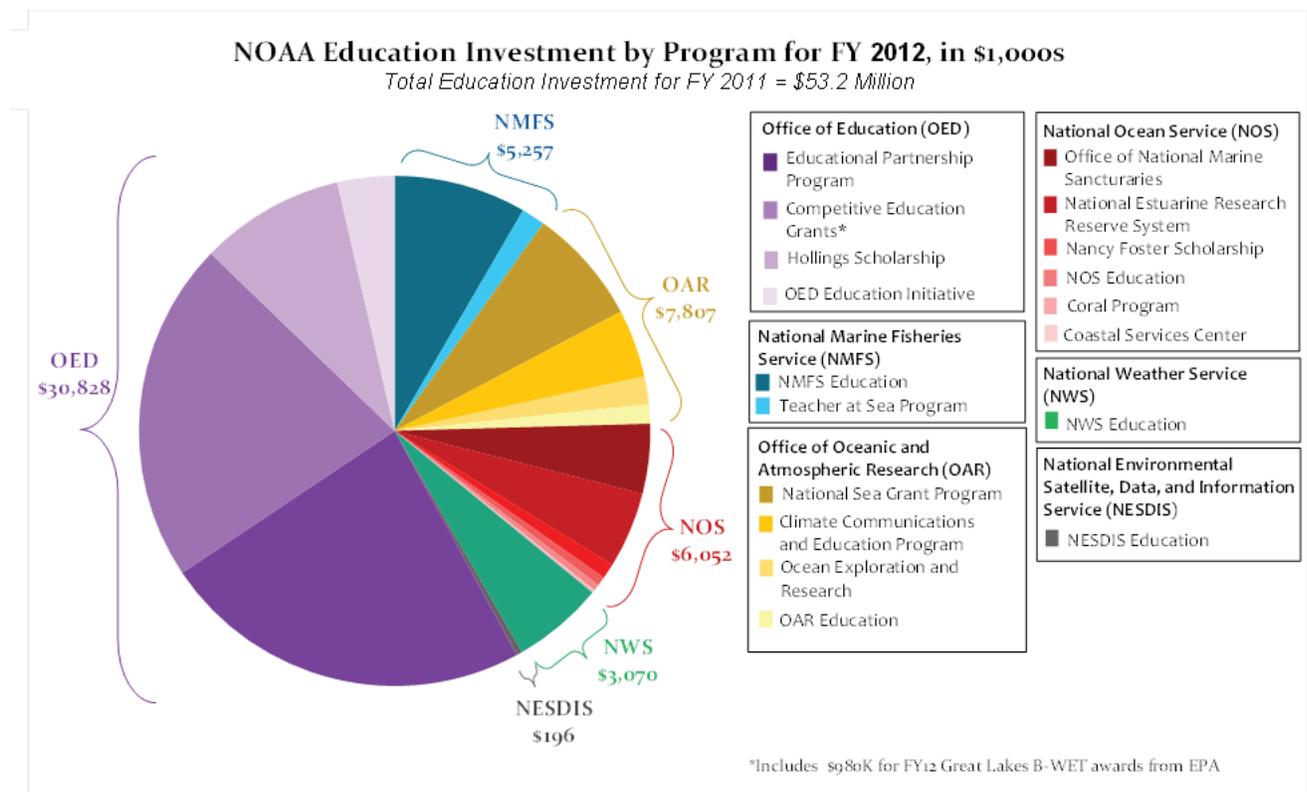




NOAA'S EDUCATION MISSION

NOAA's education mission is "to advance environmental literacy and promote a diverse workforce in ocean, coastal, Great Lakes, weather, and climate sciences, encouraging stewardship and increasing informed decision making for the Nation."¹ In FY 2012, NOAA's investment in education was \$53.2 million.



¹ The America COMPETES Reauthorization Act, 2010 (P.L. 111-358) gives NOAA broad authority for educational activities. With this statutory authority and other program-specific education mandates, the NOAA education community works collaboratively to advance the priorities outlined in NOAA's Education Strategic Plan.



