 932-5074, to discuss further enhancements or to contribute information for future issues.

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## **PROGRAM OF THE MONTH**

### **Sandwatch**

Sandwatch is a volunteer network of schools: students, teachers and principals; youth groups; non-governmental; and community-based organizations; working together to monitor and enhance their beach environments. Sandwatch seeks to modify the lifestyle and habits of children, youth, and adults on a community-wide basis and to develop awareness of the fragile nature of the marine and coastal environment and the need to use it wisely. It is an educational process with a strong field monitoring component through which school students and community members learn and work together to critically evaluate the problems and conflicts facing their beach environments and to develop sustainable approaches to address these issues.

The Sandwatch Foundation, with support from UNESCO and the Ministry of Foreign Affairs in Denmark, has recently completed a new version of the Sandwatch Manual that is available for downloading from the website. This manual includes activities, such as making a set of sieves to measure sand composition, using Google Earth to map the beach, and steps for designing and implementing a Sandwatch project. The manual also incorporates new information relating to climate change, and a set of climate change adaptation activities to build beach resilience. These include measuring the impact of sea level rise on beach width, demonstrating how ocean acidity will harm marine organisms, and monitoring ocean temperature and the incidence of coral bleaching. The Addendum also includes chapters on creating a Sandwatch network and implementing a Sandwatch project. The manual will soon be available in multiple languages.

<http://www.sandwatch.ca/index.htm>

## **WEBSITES OF THE MONTH**

### **COSEE-West Resources**

COSEE-West distributes supplemental resources to educators during lectures and workshops, many of which are available electronically on their website. Materials include bibliographies, a video list, lectures, educational activities, and much more. All materials have been prepared with the involvement of educators and/or aligned to state education standards (mostly California, but other states as well) when possible.

Check out the Marine Science Field Trip Guide for Teachers, Ocean Bibliographies, and Marine Science Video list. Further down that page are resources from lectures and workshops such as Elephant seals: Masters of the Depths; Grants, Grant Writing, Field Trips, Teacher Field Experiences; The Ocean In A Warming Climate; Polar Regions; and more.

<http://www.usc.edu/org/cosee-west/resources.html>

### **EcoViz**

EcoViz: Ecosystem Science and Visualization is a group of projects developing ecosystem science visualization products for research, education, and management applications. The goal is to research and develop landscape-scale visualizations as a means to enhance linkages between complex scientific research data sets, decision makers, and the general public. They work as much as possible with real data and imagery, augmented where necessary with models, relying as little as possible on artificial proxy.

Recent work offers visualizations of MPAs and the research that is being done in support of them. Another theme is a series of interpretive visualizations produced for visitor centers at Yellowstone National Park. One example is a 2-minute virtual tour representing 24-hours of real time in the Upper Geyser Basin, home to the world's largest concentration of geysers.

Visualizations may be browsed, viewed, and downloaded quickly, and at a variety of levels of image quality. Check this out - very cool!

<http://ecoviz.csumb.edu/home/>

## MESSAGE FROM THE BRIDGE

### Can't Take the Heat?

Why do coffee and pizza take so long to cool down? Why is ocean water sometimes the warmest when the average daily air temperature starts to drop? How can buoys help us explore these questions? In one of the newest Data Analysis Teaching Activity from the Bridge and COSEE-NOW, *Can't Take the Heat?*, students get a hands-on introduction to heat capacity and its effects on our daily lives. Students use real-time and archived data from two NOAA ocean observing system buoys and two National Climate Data Center weather stations to investigate how water acts as a thermal buffer, and the ecological and practical applications this has. The activity features mathematic conversions, direction finding using a compass rose and graphing either by hand or with Excel.

[http://www2.vims.edu/bridge/DATA.cfm?Bridge\\_Location=archive0909.html](http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive0909.html)

<http://www.marine-ed.org/bridge>

## REQUESTS

### Call for Manuscripts

This is a call for manuscripts for a special 2010 issue of the *Comparative Education Review, Educators and the Environment: World Lessons for a Sustainable World*. The aim of the issue is to present on-going research while stimulating new understandings of environmental education worldwide. They seek critical assessments of existing model programs and policy initiatives in environmental education and education for sustainable development at the school, local community, national, and international levels. The issue is anticipated to appear in August or November 2010.

<http://www.journals.uchicago.edu/page/cer/instruct.html>

### Teachers Needed for Pilot Program About Ocean Sustainability

DigitalOcean is providing an opportunity for 200 middle and high school teachers and classrooms to participate in their pilot program *DigitalOcean: Sampling the Sea*, which aims to interactively educate the next generation of seafood consumers about declining global fish populations and implications for humans and oceans. Participating teachers will receive curriculum guides, exercises, online training, and support to help them implement the program.

<http://www.cftnm.ucsb.edu/Programs/EMI/Research/SS.html>

### Vote in the Rachel Carson Sense of Wonder Contest

The US EPA invites you to vote for your favorite submissions in the third annual Rachel Carson Sense of Wonder Intergenerational Poetry, Essay, Dance, and Photography Contest. Finalists were selected in five categories: originality, creativity, use of an intergenerational team, and ability to capture a sense of wonder. Vote by October 1, 2009.

<http://yosemite.epa.gov/oa/agingepa/rcvote.nsf/fmVote?OpenForm>

## GRANTS AND OPPORTUNITIES

### Apprentice Ecologist Initiative

The Apprentice Ecologist Initiative engages youth, parents, and teachers from around the world in environmental stewardship and conservation projects. The goals of the initiative are to elevate young people (especially at-risk and low-income kids and teens) into leadership roles by engaging them in environmental stewardship projects, empower

volunteers to rebuild the environmental and social well-being of our communities, and improve local living conditions for both citizens and wildlife. The deadline for entry is December 31, 2009.

[http://www.wildernessproject.org/volunteer\\_apprentice\\_ecologist.php](http://www.wildernessproject.org/volunteer_apprentice_ecologist.php)

### **Be an "Enviro Hero" Contest**

Entries to the Enviro Hero contest must inspire, involve, and educate others about environmental awareness in the areas of recycling, water conservation, or energy using George, Petunia, or Echo in a written, drawn, or photographed format. The contest is open to kids 17 and under. The deadline for entry is November 1, 2009.

<http://www.eeingorgia.org/resource/about.aspx?s=85194.0.0.4863>

### **Braitmayer Foundation Education Grants**

The Braitmayer Foundation offers grants to fund a broad range of K-12 education programs with curricular reform initiatives and professional development opportunities for teachers. The grants can be used as seed money, challenge grants, or to match other grants to the recipient organizations. Grant applications are accepted twice each year; the deadline for the next grant cycle is November 15, 2009.

<http://www.braitmayerfoundation.org/guid.htm>

### **Coral Reef Conservation Fund**

The National Fish and Wildlife Foundation, in partnership with the NOAA Coral Reef Conservation Program (CRCP), announces the availability of funding in the following priority proposal categories in U.S. jurisdictions: addressing sediment and nutrient run-off to coral reefs from development, and implementing priority actions described in watershed and marine protected area management plans in areas containing U.S. coral reef ecosystems; and implementing activities that support the priority goals and objectives identified in NOAA CRCP's International Strategy, internationally. The deadline for pre-proposal submission is October 12, 2009. See the website for details.

