



Educational Partnership Program

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NOAA's New Administrator: Dr. Jane Lubchenco



On March 19, Jane Lubchenco, Ph.D., was confirmed by the U.S. Senate as the Undersecretary of Commerce for Oceans and Atmosphere. In this capacity, she will serve as NOAA's ninth Administrator. Dr. Lubchenco is the first woman and the first marine ecologist to lead NOAA.

The Washington Post called Dr. Lubchenco a "conservationist who has devoted much of her career to encouraging scientists to become more engaged in public policy debates, [and she] is also a vocal proponent of curbing greenhouse gases linked to global warming." On March 25, in the first of many proposed "town hall" meetings with NOAA employees, Dr. Lubchenco spoke to a packed house in Silver Spring, MD. The NOAA auditorium was filled and overflow space was standing room only. NOAA employees gave the new Undersecretary a hearty and lasting round of applause at her introduction and a standing ovation when she finished. Dr. Lubchenco made it clear that while she has a lot to learn about NOAA, she is familiar with much of the agency's work, and was generous with her praise. She spoke of the talent and commitment of those who work for NOAA, and of its track record of excellence, and was happy to report from her conversation with Commerce Secretary Gary Locke that he's an enthusiastic supporter of NOAA and its mission.

The new NOAA Administrator also reiterated—as she has in other venues—that scientific knowledge should inform decision making, and that

ECSC Director Named Vice President for Research



Florida A&M University (FAMU) President James H. Ammons has appointed Dr. Larry Robinson as FAMU's vice president for Research. Dr. Robinson serves as a professor in the Environmental Sciences Institute at FAMU and as director of the National Oceanic and Atmospheric Administration's Environmental Cooperative Science Center (ECSC), led by FAMU. Dr. Robinson has decided to continue as the Director of the ECSC, in addition to his new duties.

"I am honored to be selected to serve as vice president for Research at Florida A&M University and join Dr. Ammons' impressive leadership team," said Dr. Robinson. "The work that we do in the Division of Research will allow the University to execute our institutional mission. There are complex issues confronting our nation including economic development. Solutions to these issues rest within ingenuity and novel ideas of persons who come to this campus every day."

One of Dr. Robinson's goals is to engage FAMU's talented faculty, students and staff in research, discovery, technology transfer and outreach, which will be of great benefit to the state of Florida and the nation.

Dr. Robinson has secured more than \$35 million in contracts and grants from various agencies such as the U.S. Department of Energy, the U.S. Agency for International Development, the United Negro College Fund, and the National Oceanic and Atmospheric Administration.

SAVE THE DATE!
**NOAA'S Education and Science
Forum**
November 12-14, 2009
(See program flier on page 15)



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The *Logical* Need to Increase and Diversify Student Achievement in NOAA Mission Sciences

*Special Report by Irelene Ricks, PhD
NOAA Office of Education*

In fall 2008, the Office of Education (OEd's) Educational Partnership Program (EPP) responded to a National Academy of Sciences (NAS) request for detailed information on EPP education and training programs for underrepresented minority students in areas of NOAA mission sciences and other science, technology, engineering, and mathematics (STEM) fields. EPP complied with a formal presentation to NAS in December 2008 that demonstrates EPP's successful education and early career training of underrepresented minority (URM) students at the baccalaureate through postdoctoral academic levels.

Using a logic model to illustrate the flow of resources from EPP to the minority science community (students, faculty, and minority serving institutions), it is evident that EPP has made substantial progress in promoting education, research, and training for its target population. The logic model provided to NAS is a visual depiction of EPP's mission, functions, and intended outcomes. The model integrates qualitative and quantitative assessments of EPP's performance over the last seven years. The logic model captures EPP's overarching goals and outcomes through a simple design.