WHO WE SERVE

NOAA's education activities focus on connecting NOAA-related sciences, places, products, and services with the public, students (k-12 through post-graduate) and educators across the country with the goal of increasing Science, Technology, Engineering and Math (STEM) competitiveness, promoting environmental literacy and helping to create a future workforce that reflects the diversity of the Nation. NOAA's Line Offices and Programs support a wide range of STEM fields, including ocean, atmospheric, climate, and environmental sciences. These programs invest resources in education activities as required by legislation and as a means of meeting their broader program mission. These education investments are a vital component of NOAA's science, service and stewardship functions. Combined, they form a robust education portfolio that takes advantage of NOAA assets that are unique within the federal government. The agency's education portfolio also leverages external capabilities through a wide array of partnerships with academic and other education institutions, and other federal, state and local agencies, to reach our target audiences across the Nation. Highlights of NOAA's FY 2012 education accomplishments are provided below.

SUPPORT AN ENVIRONMENTALLY LITERATE PUBLIC

- Over 74 million people visited museums, zoos, aquariums, and other informal education institutions hosting NOAA exhibits or programs. NOAA partners with informal learning institutions to make NOAA sciences, data, and other information widely available to the American public through interactive STEM exhibits and programs.
- Over 998,000 lifelong learners participated in informal NOAA education programs. Such programs aim to enhance understanding and use of ocean, coastal, Great Lakes, weather, and climate environmental information with the goal to promote stewardship and increase informed decision making.
- Over 168,600 preK-12 students participated in formal NOAA education programs. For America to be competitive in the global marketplace, we need bright, creative minds. Our job is to see that we give as many young people as possible many opportunities to learn, stretch in new directions, develop critical thinking, ingenuity, and scientific expertise.
- Nearly 34,700 educators participated in NOAA professional development programs. Educating our educators in the STEM disciplines will help them understand their world and provide useful scientific advances to society. In turn, they prepare learners with the critical thinking skills they need to get better jobs with better pay for a brighter future.
- Over 350 institutions increased educational capacity through NOAA-funded interpretive/educational centers, exhibits or programs. These institutions are uniquely equipped to make the distinct and significant resources of our mission-driven, scientific agency accessible to the American people.
- Over 12 million people visited NOAA Education websites that support a broad spectrum of educational activities and provide effective services and critical information to the Nation. NOAA's products and services are essential to explaining current, real-world STEM issues such as climate change, oil spills, extreme weather and weather safety, appropriate management of coastal environments, and overfishing.



Students explore stream ecology in the Great Smoky Mountains through a grant from NOAA's Office of Education

DEVELOP A DIVERSE WORKFORCE

- Over 2,700 postsecondary students trained in NOAA-mission related sciences through NOAA-funded higher education programs that prepare students for career paths at NOAA and related organizations. Through scientific rigor, cutting-edge research, and integrated education, NOAA is committed to developing and attracting the next generation of scientists who will drive the scientific and technological innovation our country needs to stimulate the economy and create jobs.
- Over 570 postsecondary degrees in NOAA-related disciplines awarded to students who were supported by NOAA in higher education programs. NOAA is proud and pleased to play a role in this effort – both in developing the next transformational scientific tools and in preparing the next generation of scientists to make those discoveries for tomorrow.



Class of 2012 Undergraduate Scholarship Program scholar on NOAA Orientation Tour at Jug Bay Wetlands Sanctuary. The Jug Bay Wetlands Sanctuary is located along the tidal Patuxent River in southern Maryland.



The Educational Partnership Program (EPP) with Minority Serving Institutions supports four Cooperative Science Centers that involve 23 academic partners in 11 states, Puerto Rico, and the District of Columbia. The program's goal is to increase the number of students from underrepresented communities who are trained and graduate with degrees in STEM fields directly related to NOAA. Funds support faculty, research and students pursuing degrees in NOAA sciences. For additional information about EPP please visit: <http://www.epp.noaa.gov> Since its inception, over 3,000 students have been trained, 80 percent of whom are from underrepresented groups. In FY 2012, NOAA supported 23 EPP Undergraduate Scholarship students who completed internships at a NOAA facility. Additionally, NOAA EPP graduated its 100th Ph.D. in NOAA mission sciences. In March 2012, the Sixth Biennial NOAA Education and Science Forum took place at the Cooperative Science Center at Florida A&M University with over 300 participants.