[http://www.nfwf.org/AM/Template.cfm?Section=Charter\\_Programs\\_List&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=60&ContentID=13794](http://www.nfwf.org/AM/Template.cfm?Section=Charter_Programs_List&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=60&ContentID=13794)

### **ExploraVision Contest**

The Toshiba/NSTA ExploraVision Awards challenge students to use their imaginations and the tools of science to propose scientifically feasible technologies that could exist 20 years into the future. The program encourages K-12 students of all interest, skill, and ability levels to create and explore a vision of future technology by combining their imaginations with the tools of science. The deadline for submission is February 2, 2010.

<http://www.exploravision.org/>

### **Habitat: Imagine That!**

*Habitat: Imagine That!* Is an art contest held by the Institute for Global Environmental Strategies for grades 2-4, challenging young scientists and artists to become wildlife investigators by exploring habitats, small and large, in their backyard or around the world, and then draw a picture showing what they learned. The deadline for entry is October 26, 2009.

<http://www.strategies.org/education/index.aspx?sub=education&sub2=student&sub3=2009contest>

### **Jacob K. Javits Fellowship Program**

The purpose of the Jacob K. Javits Fellowship Program is to award fellowships to eligible students of superior ability, selected on the basis of demonstrated achievement, financial need, and exceptional promise, to undertake graduate study in specific fields including arts, archeology, communications and media, political science, public policy, and more. The deadline for application is October 5, 2009.

<http://www.ed.gov/legislation/FedRegister/announcements/2009-3/082109c.html>

### **Kids in Need Teacher Grants**

Kids In Need Teacher Grants provide K-12 educators with funding to provide learning opportunities for their students through innovative projects that address state standards. The deadline for application is September 30, 2009.

<http://www.kidsinneed.net/grants/>

### **Knowles Science Teaching Foundation Teaching Fellows**

The Knowles Science Teaching Foundation is seeking applicants for Teaching Fellows, individuals who have at least a bachelors degree in a physical science, biological science, engineering, or mathematics and now want to teach science or mathematics in U.S. high schools. Teaching fellowships support individuals professionally and financially for up to five years through a teacher preparation program to eligibility for tenure. The deadline for application is January 13, 2010.

[http://www.kstf.org/teaching\\_fellowships\\_home.aspx](http://www.kstf.org/teaching_fellowships_home.aspx)

### **Lakes Appreciation Month Poster Contest**

Students in grades 4-8 may participate in the Ninth Annual National Lakes Appreciation Month Poster Contest. Poster themes should focus on any lake and watershed issues, and may include topics such as pollution, aquatic invasive species, aquatic life, lake ecology, and more. The deadline for entry is October 15, 2009.

<http://www.nalms.org/nalmsnew/userfiles/file/LAMPC2010.pdf>

### **Living on the Ocean Planet Video Competition**

National Ocean Sciences Bowl, in partnership with the Census of Marine Life, the National Marine Educators Association, and the Encyclopedia of Life, is hosting its second annual *Living on the Ocean Planet* video competition. The goal is to showcase student-developed original videos that educate the general public about marine technology and address the Essential Ocean Literacy Principles. The deadline for submission is January 25, 2010.

<http://www.oceanleadership.org/education/national-ocean-sciences-bowl/>

### **NASA K-12 Cooperative Agreements Notice**

The NASA Office of Education has released a Cooperative Agreement Notice for K-12 proposals that incorporate innovative approaches for development and delivery of instructional materials, creates experiences that capture the interest of learners, and actively involves participants in relevant, NASA science, technology, engineering, and mathematics content applications. The deadline for proposals is September 25, 2009.

**NOTE: the Notice of Intention is due September 15, 2009.**

<http://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={726E25A3-1B61-65E8-6D6C-82A987557CEB}&path=open>

### **NEA Foundation Student Achievement Grant**

The NEA Foundation Student Achievement Grants are provided to improve students' academic achievement by engaging them in critical thinking and problem solving that deepen knowledge of standards-based subject matter. Applications are reviewed three times each year, with the next deadline for application on October 15, 2009.

<http://www.neafoundation.org/pages/educators/grant-programs/grant-application/student-achievement-grants/>

### **NOAA Coral Grants**

NOAA's Coral Reef Conservation Program announces grant programs for Fiscal Year 2010, published in the Federal Register on July 16, 2009.

- General Coral Reef Conservation Grants; the deadline for application is November 2, 2009.
- Projects to Improve or Amend Coral Reef Fishery Management Plans; the deadline for application is November 2, 2009.
- NOAA New England Bay Watershed Education and Training (B-WET) Program; the deadline for application is November 30, 2009.
- Coral Reef Monitoring Grant Program; the deadline for application is November 20, 2009.
- Coastal Hypoxia Research Program; the deadline for application is October 14, 2009.
- NOAA International Coral Reef Grant Program; the deadline for application is November 9, 2009.
- NOAA Pacific Northwest Bay Watershed Education and Training (B-WET) Program; the deadline for application is October 8, 2009.

[http://coralreef.noaa.gov/funding/grants/fy10\\_ffo\\_all\\_071609.pdf](http://coralreef.noaa.gov/funding/grants/fy10_ffo_all_071609.pdf)

### **Norcross Wildlife Foundation Grants**

The Norcross Wildlife Foundation provides support to local grassroots organizations throughout the United States that work to protect wild land. Priority is given to organizations that have difficulty raising the modest funds they need to do their critical work in the trenches of environmental conservation. Grants are primarily provided for program-related office and field equipment, and public education and outreach materials. The Foundation also provides no-interest loans to local organizations to help acquire land they have prioritized for conservation. Applications for both grants and loans may be submitted at any time. See the website for complete details.

<http://www.norcrossws.org/Foundmain.html>

### **North Central Coast MPA Baseline Program Request for Proposal**

The North Central Coast MPA Baseline Program is designed to be consistent with the monitoring framework and is essential for providing a foundation for ongoing monitoring. The purposes of the program are baseline characterization and assessment of initial socioeconomic and ecological changes. The deadline for proposals is September 28, 2009.

<http://www.csgc.ucsd.edu/FUNDING/APPLYING/NorthCentralCoastMPA2009-10.html#Purposes>

### **NSF Dear Colleague Letter on Climate Change Education**

The National Science Foundation has published a Dear Colleague Letter: Climate Change Education. The Education and Human Resources Directorate is augmenting

funding to support emerging areas of climate change education, with a focus on development of the climate science professional workforce, public understanding and engagement on climate change issues, and informed decision-making associated with adaptation to and mitigation of climate change impacts. See the letter for details.

<http://www.nsf.gov/pubs/2009/nsf09058/nsf09058.jsp>

### **NSTA Teacher Awards**

The National Science Teachers Association (NSTA) sponsors numerous awards. Check the website for complete details of all the awards. The deadline for application is November 30, 2009.

<http://www.nsta.org/about/awards.aspx>

### **Ocean Leadership Award**

The USC Wrigley Institute, QuikScience, and COSEE-West recognize educators who make outstanding contributions to K-12 ocean science education, through the Ocean Leadership Award. Nominations are accepted in different categories to help further marine science educational goals. The deadline for nominations is February 1, 2010.

<http://www.usc.edu/org/cosee-west/quikscience/OceanLeadershipAwards.html>

### **Pay It Forward Mini-Grants**

Pay It Forward Mini-Grants are designed to fund one-time-only service-oriented projects identified by youth as activities they would like to perform to benefit their school, neighborhood, or community. Projects must contain a “pay it forward” focus – that is, they must be based on the concept of one person doing a favor for others, who in turn do favors for others, with the results growing exponentially. Grant applications are due by September 15, 2009 or February 15, 2010.