The logic model identifies the **SITUATION** (or purpose) of EPP's programs as the need to address the paucity of URM STEM students at the undergraduate through postdoctoral levels; as well as underrepresented minority faculty serving at Minority Serving Institutions (MSIs). Secondly, the **INPUTS** (or what EPP invests) in the program, including issues related to information and technology transfer at MSIs is identified. Thirdly, highlights of URM student and faculty **ACTIVITIES** are described in detail. The last two major elements of the model (**OUTPUTS** and **OUTCOMES**) provide a

forward-thinking projection of what EPP seeks to accomplish in the future while presenting data evidence of achievements made over the last seven years. At its core, the model reflects EPP's commitment to two interrelated objectives: (1) To educate and train early career scientists from underrepresented populations in NOAA mission sciences and STEM fields for the nation's labor pool and NOAA's workforce; and (2) To increase our nation's global competitiveness in NOAA mission sciences and STEM research at MSIs throughout the country.

NOAA's Education Council has adopted the Bennett TOP logic model to be used as a way to describe the various ways that educational activities are depicted throughout NOAA line offices. This model, used by EPP, is adapted to illustrate specific ways in which EPP has sought to increase the number of URM scientists at NOAA, while developing the research enterprise at selected Minority Serving Institutions (MSIs) around the country. Through the construction of targeted intervention programs that have been successful over the last eight years, EPP has demonstrated that the careful and deliberate development of URM students and faculty can significantly increase the national number of STEM URM scientists in NOAA mission sciences who are qualified to work at NOAA and other STEM organizations.

Increasing the production of URM STEM scientists in the United States is a national priority and can ensure that we remain strong and competitive in industries that demand STEM proficiencies. By including the public in its outreach efforts, the Educational Partnership Program seeks to involve as many individuals as possible in the strengthening of our STEM labor force and the protection of our natural environment.



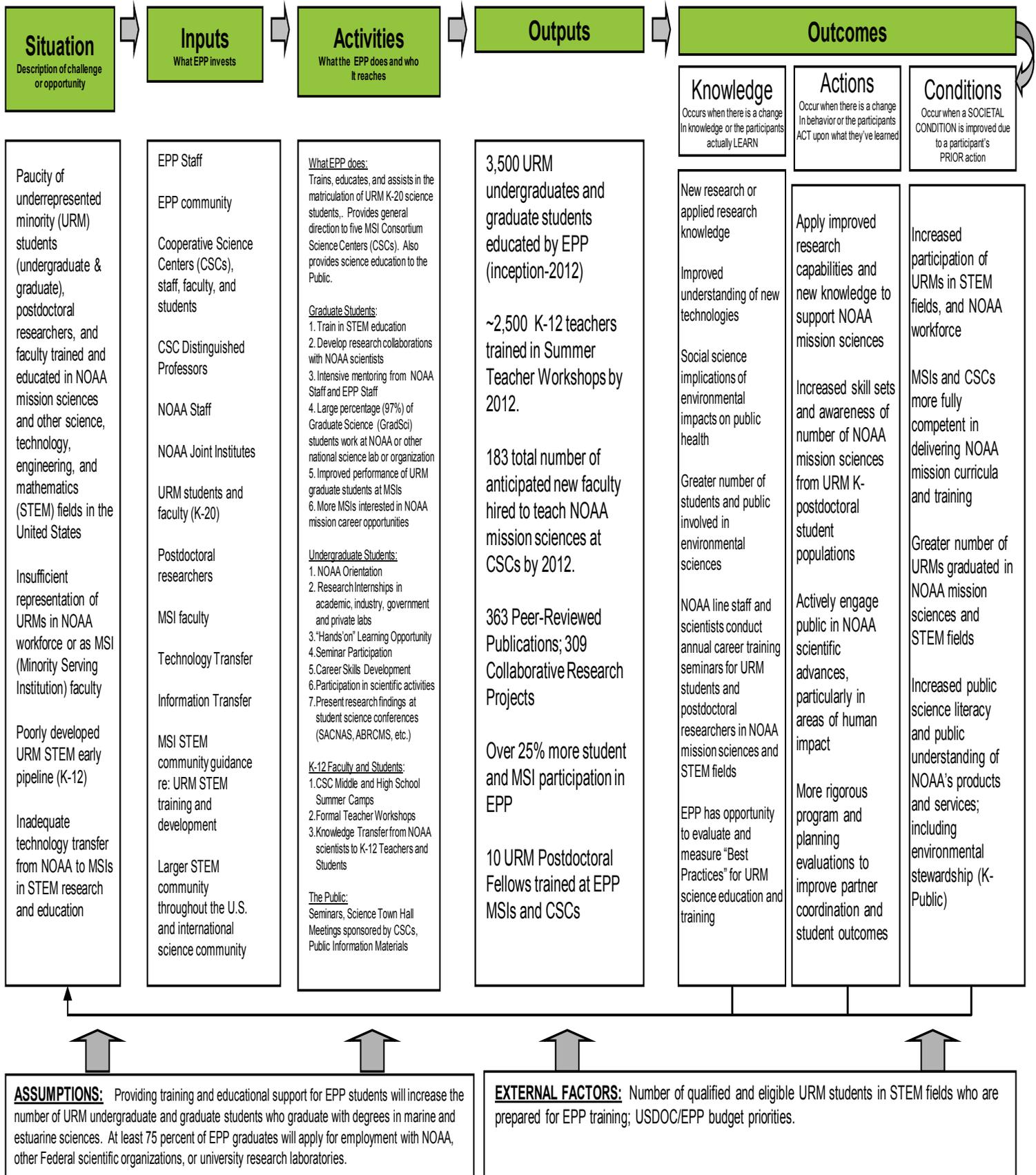
The illustration on Page 3 is an example of the logic model concept utilized by the Educational Partnership Program.