EDUCATIONAL PARTNERSHIP PROGRAM



Hollings undergraduates participating in the 2012 NOAA orientation week tour at Jug Bay Wetlands Sanctuary. The Jug Bay Wetlands Sanctuary is located along the tidal Patuxent River in southern Maryland.

ERNEST F. HOLLINGS UNDERGRADUATE SCHOLARSHIP PROGRAM

The Ernest F. Hollings Scholarship program provides successful undergraduate applicants with academic assistance and a 10-week NOAA internship that provides “hands-on” experiences in NOAA-mission science, technology, and educational activities. The Program is legislatively mandated to increase undergraduate training in oceanic and atmospheric science, technology, and education; recruit and prepare students for public service careers at NOAA and related mission agencies; recruit and prepare students for careers as educators in oceanic and atmospheric sciences; and improve environmental literacy and stewardship. http://www.oesd.noaa.gov/Hollings_info.html

In FY 2012, 139 students from the class of 2010 completed the Hollings Scholarship Program. NOAA provided summer internship experiences for 103 students from the class of 2011 and selected 115 new students for the class of 2012: http://www.oesd.noaa.gov/scholarships/hollings_scholars/class_2012/class_of_2012.html.



COMPETITIVE EDUCATION GRANTS



Students explore the incredible diversity of life found in the Grand River Watershed in Michigan as part of the Groundswell FORCES initiative in the new B-WET Great Lakes region. Photo credit: Laura Oremland of NOAA Enrichment in Marine Sciences and Oceanography (NEMO) Program

NOAA's competitive education grants portfolio is designed to increase environmental stewardship and informed decision-making through strategic investments at the national, regional, and local levels.

The Office of Education's Environmental Literacy Grants (ELG) program provides competitive funding for formal and informal education projects implemented on regional to national scales. <http://www.oesd.noaa.gov/grants/elg.html>

Additional competitive grants and in-kind support are provided for strategic, long-standing education initiatives, foundational environmental education studies, and capacity-building activities among grantees and partners. <http://www.oesd.noaa.gov/grants/othergrants.html>

Since 2005, 98 grants have been awarded totaling over \$63 million. In FY 2012, these awards served over 10,000 teachers, 68,000 K-12 students, and 51 million members of the public. These awards also supported active exhibits and programs at over 120 education institutions across the United States. NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.

NOAA's Bay Watershed Education and Training (B-WET) program supports place-based experiential watershed education for students and teachers in seven regions around the country. Through the development of local examples and hands-on technical assistance, NOAA is supporting a shift in state and local science education towards more outdoor, environment-based education—essential for promoting an environmental stewardship ethic.

<http://www.oesd.noaa.gov/grants/bwet.html>

Since its start in Chesapeake Bay in 2002, B-WET has awarded more than 500 grants totaling over \$50 million. In FY 2012, B-WET reached an estimated 60,000 students and 5,000 teachers. NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.



NATIONAL MARINE FISHERIES SERVICE EDUCATION

A middle school student from Washington, D.C. investigates marine life in the Chesapeake Bay.

NOAA Fisheries education program increases environmental literacy to support productivity and sustainability of fisheries and fishing communities and recovery and conservation of protected marine species. Educators and scientists develop learning tools and promote learning experiences for students, teachers, and families through a variety of internal and external partnerships. <http://www.nmfs.noaa.gov>

In 2012, staff conducted a variety of education activities around the country such as:

- Displaying a “Crimes Against Marine Mammals” exhibit at the National Museum of Crime and Punishment to celebrate the 40th anniversary of the Marine Mammal Protection Act,
- Training educators in the Chesapeake Bay watershed on the effect of climate on the environment and native species there,
- Teaching students in New England about protecting marine species and sustaining the U.S. seafood supply, and
- Explaining the science behind sustainable seafood to thousands in the Seattle area through the Newspapers in Education partnership.