<http://www.payitforwardfoundation.org/educators/mini-grant.html>

### **Planet Connect High School Challenge Grants**

The National Environmental Education Foundation's Planet Connect Program, developed in partnership with The Weather Channel, can help fund high school students who have an innovative solution to protect the environment. The deadline for application is October 30, 2009.

<http://www.planet-connect.org/planet-connect-grants>

### **PolarTREC Funding Opportunities for Teachers and Researchers**

PolarTREC (Teachers and Researchers Exploring and Collaborating) is currently accepting applications for teacher research experiences. The deadline for application for PolarTREC Teachers is October 5, 2009; the deadline for application for PolarTREC Researchers is September 20, 2009. See the website for complete details.

<http://www.polartrec.com>

### **Project AWARE Foundation Grant**

The Project AWARE Foundation is committed to the preservation of the aquatic environment and its resources throughout the world through education, advocacy, and action. The foundation provides grants for the conservation of both marine and freshwater underwater environments, with a focus on coral reefs, shark protection, sustainable fisheries, ecotourism, shoreline cleanups, and aquatic education for children. The next deadline for application is December 15, 2009.

[http://www.projectaware.org/english/grants/grant\\_information.aspx](http://www.projectaware.org/english/grants/grant_information.aspx)

### **Prudential Spirit of Community Awards**

The Prudential Spirit of Community Awards honor young people in middle and high school grades for outstanding volunteer service to their communities. The deadline for application is November 2, 2009.

<http://spirit.prudential.com/view/page>

### **QuikScience Challenge**

The USC Wrigley Institute for Environmental Studies and Quiksilver, Inc. offer the new QuikScience 'SOS' *Challenge: Surfing Onto Solutions for Our Ocean Planet*, a multi-faceted competition for Southern California student teams designed to spark their interest in science and the oceans. The challenge also seeks to foster leadership qualities in young people through environmental awareness and stewardship. There are two challenge competitions, one for middle school teams and one for high school teams. The deadline for registration is October 30, 2009.

<http://www.usc.edu/org/cosee-west/quikscience/QuikScienceChallenge.html>

### **QuikScience Music Challenge**

The QuikScience Music Challenge seeks young people in Southern California to compose ocean-inspired music for the QuikScience Challenge. Help promote ocean understanding and appreciation through music. The deadline for entry is February 19, 2010.

[http://www.usc.edu/org/cosee-west/quikscience/music\\_winners.html](http://www.usc.edu/org/cosee-west/quikscience/music_winners.html)

### **RFP for Marine Regulation Awareness Program**

The Florida Department of Environmental Protection offers a request for proposal, Solicitation No. 2010003C, RFP for the Development of a Marine Regulation Awareness Program for the South Florida Region. The deadline for submission is October 7, 2009.

[http://vbs.dms.state.fl.us/vbs/ad.view\\_ad?advertisement\\_key\\_num=82025](http://vbs.dms.state.fl.us/vbs/ad.view_ad?advertisement_key_num=82025)

### **River of Words Art and Poetry Contest**

River of Words is an international environmental poetry and art contest on the theme of watersheds for ages 5-19. The contest is designed nurture respect and understanding of the natural world by helping youth explore the natural and cultural history of the place they live, and to express, through poetry and art, what they discover. The deadline for entry is December 2, 2009 for U.S. entries, and February 1, 2010 for international entries.

<http://www.riverofwords.org/contest/index.html>

### **Siemens We Can Change the World Challenge**

NSTA, the Siemens Foundation, and Discovery Education are partnering again this year to educate, empower, and engage students and teachers nationwide to become agents of change in improving their communities through the *Siemens We Can Change the World Challenge*. The national sustainability challenge encourages students in kindergarten through eighth grade to team up with their classmates to create replicable solutions to environmental issues in their classroom (grades K-2), school (grades 3-5) and community (grades 6-8). The deadline for entry is March 15, 2010.

<http://wecanchange.com/>

### **Spirit of Innovation Awards**

The Spirit of Innovation Awards Program challenges teams of high school students to solve real world problems by creating products using science, technology, and

entrepreneurship. The competition encourages students to develop new products that can be introduced to the marketplace. The 2009-2010 competition challenges students to develop new ideas in the areas of green schools, aerospace exploration, renewable energy, and space nutrition. In order to qualify for the competition, student teams must have successfully completed all preliminary tasks in order to be considered for the competition. In April, top teams will be honored with a grant to further develop their product. The deadline for submission is December 15, 2009.

<http://www.conradawards.org/rules.html>

### **State Farm Youth Advisory Board Grant Program**

The State Farm Youth Advisory Board Grant Program funds student-led service-learning projects throughout the U.S. and Canada. Specific areas of interest include natural and societal disasters, environmental responsibility, and more. Educators interacting with students in public K-12 schools are eligible to apply. The deadline for application is October 2, 2009.

<http://www.statefarmyab.com/apply.php>

### **Statewide Longitudinal Data Systems Grant Program**

This program will enable all state educational agencies to create statewide, longitudinal data systems to efficiently and accurately manage, analyze, disaggregate, and use individual student data to support informed decision-making at all levels of the education system; increase the efficiency with which data may be analyzed to support the continuous improvement of education services and outcomes; facilitate research to improve student achievement and close achievement gaps; and support education accountability systems and public reporting. The deadline for application is November 19, 2009.

<http://www.ed.gov/legislation/FedRegister/announcements/2009-3/072909c.html>

### **Target Field Trip Grants**

The Target Field Trip Grants Program offers funds to allow teachers to offer valuable experiential learning gained from field trips to enhance students' classroom studies. Funds may be used to cover cost of transportation, entry fees, supplies and equipment, and resource materials. The deadline for application is November 3, 2009.

<http://sites.target.com/site/en/company/page.jsp?contentId=WCMP04-031880>

### **Tech & Learning's Leader of the Year Program**

Tech & Learning's Leader of the Year Program honors K-12 administrators, technology coordinators, and teachers who use technology in innovative ways to help teachers teach and help students learn. The deadline for entry is September 30, 2009.

<http://www.techlearning.com/section/LeaderoftheYear>

### **Toyota Tapestry Grants for Science Teachers Program**

Toyota Tapestry Grants are administered by NSTA and are available to middle and high school science teachers who teach at least two science classes a day and to elementary classroom teachers who teach at least some science in the classroom. The grants recognize outstanding educators who are making a difference by demonstrating excellence and creativity in science teaching. Categories include environmental science, integrating literacy and science, and physical science. The deadline for entry is January 18, 2010.

<http://www.nsta.org/pd/tapestry/>

### **World Maritime Day Parallel Event**

The United States is hosting the 2009 World Maritime Day Parallel Event with a theme of *Climate Change*. The lead agency is the U.S. Coast Guard, with participation by NOAA, EPA, and others. The Design Competition & Science Fair will be held throughout the day for students from high schools and universities. Projects should be related to climate change with a focus on the maritime industry. The deadline for entry is October 1, 2009.

<http://www.uscg.mil/worldmaritimeday/sciencefair.asp>

## **INTERNSHIPS AND TEMPORARY OPPORTUNITIES**

### **Reef Check Australia Volunteer Positions**

Reef Check Australia is looking for several motivated and independent people to assist with activities leading up to and during the 2010 survey season for the Great Barrier Reef Project. All positions will be based out of Reef Check Australia headquarters in Townsville, Queensland.