If you would like a copy of this model or if you have questions regarding its implementation, please email your requests to irelene.ricks@noaa.gov



LOGIC MODEL FOR EDUCATION PARTNERSHIP PROGRAM (K-20; The Public)

(This model is intended to be an illustrative guide for reporting on EPP- NOAA funded student training, research, and educational activities. It is not a comprehensive inventory of EPP activities.)



A NOAA Life....Dr. William Corso, National Ocean Service

By Ellen Gordon
NOAA Office of Education



Dr. William Corso, Deputy Assistant Administrator (DAA) for Ocean Services and Coastal Zone Management has definitely steered an uncommon course,

coming to NOAA with—in his own words—an “eclectic background.” After receiving his PhD in Geophysics from the University of Texas at Austin, he started his post doctorate career on a tall ship sailing out of Woods Hole, MA. teaching undergraduates. As the senior scientist on board, he had to stand ready to reach beyond his own academic expertise, providing guidance as needed on all aspects of ocean studies. His role called for more than just helping the students understand oceanographic concepts; he also needed to encourage their perseverance and resourcefulness in bringing their projects to fruition, e.g., break a plankton tow in the middle of the North Atlantic and you’d better be able to figure out how to jury-rig it or your research ends very abruptly!

Marriage called him back to the land-lubber’s life, and he found himself teaching at Stockton College in NJ, directing education and research at the New Jersey Marine Science Consortium, then working for the Corps of Engineers, and eventually hired by Lockheed Martin. Lockheed Martin transferred him to Mississippi where he and his wife happily continued raising their family in Pass Christian—until Hurricane Katrina hit, wreaking destruction on their community. While they were fortunate to have their home survive, the havoc done the area was massive, precipitating their desire to relocate. Dr. Corso professes no grand plan in his career moves; time and tides brought him to the Washington metropolitan area, where he joined NOAA as the aforementioned DAA, arriving in the fall of 2006.

Asked to describe what careers the National Ocean Service (NOS) could offer students, Dr. Corso responded that because of the breadth of NOS responsibility, and its diverse elements, it’s rather a long list. Working with critters or restoring wetlands, responding to oil spills or working on geospatial references systems—all have a home at NOS. “What I hope they will think about is how their interest and their zeal can be applied to an NOS area of responsibility, so that they can help make NOS better and more effective. For example, NOS employs a lot of scientists in the traditional vein and far fewer social scientists, i.e., sociologists, anthropologists, economists. Yet much of NOS responsibility has a very real impact on people and society.” He emphasized the importance of not being trapped by tradition and the need to encourage innovation, “For example, visualization technologies; how do you take myriad observations and package them into a picture—2, or 3, or 4 dimensional—that a decision maker, without a technical background can readily understand? Within NOS we haven’t really focused on visualization as a competency, just as a sideline for some.” Yet it could be an important component of NOAA’s future. Dr. Corso suggested another field where NOS might be looking for skills in the future. “Robotics engineers; for 200



years, NOS has figured out how deep our waterways are. Historically we’ve done that from boats, but it’s going to get to a point where we can’t use just boats and remain cost effective. We’re likely to end up relying on autonomous remote vehicles, which means NOS is probably going to need individuals with systems engineering and robotics skills some day! Tell the students that if they’ve got a passion for something, they can look for connections to NOS that we may not even be able to imagine.”