TEACHER AT SEA PROGRAM

NOAA's Teacher at Sea Program provides authentic research experiences to kindergarten through college level teachers from around the U.S. aboard NOAA ships conducting scientific research. This successful communication of NOAA science is built on the close partnership with the teachers and NOAA scientists. In 2012, 29 NOAA Teacher at Sea participants performed over 380 days of research at sea, and more than 600 program alumni, from every state, used NOAA science and data in the classroom, reaching thousands of students. This year, the program also enhanced its alumni association activities and science communications efforts through the use of online technology and engaging teacher-created educational products.

One 2012 teacher summed up his participation in the program by saying, "My passion for the sciences has been re ignited. I found myself craving more knowledge after seven years in the classroom with stagnant curriculum. This has totally revamped my creativity." Another teacher expressed that while she already uses NOAA resources in her classroom, "The opportunity to see and assist in the hands-on collection of that data has proven to be an immeasurable experience" for her and her students. NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.

<http://teacheratsea.noaa.gov>

NOAA Teacher at Sea, Andrea Schmuttermair, from Westminster, CO was aboard NOAA Ship Oregon II while scientists conducted a Summer Ground Fish Survey in the Gulf of Mexico. Here she is working in the at-sea lab and holding a southern flounder.



Mark Wiley, Assistant Director for Marine Education for New Hampshire Sea Grant, discusses lobsters and lobstering with attendees of the 1st Annual New Hampshire Fish and Lobster Festival in Portsmouth, NH. Photo credit: New Hampshire Sea Grant.

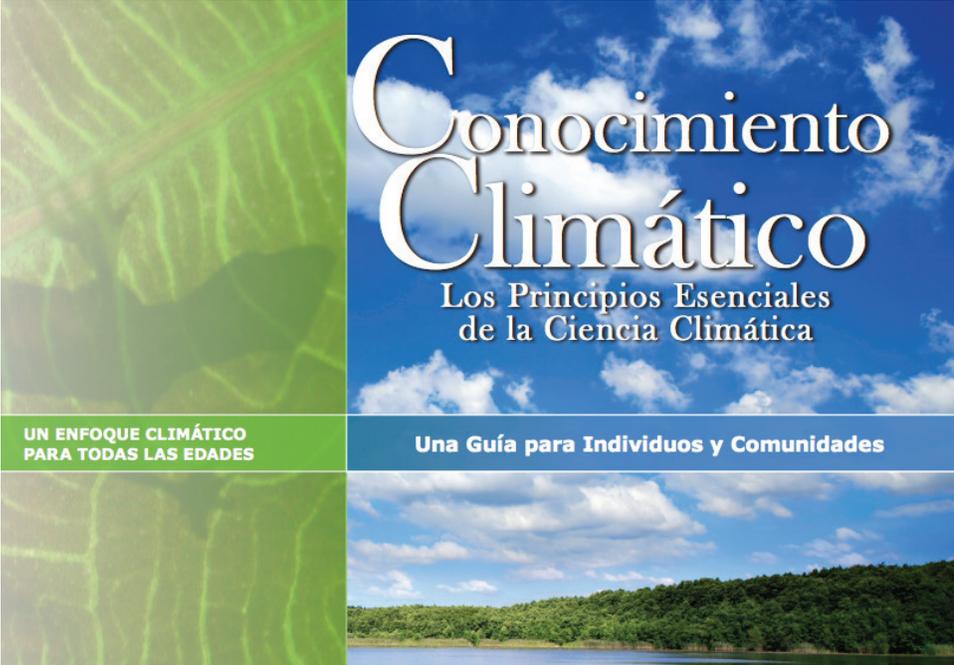
NATIONAL SEA GRANT COLLEGE PROGRAM

The National Sea Grant College Program's Sea Grant Education Network (SGEN) consists of professional educators working at universities across the Nation to further NOAA's education goals of advancing environmental stewardship and workforce development. SGEN provides multidisciplinary marine and aquatic science education for the formal and informal education sectors through teacher trainings, free-choice learning experiences, student opportunities, and much more.