<http://www.reefcheckaustralia.org/opportunities.html>

### **Research Fellowships - Australia**

The ARC Centre of Excellence for Coral Reef Studies is administered by James Cook University in Townsville, Queensland, Australia. The center undertakes research in more than 40 countries. Fellowship positions are open to all career stages (from outstanding new PhD graduates to Professorial level Fellows), in four of the center's programs.

<http://www.coralcoe.org.au/employment.html>

## **CONFERENCES, WORKSHOPS, AND PROFESSIONAL DEVELOPMENT**

### **Alaska Marine Science Symposium**

Scientists from Alaska, the Pacific Northwest, and beyond will gather in Anchorage to inform each other about their research in the marine ecosystems of the Arctic, the Bering Sea, and the Gulf of Alaska, January 18-22, 2010 in Anchorage, Alaska. Registration for this conference is free, thanks to their many sponsors. Plenary and poster sessions will feature research on climate, oceanography, local and traditional knowledge, and more. Abstract submission will begin in October, with a deadline for submission in November.

<http://www.alaskamarinescience.org/>

### **Benefits of Research Experiences, Call for Abstracts**

Organizers of Session ED10, at the American Geophysical Union Ocean Sciences Meeting, February 22-26, 2010 in Portland, Oregon, *Authentic Research Experiences for Teacher and Student Benefits*, announce a call for abstracts. Contributions are invited from researchers and educators that would like to share their research experience. The deadline for submission is October 15, 2009.

Contact Jennifer Hammond at [Jennifer.Hammond@noaa.gov](mailto:Jennifer.Hammond@noaa.gov)

<http://www.agu.org/meetings/os10/index.php>

### **Coastal and Estuarine Research Federation Conference**

The Coastal and Estuarine Research Federation's 20th Biennial Conference, *Estuaries and Coasts in a Changing World*, will take place November 1-5, 2009 in Portland,

Oregon. The website offers the updated Schedule at a Glance; the deadline for early registration is October 1, 2009.

<http://www.sgmeet.com/cerf2009/>

### **DataStreme Atmosphere - Online**

DataStreme Atmosphere is a precollege teacher enhancement program from the American Meteorological Society. A free 13-week course is offered twice a year to selected participants through distance-learning course. Check out the website for complete details.

<http://www.ametsoc.org/amsedu/dstreme/extras/dsinfo.html>

### **Education and Science Forum – Washington, D.C.**

Howard University, in conjunction with NOAA's Educational Partnership Program, will host the fifth Bi-Annual Education and Science Forum, November 12-14, 2009, in Washington, D.C. Students and instructors, representatives from federal and local government, private industry, and the general public will convene to view and present research on atmospheric, oceanic, and environmental sciences; engineering; and technology that support NOAA's mission.

<http://ovprc.howard.edu/epp/>

### **EISTA 2010 - Call for Papers**

The deadline for submission of draft papers for the 8th International Conference on Education and Information Systems, Technologies and Applications: EISTA 2010, June 29-July 2, 2010 in Orlando, Florida, is October 7, 2010.

<http://www.iis2010.org/imsci/website/default.asp?vc=5>

### **International Pacific Marine Educators Network Conference**

The theme for the International Pacific Marine Educators Network (IPMEN) Conference, July 7-10, 2010 in Sigatoka, Fiji Islands is *Vakarau ni se siga toka* - Marine education in the new millennium. *Vakarau ni se siga toka* is something Fijian elders used to say, which translated means "Start preparing while we've still got daylight." The conference committee will call for papers in the four strands: Key Challenges in Ocean Literacy, Building Healthy Sustainable Coastal Communities, Women in Fisheries - Partnerships for Change, and How Does Climate Change Affect Children of the Pacific? Marine educators are encouraged to participate, either in person or virtually via the web, in this conference focused on the Pacific but with worldwide implications. Virtual participation will be through the College of Exploration (presentations from earlier conferences are archived as web-based streaming video). Scholarships may be available. Check the IPMEN website for details and future postings.

<http://www.ipmen.net/>

### **Introduction to OBIS-SEAMAP – Quebec**

OBIS-SEAMAP is an open access data center for marine mammal, sea bird and sea turtle observations, the primary purpose of which is to encourage collaborations and improve the understanding of these species by making it easy to share and visualize biogeographic data with advanced mapping and query tools. There will be a free workshop, Introduction to OBIS-SEAMAP, at the Society for Marine Mammalogy biennial conference, October 11, 2009 in Quebec City, Quebec. The workshop, useful for both data providers and users, will include sections focusing on visual survey data, as well as integrating photo-ID and acoustic data.

[http://marinemammalscience.org/index.php?option=com\\_content&view=article&id=361&Itemid=214](http://marinemammalscience.org/index.php?option=com_content&view=article&id=361&Itemid=214)

### **Learning Ocean Science through Ocean Exploration - Various**

NOAA's Ocean Exploration Program and partners will offer introductory (default) and follow-up Learning Ocean Science through Ocean Exploration professional development workshops for science teachers. Participants will receive the curriculum with CD-ROM's, certificates of participation, and more. Contact the noted educator for registration and more information.

- October 17, 2009 with the New England Aquarium, Boston, Massachusetts. The deadline for registration is October 2, 2009. Contact Jaysree Oberoi at [joberoi@neaq.org](mailto:joberoi@neaq.org)
- October 24, 2009 with The National Aquarium, Baltimore, Maryland, a follow-up workshop. The deadline for registration is October 9, 2009. Contact Joe Harber at [jharber@aqua.org](mailto:jharber@aqua.org)
- November 7, 2009 with Hatfield Marine Science Center, Newport, Oregon. The deadline for registration is October 23, 2009. Contact Tracy Crews at [tracy.crews@oregonstate.edu](mailto:tracy.crews@oregonstate.edu).
- November 14, 2009 with John G. Shedd Aquarium, Chicago, Illinois. The deadline for registration is October 30, 2009. Contact Amy Christiansen at [AChristian@sheddaquarium.org](mailto:AChristian@sheddaquarium.org)
- November 14, 2009 with SeaWorld Adventure Camp, San Diego, California. The deadline for registration is October 30, 2009. Contact Adrienne Marriott at [Creec9a@hotmail.com](mailto:Creec9a@hotmail.com)
- November 21, 2009 with Audubon Aquarium of the Americas, New Orleans, Louisiana. The deadline for registration is November 6, 2009. Contact Tricia LeBlanc at [tleblanc@AudubonInstitute.org](mailto:tleblanc@AudubonInstitute.org)

<http://oceanexplorer.noaa.gov/edu/development/development.html>

### **LiMPETS Introduction to Sandy Beach Monitoring - California**

The Gulf of the Farallones National Marine Sanctuary and Farallones Marine Sanctuary Association offer the free workshop, *LiMPETS Introduction to Sandy Beach Monitoring*, October 24, 2009 in San Francisco, California. Participants receive a monitoring handbook and are trained to survey the distribution and abundance of the Pacific mole crab (*Emerita analoga*) at one of many monitoring sites along the coast of California. For those closer to San Mateo County, register for the November 14, 2009 workshop.

[http://limpetsmonitoring.org/resources\\_workshops.php](http://limpetsmonitoring.org/resources_workshops.php)

### **Long Island Sound Teacher Workshops - Connecticut**

There are three Long Island Sound Mentor Teacher workshops scheduled, facilitated by Connecticut Sea Grant via funding from the EPA Long Island Sound Study. The workshops cost is minimal, and includes resources for each participant to take back to the classroom.