He added, “What about sea level change? The group that legally meas-

ures and defines water levels-- Center for Operational Oceanographic Products and Services (COOPS) -- is in NOS. If you go to a court of law on issues related to sea level, its COOPS whose data counts. Now, with so much of our population living near the coasts, what’s going to happen when sea level rises? You’re looking at a potentially massive migration here in the US. The basic disciplines are important and we need to keep folks interested to sustain what we do, but we need to go beyond that. What about communications? We in NOAA put a lot of emphasis, for example on NOAA weather



NOS has hired about one quarter of the Educational Partnership Program’s Graduate Science Scholars, to date. Dr. Corso calls it a “no-brainer.”

radios. There will probably come a time when rather than relying on those bandwidths, we’ll be using texting or twitter or something even newer! From an NOS corporate standpoint, we haven’t really thought much along those lines.”

NOS has hired about one quarter of the Educational Partnership Program’s Graduate Science Scholars, to date. Dr. Corso calls it a “no-brainer.” “They help us address very critical needs and we wind up with some very smart people with really good ideas.” Describing NOS as a microcosm of NOAA, Dr. Corso spoke of the fundamental, systemic challenge of communicating better, both internally and to the world outside of NOAA.

During orientation sessions for Educational Partnership Program scholars, various NOAA offices are invited to explain what they do, to help students understand in which part of NOAA

Cooperative Science Center Profile– ECSC

NOAA’s Environmental Cooperative Science Center at Florida A&M University



The Environmental Cooperative Science Center (ECSC) is unique among the five Cooperative Science Centers in having as a part of its core mission the development of science-based tools that can support environmental decision making. The Center provides an opportunity to move toward a model of public policy and decision making that encourages participation and acknowledges the contributions of stakeholders and local communities. Sociology and history provide a means for identifying and understanding the critical cultural values, experiences, attitudes, beliefs, and knowledge that form the basis of human relationships to the environment and influence decision making processes about the management of coastal resources. Various methodologies are used, including qualitative (e.g., ethnographic research, participatory action research, and oral and visual history) and quantitative (e.g., cost/benefit analysis, environmental valuation) techniques to assess social values and attitudes, policies for efficiency, and equity and/or sustainability. The result of this multidimensional socioeconomic approach is an integrated program to educate students in ways to better manage societal impacts of environmental changes leading to a more holistic approach to environmental management. ECSC’s capability is enhanced by an energetic multidisciplinary team of faculty, staff and students.

Natural sciences are also integral to the ECSC mission. Ecosystem status and health research has been designed to produce the data needed to effectively model ecosystem dynamics. This research focus incorporates studies in

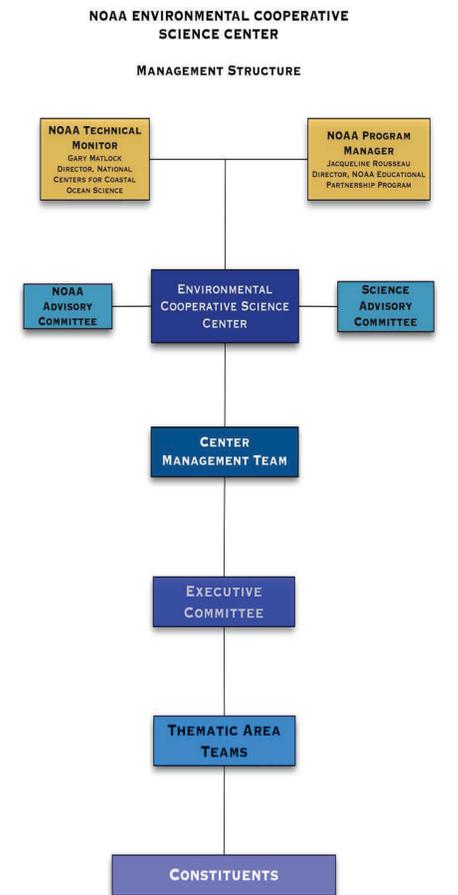
biogeochemistry, e.g., water quality and contaminant loading and *bioindicators*, e.g., harmful algal blooms and invasive species. Integrated ecosystem modeling research helps develop forecasting modeling tools to improve the understanding of transport processes as well as the effects of stressors on coastal and estuarine ecosystems.