For more information on the SGEN: <http://www.seagranted.net>

For Sea Grant-sponsored teacher resources: <http://web.vims.edu/bridge/>

In FY 2012, the SGEN directly and indirectly reached 444,520 K-12 students, and supported 1,980 undergraduate and graduate students in a continuing effort to enhance marine and aquatic literacy. NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.



In FY 2012 the new Spanish translation of the Climate Literacy guide was completed by many members of the Education and Climate community and networks. As a scientist working with NOAA put it "This will be invaluable to stakeholders in the U.S.-Mexico transborder region, served by my Regional Integrated Sciences and Assessments (RISA), the Climate Assessment for the Southwest."

The NOAA Climate Communications and Education Program improves public climate literacy and raises public awareness and understanding of, and engagement with, NOAA's climate science and services programs. In support of the agency's Climate Mission Goal, the Climate Communications and Education Program is integrating the latest, most authoritative climate information from across NOAA, and its partners, into a cohesive, well-coordinated framework that promotes public climate literacy. The program integrates climate data and information into programs, tools, and resources designed to increase students', educators', and life-long learners' climate literacy. <http://www.climate.noaa.gov/education/>

CLIMATE COMMUNICATIONS AND EDUCATION PROGRAM

In FY 2012, this program redesigned and expanded the Climate Portal (www.climate.gov), in partnership with the Climate Literacy and Energy Awareness Network (CLEAN) (<http://www.cleanet.org/>) to syndicate this reviewed climate educational resource collection through the portal in FY 2013. Through federal grants and strategic partnerships, the program worked with education communities to increase the use of and implementation of the Climate Literacy guide and the Next Generation Science Standards, and partnered with informal education institutions to reach 14 million visitors.



Small remotely-operated vehicle capture's one student's excitement at the 2012 National Science and Technology Festival held in Washington, DC. Image courtesy: NOAA Ocean Exploration..

OCEAN EXPLORATION AND RESEARCH PROGRAM

NOAA's Office of Ocean Exploration and Research (OER) is committed to enhancing America's environmental literacy by bringing the excitement of ocean exploration and discovery to a wide variety of audiences. Educators are essential to this mission and OER offers opportunities for them to learn how to bring NOAA science and advanced technologies associated with exploring the ocean in near-real time into their classrooms.

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

In 2012, educators learned about the importance of the Nation's ocean exploration program through onsite professional development using the teaching materials, *Why Do We Explore?* and *How Do We Explore?* (<http://oceanexplorer.noaa.gov/oceanos/edu/collection/wdwe.html>). This national dissemination took place at 14 aquarium Education Alliance Partner sites (<http://oceanexplorer.noaa.gov/edu/alliances/welcome.html>). A total of 664 educators were reached intensively (5,005 contact hours), thus potentially reaching a minimum of 106,240 students (non-duplicative count based on an average of 160 students per teacher). NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.



The brand new Monterey Bay Sanctuary Exploration Center located just steps away from the city's Municipal Wharf in the heart of the famed Santa Cruz beach area. Credit-MBNS/NOAA.

Since 1972, the Office of National Marine Sanctuaries (ONMS) has been federally mandated to promote environmental education through thirteen national marine sanctuaries and one marine national monument. Through hands-on activities, workshops, classroom curricula, and innovative technology ONMS reaches over 39 million people a year with messages about the ocean and its resources.

<http://sanctuaries.noaa.gov/education>

A highlight for FY 2012 was the opening of a new LEED certified visitor center highlighting the Monterey Bay National Marine Sanctuary. The Office of National Marine Sanctuaries collaborated with the City of Santa Cruz and the National Marine Sanctuary Foundation to build the 12,600 sq. ft., \$13.9M Sanctuary Exploration Center. Located in Santa Cruz, CA the center features interactive and multi-media exhibits to help visitors explore the sanctuary's remarkable marine environment, as well as their personal role in protecting this special underwater treasure. The Sanctuary Exploration Center has welcomed more than 30,000 visitors since it opened in July.