- Island Cruise, September 26, 2009; contact Beth Taylor at [etaylor@branford.k12.ct.us](mailto:etaylor@branford.k12.ct.us)
- Past, Present & Future Waters, September 26, 2009; contact Karen Beitler at [Karen.beitler@new-haven.k12.ct.us](mailto:Karen.beitler@new-haven.k12.ct.us)
- Teach at the Beach, October 2, 2009; contact Donna Rand at [drand@crec.org](mailto:drand@crec.org)

Note that there will also be a free Educator Appreciation Night at New England Aquarium on September 30, 2009; registration is required.

<http://neosec.wordpress.com/2009/09/08/long-island-sound-teacher-workshops/>  
[http://www.neaq.org/education\\_and\\_activities/teacher\\_resources/teacher\\_resource\\_center/educator\\_appreciation\\_night.php](http://www.neaq.org/education_and_activities/teacher_resources/teacher_resource_center/educator_appreciation_night.php)

### **MAMEA Annual Conference - Delaware**

Registration is open and presentation proposals are being accepted for the 2009 Mid-Atlantic Marine Education Association (MAMEA) Conference, *New Inspiration in Marine Education*, October 2-4, 2009 in Lewes, Delaware. The conference will highlight the latest marine research in the Mid-Atlantic region and how educators can use the new information in their classrooms and programs.

<http://www.mamea.org/2009conf.html>

### **National Conservation Training Center Courses – West Virginia**

The U.S. Fish and Wildlife Service offers professional development courses at the National Conservation Training Center campus in West Virginia. For more information about a specific course, contact the noted educator.

- OUT8116: Grant Writing for Conservation, December 7-9, 2009; the deadline for registration is September 28, 2009. Contact Ora Dixon at [Ora\\_Dixon@fws.gov](mailto:Ora_Dixon@fws.gov).
- OUT8115: Balancing Nature and Commerce in Communities that Neighbor Public Lands, January 25-28, 2010; the deadline for registration is November 30, 2009. Contact Laura Jones at [Laura\\_Jones@fws.gov](mailto:Laura_Jones@fws.gov)
- OUT8127: Public Participation and Informed Consent – Part I, February 17-19, 2010; the deadline for registration is December 14, 2009. Contact Jim Siegel at [Jim\\_Siegel@fws.gov](mailto:Jim_Siegel@fws.gov)
- OUT8162: Education Programs for Youth: School's Out, March 8-10, 2010; the deadline for registration is December 28, 2009. Contact Julie Study at [Julie\\_Study@fws.gov](mailto:Julie_Study@fws.gov)

[http://training.fws.gov/documents/Section1\\_NCTC\\_Sponsored\\_Courses.pdf](http://training.fws.gov/documents/Section1_NCTC_Sponsored_Courses.pdf)

### **OCEANIA Fall Conference – Hawai'i**

The OCEANIA Marine Educators Association will host its conference October 3, 2009 in Honolulu, Hawai'i following the Hawai'i Science Teachers Association Conference. That evening, join them for an Educator's Evening at the Waikiki Aquarium sponsored by the National Marine Sanctuary Foundation for an introduction to the Ocean Explorer program's educator resources.

<http://www.hawaii.edu/mcc/oceania/announcements.html>

### **Overview of Science Communication Tools - Online**

The Integration and Application Network produces a variety of communication products including newsletters, posters, books, reports, brochures, and conceptual diagrams. These products synthesize scientific findings using effective science communication techniques. This webinar, September 30, 2009, will give an overview of the scientific communication products that the network produces, with a focus on conceptual diagrams and conceptual diagramming tools.

<http://www.ebmtools.org/september-30-2009-overview-science-communication-tools-bill-dennison-and-tim-carruthers-university-m>

### **Peace Corps Master's International Program**

The Peace Corps is seeking environmental educators for the Peace Corps Master's International program. Prospective students apply simultaneously to the Peace Corps

and the graduate program of their choice. Typically, students complete one year of graduate school and then serve 27 months in the Peace Corps, after which they return to the university to complete any remaining degree requirements. More than 50 universities, 15 of which offer graduate degrees related to the environment, currently partner with the program.

<http://www.peacecorps.gov/index.cfm?shell=learn.whyvol.eduben.mastersint>

### **Persistent Organic Pollutants Awareness Training Module - Online**

This free online training module was developed through the GEF in collaboration with the International Persistent Organic Pollutants (POP) Elimination Network, with a purpose of building awareness about the Stockholm Convention on POPs, its legal and institutional arrangements, and good cases or examples of community-based POPs management.

<http://www.sgp-pops.org/>

### **ROV Building Workshop - Massachusetts**

The Museum Institute for Teaching Science, MIT Sea Grant, and partners offer an ROV building workshop for middle and high school teachers, November 6-7, 2009 in Worcester, Massachusetts. Participants will experience the MIT SeaPerch program through building their own ROV and then exploring how this ROV can be used in the classroom and field. Teachers will receive a complete ROV kit to use in the classroom along with the SeaPerch curriculum guide.

Contact Amy Hoffmaster at [ahoffmaster@mits.org](mailto:ahoffmaster@mits.org)

### **Why Do We Explore - Online**

Join the College of Exploration and NOAA's Ocean Explorer for the free online teacher workshop, *Why Do We Explore*, October 5-16, 2009. This is the second workshop in a series of teacher professional development opportunities focused around NOAA's new ship, the *Okeanos Explorer*. Scientific keynote presenters and education facilitators will work with participants to delve into the benefits of ocean exploration targeting climate change, energy, human health and ocean health. Interact with scientists, converse and share classroom applications with other educators, and find a wealth of multimedia resources. The workshop will introduce the first in a series of Leader's Guides for *Classroom Explorers Why Do We Explore?* with associated exploration lessons and hands-on activities. The workshop will be available 24 hours a day, 7 days a week.

<http://www.coexploration.org/oe/>

## **EDUCATIONAL RESOURCES**

### **About Coral Reefs**

NOAA's Coral Reef Information System (CoRIS) is designed to be a single point of access to NOAA coral reef information and data products, especially those derived from NOAA's Coral Reef Conservation Program. The website includes introductory material about coral reefs, deep water corals, coral diseases, and more.

<http://coris.noaa.gov/about/>

### **Adventure Marine**

Adventure Marine offers a marine science program at sea aboard the research vessel *Pacific Monarch*, traveling from Long Beach Harbor to the Island of Catalina in

California. The ship is equipped with wet lab touch tanks, snorkeling gear, underwater camera, color sonar, and more.

<http://www.adventuremarine.org/>

### **Adventures of Ed the Bear and Fred the Monkey**

Stephen Savage is currently developing a marine based education project that will introduce U.K. schools to marine habitats around the world, along with global marine conservation issues, through a weblog seen through the eyes of the teddy bear, Ed the Bear. Follow along, and help Ed get around by hosting him at your favorite spot. Ed starts his adventure by sharing his experiences centered around his own local coastline and marine wildlife, the inspiration behind his travels. Ed hopes to show how his local coastline fits into the bigger picture and also to create a point of references for local U.K. schools to compare with Ed's global adventures.

Ron Hirschi and Fred the Monkey want to connect with kids about oceans, marine debris, and especially ridding the sea of plastics. Follow Fred on his journeys, including a recent trip to Pihe Manu (Midway Atoll), his research into micro-plastics in beach sand, and his future adventures, including SOARing with Fred. Keep in touch by way of Postcards from Fred on his website.