OFFICE OF NATIONAL MARINE SANCTUARIES



Students learn about the importance of fish diversity in the estuary, by monitoring fish and examining water quality, part of a Hudson River NERR (N.Y.) education program.

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM

The National Estuarine Research Reserves System (NERRS) is a partnership program between NOAA and 28 reserves located in 22 states and Puerto Rico. NERRS provides place-based educational opportunities for teachers, students and the public and helps communities develop strategies to deal successfully with coastal resource management issues.

<http://nerrs.noaa.gov/Education.aspx> and <http://estuaries.noaa.gov>

In 2012, NERRS launched an online multimedia science Middle School Estuaries 101 Curriculum designed for students to learn about estuaries and how their actions impact our coasts. Four Teachers on the Estuary (TOTE) workshops were delivered and teachers engaged their students in addressing local resource needs. A sampling of projects includes: student-run environmental impact assessment of school's energy use and waste; vernal pool and water quality investigation of a site slated for high impact development; invasive species removal, among others. In addition, 33,837 community members participated in activities designed to focus on their personal stewardship and help protect estuaries.



NOAA's Coral Reef Management Fellows, training and presenting during the U.S. Coral Reef Task Force meeting in Washington, D.C.

The Coral Reef Conservation Program (CRCP) works closely with states and U.S. territories to address climate change, adverse impacts of fishing, and land-based sources of pollution that damage reef ecosystems. The Coral Reef Conservation Act of 2000 charges the CRCP with "...enhancing public awareness, education, understanding, and appreciation of coral reefs and coral reef ecosystems," as one of the mandates for the Program.

CORAL REEF CONSERVATION PROGRAM

<http://coralreef.noaa.gov/education/>

During 2012, CRCP led symposia at national educator conferences on using data in the classroom, including climate and ocean acidification data. The CRCP funded the Coral Reef Management Fellowship, placing recent graduates in Florida, US Virgin Islands, Puerto Rico, Hawaii, CNMI, Guam, and American Samoa, who help advance coral reef conservation and education in the Pacific and Caribbean/Atlantic jurisdictions.



As part of the orientation/training, the scholars visited the Olympic Coast National Marine Sanctuary. This photo was taken at the end of an interpretive hike from sanctuary staff at Cape Flattery. (higher res photo will be sent on Monday).

DR. NANCY FOSTER SCHOLARSHIP PROGRAM

NOAA's Dr. Nancy Foster Scholarship Program recognizes outstanding scholarship and encourages independent graduate level research in oceanography, marine biology and maritime archaeology. Congress authorized the program in honor of Dr. Nancy Foster as described in the National Marine Sanctuaries Amendments Act of 2000 (Pub. L.106-513). The program is administered through NOAA's Office of National Marine Sanctuaries (ONMS) and has graduated over 50 scholars in the past 10 years.

<http://fosterscholars.noaa.gov/aboutscholarship.html>

In FY 2012, 3 new scholarships were awarded- two PhD's and one Masters student. As part of a large effort to engage the scholars in NOAA and the National Marine Sanctuary (ONMS) System's work, the current scholars were brought to an orientation/training to help them gain a better perspective on NOAA, ONMS, and how to be better communicators of their science. The scholars gained knowledge in science communication, grant award management, and Nancy Foster Program requirements. NOAA will not be requesting funds for this program in the FY2014 President's Budget due to the Administration's STEM consolidation initiative.



A recently graduated fellow teaches the new cohort of marine management fellows how to use a sonde unit to monitor the effectiveness of taro, a native wetland crop, as a means to trap sediment and improve the quality in the bays and near the coasts of Heeia, Hawaii..