<http://adventuresofedthebear.blogspot.com/>

<http://soaronhirschi.blogspot.com/>

### **Astrobiology in the Classroom**

While Astrobiology in the Classroom leads students in the exploration of the limits of life on Earth to extend their beliefs about life to include its possibility on other worlds, these units can easily be adapted for other studies. In this four-part activity, students first explore the environments of several mammals and birds to better understand how living things and their environments interact and depend on each other. In the second part, students match bacterial types with their more extreme environments. Students investigate physical parameters and read about the latest scientific findings in this field and. The final part guides students in the exploration of environments on other planets and moons in our Solar System.

<http://btc.montana.edu/ceres/astrobiology/LabActivities/ExtremeEnvironments.doc>

### **Beach Management**

*Beach Management, Principles & Practice*, is a handbook which collects decades of research on integrated beach management. Part One covers beach management principles and theory and addresses practical management tools and guidelines, including how to determine the best management strategy for different beach types (linear, pocket, resort, urban, village, rural and remote) as well as how to include user preferences and priorities in effective management plans. Part Two offers case studies of best and worst practices.

<http://www.earthscan.co.uk/?tabid=56717>

### **Beaked Whale Identification Guide**

From the Smithsonian's National Museum of Natural History's Marine Mammal Program comes the Beaked Whale Identification Guide, with detailed identification guides and separate pages for each beaked whale species. The website includes basic morphology, habits, and geographic distribution. In addition to references, there are links to a cetacean stranding database and more.

[http://vertebrates.si.edu/mammals/beaked\\_whales/pages/main\\_menu.htm](http://vertebrates.si.edu/mammals/beaked_whales/pages/main_menu.htm)

### **Black Smokers WebQuest**

This website from the University of Sydney's UniServe Science contains a webquest where student groups investigate one aspect of the science of black smokers. The webquest provides a separate list of links for each research role, including geochemist, biologist, oceanographer, and geologist. Upon completing their specialist research, the students work in groups to get a better understanding of black smokers and the issues by presenting a position on whether to protect black smokers or continue research on the black smokers for possible benefits. The website offers links to current information, animations, and more.

<http://science.uniserve.edu.au/school/quests/hydroventwg.html>

### **California Ocean Uses Atlas**

The California Ocean Uses Atlas Project is a public-private partnership between NOAA's Marine Protected Areas Center and the Marine Conservation Biology Institute. The project maps significant human uses of the ocean in state and federal waters of the coast of California. Data, maps, and analytical products are available. In addition, the aim is to create Ocean Uses Atlases for all U.S. waters and they are actively seeking interested partners in coastal states and regions, and in other public and private entities.

[http://mpa.gov/science\\_analysis/atlas.html](http://mpa.gov/science_analysis/atlas.html)

### **Catch the Science Bug**

This educational science website, sponsored by Best Buy Children's Foundation, offers a variety of science activities meant to increase science literacy, raise environmental awareness, and introduce different careers in the sciences. The site also provides the user with video clips from the PBS Rhode Island television series, interactive online activities, and educational activities.

<http://www.sciencebug.org/>

### **Climate Change**

The Climate Change website from the World Bank offers a view of climate change from the perspective of people in the developing world. The website reviews current projects, data sets, research papers, and more.

<http://beta.worldbank.org/climatechange/>

### **Climate Change and Human Health**

The National Environmental Education Foundation (NEEF) has created a climate change webpage for health professionals which offers an overview of the potential health effects as well as a list of additional resources. In addition, two new online courses developed by NEEF and the Cooperative Program on Operational Meteorology Education and Training are included among the resources. *Climate Change: Fitting the Pieces Together* provides a basic overview of climate change science and answers frequently asked questions. *Weather and Health* was created to help meteorologists, health care professionals, and others broaden their understanding of the impacts of weather and climate on public health. Both courses are offered at no cost; free registration is required.

[http://www.neefusa.org/health/cc\\_initiative.htm](http://www.neefusa.org/health/cc_initiative.htm)

### **Conch Reef Expedition**

This 5-day expedition to map the coral reefs around the Aquarius underwater habitat took place in August, 2009. Using autonomous underwater vehicles (AUVs), the science

team used side-scan sonar and underwater video to determine the biodiversity of the coral reefs around the habitat, as well as what species live there. The expedition website features daily blog entries, video, pictures and suggested lesson plans and other education resources. In addition, there are two webinars archived on the ustream website.

[http://www.vims.edu/blogs/conch\\_reef/index.php](http://www.vims.edu/blogs/conch_reef/index.php)

<http://www.ustream.tv/channel/conchreef2009>

### **Connecticut Sea Grant Educational Materials**

Connecticut Sea Grant offers a variety of free educational materials about Long Island Sound, including The Living Treasures, Long Island Sound Curricular Resources Guide Connecticut River Tidal Marshes CD-Rom, and more. Some materials are downloadable from the website, while others are available for nominal charge.

<http://web2.uconn.edu/seagrant/publications/marineed/index.php>

### **Diversity, Systematics, and Connectivity of Vulnerable Reef Ecosystems (DISCOVRE)**

This 4-year multidisciplinary research program will focus on understanding the physical oceanography, biology, ecology, genetic connectivity, and trophodynamics of deep coral environments in the Gulf of Mexico, both within natural and artificial sites. Read the daily logs from the first cruise, review relevant publications, and more. The second cruise, Lophelia II, is featured on a NOAA website, below.

<http://fl.biology.usgs.gov/DISCOVRE/index.html>

### **Earth Science Week**

Earth Science Week is October 11-17, 2009. The 2009 Earth Science Week Toolkit is now available. The kit includes an activity calendar, posters, resources, activities, a field notebook, and student handouts. Materials cover a range of earth science topics including National Parks, GIS technology, volcanoes and the ecological impacts of climate change.

<http://www.earthsciweek.org/materials/index.html>

### **EarthTrends**

EarthTrends is an online database maintained by the World Resources Institute that focuses on environmental, social, and economic trends. Research topics include Coastal and Marine Ecosystems, Climate and Atmosphere, and more. The website includes maps, information guides, a monthly newsletter, and other resources.

<http://earthtrends.wri.org/#>

### **Finding Coral Expedition**

A team of scientists took part in a two-week-long expedition funded by the Living Oceans Society, June 9-23, 2009, designed to study deep sea corals in the North Pacific off the west coast of Canada and document threats to their well being. The interactive website includes background information, expedition logs, video, maps, and much more.

<http://findingcoral.com/>

### **Freshwater and Marine Image Bank**

The University of Washington Libraries offers 21,000 digitized images of freshwater and marine life taken from 1735-1924 from various publications. Visitors can browse by collection and subject, or enter search criteria. There are also links to other sources for digital images.

<http://content.lib.washington.edu/fishweb/index.html>

### **Global Water Supply School Curriculum**

Water.org launched school curriculum materials for World Water Day, March 22. Aligned with national standards, the lesson plans and mini-units include elementary, middle, and high school levels. Stand-alone lesson plans are part of larger units that cover a broad scope of subjects including English, science and technology, and social sciences like geography, civics and economics. Classroom activities cover everything from poetry seminars and vocabulary-building worksheets to science and math lessons about potable water availability.

<http://water.org/lessonplan/>

### **HAB Monitoring in Whyville**

NOAA's National Centers for Coastal Ocean Science (NCCOS) is using a new way to teach kids about using of scientific inquiry to address environmental problems, inside the online virtual learning world "Whyville." A NCCOS-sponsored scientist from the Woods Hole Oceanographic Institution created and regularly updates a harmful algal bloom (HAB) monitoring feature including the virtual Plankton Lab at the Whyville Oceanographic Institute. About half of the roughly 750,000 kids visiting the lab so far have collected samples from the virtual ocean, used the lab to identify algal species and bloom-causing nutrient, traced the nutrient to its source, and stemmed the nutrient flow by restoring a virtual wetland. Be sure to check out the virtual reef, also.

<http://www.whyville.net/smmk/nice>

### **Help! It's an HAB!**

*Help! It's an HAB!*, from the Bigelow Laboratory for Ocean Sciences is part of a series of lessons that provide information and materials to teach students about the effects of harmful algal blooms on fish, as well as devising remediation techniques. The website features links to other related lessons and pages as well as a chart of education standards met by these activities by grade level.

[http://www.bigelow.org/edhab/help\\_hab.html](http://www.bigelow.org/edhab/help_hab.html)

### **Humpback Whale Educational Materials**

The Hawaiian Islands Humpback Whale National Marine Sanctuary website offers a variety of downloadable educational materials, including brochures, fact sheets, activity books, and more.

<http://hawaiihumpbackwhale.noaa.gov/documents/education.html>

### **Ice Planet Earth**

Ice Planet Earth is a collaborative project led by the University of New Hampshire to promote understanding of Earth's polar regions and the uniqueness of Earth as an ice and water planet in our solar system. The website has polar fact sheets, resources and activities, a kids' section, and much more.

<http://iceplanetearth.org/index.jsp>

### **Journey South**

Give your students hands-on experience with nature by participating in Journey South, the fall portion of Annenberg Media's Journey North program for K-12 students and teachers. The international program puts students in touch with students in other countries as together they track wildlife migrations and seasonal growth and change.

<http://www.learner.org/jnorth/>

### **Jumping the Grate**

Jumping the Grate, the story of Sam the Kokanee Salmon, is an adventure book for children. Jumping the Grate contains elements not usually found in books: a CD of two theme songs written by the author and performed by her band, follow-up adventures in language arts and science, coloring pages, song lyrics with guitar chords, and more. You can preview some of the book and listen to portions of two songs on the website.

<http://www.rayoflightbooks.com/index.php?nav=jumping>

### **KidWind Project**

The KidWind Project is a team of teachers, engineers, and scientists committed to innovative energy education to promote wind power through affordable tools and training programs that challenge, engage, and inspire students of all ages. The website offers lesson plans, science project ideas, and more.

<http://www.kidwind.org/>

### **Learning from the Sea**

Learning from the Sea: Reading and Math Exercises for Young Turks and Caicos Students, is a marine education series that consists of a workbook and an interactive DVD that will be distributed to schools in the Turks and Caicos Islands in an effort to incorporate more marine education and awareness into the school curriculum. This website contains many features of the DVD, a virtual dive and snorkel, and other material. Additional features include videos, news, and links to other educational material.

<http://www.learningfromthesea.com/>

### **Living on the Ocean Planet Video Contest Winners**

These Gulf of Maine Area Census of Marine Life website hosts winning videos submitted to the 2009 National Ocean Sciences Bowl "Living on the Ocean Planet" Video Contest. Check these out by clicking on the "Watch the winning videos" link.

<http://www.usm.maine.edu/gulfofmaine-census/>

### **Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks**

NOAA Ocean Exploration and Research Program has launched the *Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks* Web page on its Ocean Explorer website, complete with archives of the August 19-September 12, 2009 mission. In the second year of a four year study, and the third cruise in a series of four expeditions to the Gulf of Mexico, Lophelia II 2009 took place on board the NOAA Ship *Ronald H Brown*. A basic goal of the study was to be able to predict deep-water coral distribution in the Gulf of Mexico. Educators working with scientists from the cruise developed an Ocean Explorer Expedition Education Module for the mission, and the website also includes mission logs, video, OceanAGE Career Connections, and other resources.

<http://oceanexplorer.noaa.gov/explorations/09lophelia/welcome.html>

### **Louisiana Marine Education Resources**

The Louisiana Sea Grant College Program offers La MER, (Louisiana Marine Education Resources), a website repository for regionally relevant marine education resources. The website links to aquatic education projects, including Native Fish in the Classroom and Ocean Commotion; classroom resources, including On Again, Off Again: the Dead Zone and Manatee Activities; and other useful aquatic links.

<http://lamer.lsu.edu/index.htm>

### **Mangal Cay**

Mangal Cay is virtual tour of a Caribbean mangrove island, brought to us by the Animal-Plant Interaction Lab at the Smithsonian Environmental Research Center and the National Science Foundation. Educators can use it in conjunction with their own webquests to highlight the special ecology of mangrove wetlands. Note that a fast Internet connection is needed for an optimal tour.

[http://www.serc.si.edu/labs/animal\\_plant\\_interaction/Trail/VirtualTour.html](http://www.serc.si.edu/labs/animal_plant_interaction/Trail/VirtualTour.html)

### **Marine Debris Poster**

The North American Marine Environment Protection Association offers a downloadable marine debris poster, "Do You Know Where Your Litter Is? Right Where You Left It."

[http://www.namepa.net/Downloads/News/NAMEPA\\_Marine\\_Debris\\_Poster.pdf](http://www.namepa.net/Downloads/News/NAMEPA_Marine_Debris_Poster.pdf)

### **National Ocean Service Widgets**

A widget is a small piece of web programming code that adds content to your blog, wiki, or web page. Information in a widget can feature updated content or let the readers do something like use a search box. NOAA's National Ocean Service offers widgets for Ocean Facts, the NOS YouTube Channel, the NOS Twitter account, and more.

<http://oceanservice.noaa.gov/widgets/welcome.html>

### **Nebraska Earth Systems Education Network Lessons**

The goal of the Nebraska Earth Systems Education Network, part of the School of Natural Resources of the University of Nebraska-Lincoln, is to improve linkages between K-12 educators and Earth science resources. The website hosts a variety of lessons about the atmosphere, hydrosphere, geosphere, and interdisciplinary.

<http://nesen.unl.edu/Lessons/Lessons.asp>

### **Ocean Motion**

Learn to identify weather-related patterns in satellite data of ocean surface currents, ocean temperature, and winds with special attention given to El Niño. Read about the mechanisms that trigger this ocean phenomena. Find out about the interplay between the ocean and the atmosphere that creates global weather patterns that affect millions of people.

<http://www.oceanmotion.org/>

### **One Million Acts of Green**

Cisco offers the One Million Acts of Green website to show that individual, organizational, and community acts of green add up to something significant. The project allows visitors to record acts of green and share ideas to encourage others. The calculator shows your positive impact. The website offers educational resources on climate change, a green career guide, and more.

<http://www.greenexus.com/omaog/index.aspx>

### **Pulse of the Planets' Educator Resources**

The National Science Foundation's Pulse of the Planet offers lesson plans using Pulse of the Planet programs and sounds as a focus for learning activities on a variety of subjects. The lesson plans are aligned to national science education standards for grades K - 12. All lesson plans, along with downloadable audio files, are free for educational use; free registration is required.

<http://pulseplanet.com/educatorresources/>

### **ReefCheck Australia Educational Program**

Reef Check Australia has developed an Educational Program for Years 4-7 (although some activities can be adapted for older or younger audiences), focusing on coral reefs, sustainability, and environmental monitoring. The materials have been created to work towards increasing awareness and engendering behavioral change towards more sustainable practices. The website also includes quick fact sheets, photocards, and a teachers' guide.