A suite of education and training services are available from the NOAA Coastal Services Center. The classes, fellowship programs, and educational materials help constituents and educators understand environmental and coastal issues, use geospatial tools and technologies, and build new skills. Courses are provided on-line and in person.

COASTAL SERVICES CENTER

The Center's portfolio of services includes professional development, technical assistance, and training. During FY 2012, the organization coordinated the first Pacific region educational showcase for 133 educators. Numerous NOAA offices participated, demonstrating science lessons, providing expert presentations, and delivering professional development training. The Center also contributes to building the future workforce through coastal and marine management fellowships. In FY 2012, 11 fellows were placed in State Coastal Zone Management offices and partner NGOs to gain real work experience in coastal and marine resource management.



As part of a curriculum about the importance of estuarine environments and the potential impacts of climate change, fifth grade students of Climate Steward Jacob Tanenbaum visited the Hudson River National Estuarine Research Reserve with Education Coordinator Chris Bowser. Photo credit: Jacob Tanenbaum, South Orangetown Central School District, Blauvelt, NY.

NATIONAL OCEAN SERVICE EDUCATION

NOAA's National Ocean Service (NOS) education serves educators and students through Web sites and projects that promote environmental literacy using ocean, coastal, and climate science. <http://oceanservice.noaa.gov/education> and <http://games.noaa.gov/>

The Climate Stewards program expanded in FY 2012 to serve 140 educators in 40 states and provided climate professional development and collaborative online tools. Completed stewardship projects by the educators included an anti-idling campaign, a model U.N. Climate Summit, investigating carbon sequestration, and impacts of climate change on wildlife cycles. A Digital Badge Project - Planet Stewards - was started with Boise State University to bring NOAA science and career awareness to high school classrooms. This program provided 38,507 hours of educator professional development about ocean, coastal and climate science through symposia, workshops, and distance learning events, including webinars and the use of NOS online modules via the National Science Teachers Association Learning Center. Over 1.5 million visitors have accessed NOS online education content through the NOS Education Web site.



A big part of the NWS education program is teaching the public and K-12 students about emergency preparedness.

A goal of National Weather Service (NWS) education is to inform students, teachers and the general public about how to minimize fatalities and injuries and protect property from severe weather. A partnership between The American Meteorological Society and NWS has trained over 900 science teachers in weather forecasting, hydrology, and climate, helping them to bring NOAA science to their classrooms. In addition, NWS and emergency managers educate the citizens of local communities through StormReady and TsunamiReady programs. NWS partners with the Plan!T NOW organization to develop innovative, digital severe weather awareness activities for all ages.

NATIONAL WEATHER SERVICE EDUCATION

<http://www.weather.gov/>

In FY 2012, NWS conducted over 2,900 outreach and education events, targeting schools and students. Through these events, NWS reached approximately 3,421,800 teachers, students, and school officials about weather and safety preparedness. In FY 2012 NWS and the Plan!T Now organization officially launched the Young Meteorologist Program online, free to all audiences. (www.youngmeteorologist.org)



On October 16, 2012, Nina Jackson of NOAA NESDIS and 400 middle and high school girls participated in the event, Women in Mathematics Celebration, at Elizabeth City State University in Elizabeth City, North Carolina..

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE EDUCATION

NESDIS education activities support students and educators of remote sensing and atmospheric sciences through cooperative partnerships such as the Federation of Earth Science Information Partners (ESIP). In addition, NESDIS supports applied community and location specific public education activities. www.nesdis.noaa.gov

In FY 2012, NESDIS funded: 1) a Student Opportunity for Learning grant at Western Connecticut State University; 2) the Northern Gulf Institute Diversity Internship Program in Louisiana; 3) Oregon's Science and Math Investigative Learning Experiences Program at Oregon State University; 4) educator workshops on remote sensing, climate, weather, and space science at three locations (University of Wisconsin-Madison, California State-Los Angeles, and Vandenberg Air Force Base) and 5) provided NOAA-specific educational programming and mentoring to students through programs at the American Meteorological Society annual conference and MentorNet Program.