<http://www.reefcheckaustralia.org/for-teachers.html>

### **Russian-U.S. Arctic Census 2009**

The RUSALCA mission set sail from Nome, Alaska on the Russian Research Vessel *Professor Khromov* on August 22, for a 40-day voyage into the Bering Strait and northwards to the Pacific side of the Arctic Ocean. RUSALCA stands for Russian-American Long Term Census of the Arctic, and also means mermaid in Russian. Visit the website for an overview of the mission, along with links to blog posts, RSS feed, and more.

<http://oceanexplorer.noaa.gov/explorations/09arctic/>

### **Salt Marshes: A Natural and Unnatural History**

This book puts salt marshes into a broad environmental context. Chapters include salt marsh basics, pollution, and restoration. The appendix has a species index, and the book comes complete with references and an index.

[http://rutgerspress.rutgers.edu/acatalog/Salt\\_Marshes.html](http://rutgerspress.rutgers.edu/acatalog/Salt_Marshes.html)

### **San Diego Natural History Museum Exhibits**

The San Diego Natural History Museum website offers companion material to a changing array of museum exhibits. The exhibit information includes online activities, educational resources, field guides, online lectures, and much more. In addition to the current exhibits, make sure to check out the archives of past offerings, including Glow: Living Lights, Earth, Wind & WILDFIRE, and much more.

<http://www.sdnhm.org/exhibits/>

### **Science Careers**

Science magazine from the American Association for the Advancement of Science (AAAS) offers this Science Careers website, with information and commentary on the state of the science workplace environment. The site is dedicated to furthering careers in science and technology, and offers a searchable science job database. In addition, visitors can check out the Forum to ask questions about future employment opportunities and career development, the Grants and Funding section, and much more.

<http://sciencecareers.sciencemag.org/>

### **SEAICEBOX Interactive Sea Ice Explorer**

SEAICEBOX lets users view and measure changes in monthly sea ice concentration since 1979 in the Arctic and Antarctic regions. Users can view the latest daily image of sea ice concentration and compare changes in sea ice over time. The tutorial for first time visitors includes background information on sea ice and its importance to climate and also has student activities for exploring sea ice.

<http://iceplanetearth.org/seaiicebox/index.jsp>

### **Skeptical Science**

*SkepticalScience: Examining Global Warming Skepticism* tracks, ranks, outlines, and debunks arguments about the science of global warming.

<http://www.skepticalscience.com/>

### **Coastal and Waterfront Smart Growth**

NOAA, the EPA, and other agencies have released a smart growth guide that will help coastal and waterfront communities tackle threats from sea level rise, stronger hurricanes, flooding, and other challenges. *Smart Growth for Coastal and Waterfront Communities* features ten smart growth guidelines for development along the water. The publication and website highlights tools, techniques, and examples of smart growth in practice.

<http://coastalsmartgrowth.noaa.gov/>

### **Splash of Math**

SeaWorld provides teachers with up-to-date information and activities that can motivate students to conserve wildlife, the oceans, and the natural world. The Splash of Math Teacher's Guide for grades 4–8 was developed at SeaWorld with input from the San Diego County Office of Education. The goal is to offer students an active, hands-on tutorial about how mathematical skills relate to real-life situations, specifically marinelifelife studies and marine zoological park careers. This curriculum supports national standards for mathematics education.

<http://www.seaworld.org/just-for-teachers/guides/pdf/splash-of-math-4-8.pdf?src=2009WODsilverpopWildlifeAugM>

### **Tour of the Cryosphere 2009**

Take a tour of some of the coldest places on the planet courtesy NASA's fleet of Earth-observing spacecraft. The text of the video is also available.

<http://www.nasa.gov/multimedia/podcasting/TourOfCryosphere09.html>  
<http://www.nowpublic.com/environment/nasa-tour-cryosphere-2009>

### **Understanding Climate Toolkit**

The American Geological Institute, in conjunction with Earth Science Week 2009 (October 11–17), released a new toolkit that enables students, educators and the general public to explore this year's theme, *Understanding Climate*. The 2009 Earth Science Week Toolkit features a variety of educational climate resources from the USGS, NASA, and NOAA. The toolkit is available for the cost of shipping and handling.

<http://www.earthsciweek.org/materials/>

### **Washington State Department of Natural Resources: Geology & Earth Sciences**

The Washington State Department of Natural Resources website offers how-to guides for the Geology and Earth Sciences. Topics include Geologic Hazards & Mapping, Earth Resources, and more. Publications include maps, reports, and more.

<http://www.dnr.wa.gov/ResearchScience/GeologyEarthSciences/Pages/Home.aspx>

### **WIDECAST – Sea Turtle Resources**

WIDECAST is an expert network of biologists, managers, community leaders, and educators in more than 40 nations and territories, committed to an integrated, regional capacity that ensures the recovery and sustainable management of depleted sea turtle populations. The website hosts myriad resources, from basic biology of Caribbean Sea Turtles to educators' guides to ecotourism guides to marine turtle trauma response

procedures. If you're interested in sea turtles, spend some time checking out this website.

<http://www.widecast.org/>

### **Xeno-Canto**

Xeno-Canto is a community database of shared bird sounds from the Americas and around the world. The website also offers bird songs of almost 4500 species, which can be searched by map, collection, and randomly.

<http://www.xeno-canto.org/>

## **INITIATIVES, JOURNALS, and MORE**

### **Eco-Schools**

Eco-Schools is an internationally acclaimed program that provides a framework to help educators integrate sustainable principles throughout their schools and curriculum. The National Wildlife Federation is the lead for the initiative in K-12 schools in the United States. Through school-based action teams of students, administrators, educators and community volunteers, Eco-Schools combines effective "green" management of the school grounds, facilities, and the curriculum.

<http://www.nwf.org/ecoschools/about.cfm>

### **Fusion Tables**

Google has launched a new online tool enabling free data-sharing that could aid with international scientific research collaborations. The tool, Fusion Tables, allows tables of data to be visualized as charts, graphs, and maps, which can help identify patterns and trends. Users are able upload their data and make the information freely available to anyone, opening up possibilities for collaboration. In one example, the Pacific Institute, together with media network Circle of Blue, is using the tool to provide free international access to global freshwater data.

<http://www.scidev.net/en/news/online-tool-could-aid-global-collaboration.html>

### **Herpetological Conservation and Biology**

The open access journal *Herpetological Conservation and Biology* offers articles about the ecology, life history, conservation, and management of amphibians and reptiles.

<http://www.herpconbio.org/>

### **International Coastal Cleanup Day**

In partnership with organizations and individuals across the globe, Ocean Conservancy's International Coastal Cleanup engages people to remove trash and debris from the world's beaches and waterways, identify the sources of debris, and change the behaviors that cause marine debris in the first place. Join them this September, and join in a local cleanup effort.

<http://www.signuptocleanup.org/index.cfm?fuseaction=Projects.Main&CFID=5699226&CFTOKEN=39878856>

### **Monterey Bay National Marine Sanctuary's Ocean Fair - California**

Celebrate the ocean at the Monterey Bay National Marine Sanctuary's 2009 Ocean Fair, September 19, 2009 from 11:00 am - 3:00 pm. Check the website for details and directions.

<http://montereybay.noaa.gov/>