ECSC has cultivated a regional approach to addressing coastal and marine environmental issues through collaboration with NOAA’s National Ocean Service (NOS), by partnering with strategically selected collaborators from the National Estuarine Research Reserve System (NERRS) that span coastal regions from the extreme western Gulf of Mexico to the Atlantic coast of Delaware. These ECSC partners are Apalachicola NERR, Delaware NERR, Grand Bay NERR and the newly established Mission Aransas NERR. The Center actively participates in the formulation and use of integrated conceptual models for each partner NERR site, with the models used as tools to communicate coastal system risks, guide ECSC research, and link scientific and social information to enhance decision making for achieving coastal management goals.

Students at ECSC receive training in geospatial technologies, such as airborne hyperspectral image measurements to study e.g., vegetation attributes and optical constituents of water quality. Special education and training is provided in ecological field sampling techniques to ensure consistency across the Center’s research and monitoring activities. These activities are not an end themselves, but rather tools for student training and faculty and program development and for investigations to support management and research objectives and address relevant at designated sites.

Established in 2001, ECSC strives to increase recruitment of underrepresented populations into NOAA-related disciplines by enhancing curriculum and educational capacities at partner institutions. Florida A&M University

(FAMU) is the lead institution in this consortium of 9 schools. The remaining partners are Bethune-Cookman University, Creighton University, Delaware State University, Jackson State University, Morgan State University, University of Miami, University of Nebraska at Lincoln and Texas A&M University-Corpus Christi. With direct interactions with K-12 students, ECSC facilitates awareness of NOAA-related sciences by students and teachers. Texas A&M University-Corpus Christi conducts a summer training program for K-12 teachers in the region. FAMU conducts a summer camp for high school students, coaches a high school team that consistently performs well in the National Ocean Science Bowl and holds poster competitions for middle and high school students to encourage their awareness of estuarine systems. Morgan State University holds an Eco Clues Summer Camp that enhances secondary school students’ understanding of the Chesapeake Bay watershed and the role of environmental sustainability.



Cooperative Science Center Profile-ECSC



Students from the ECSC Weather Camp with survival suits



ECSC students in research lab



ECSC students and faculty with students at the Sealey Elementary School Environment Poster Competition

For additional ECSC Information:

<http://www.ecsc.famu.edu>
850-599-3550

Dr. Larry Robinson
Program Director

Dr. Charles Jagoe
Distinguished Professor

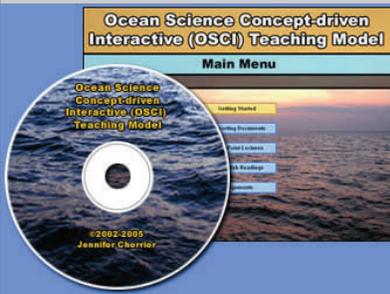
Ms. Linda Johnson Miller
Program Coordinator

ECSC's Non-Traditional Ocean Science Teaching Model



Dr. Jennifer Cherrier, a co-leader in ECSC's thematic area on Ecological Processes and Indicators of Ecosystem Health saw a need for a nontraditional teaching model for basic oceanography. Observing that traditional teaching promotes memorizing factual knowledge of scientific concepts rather than a deep understanding of the concepts themselves, she sought a more interactive, collaborative approach. Acknowledging that the diversity of student population is considerably greater today than it was 10-15 years ago, Dr. Cherrier felt that traditional lecture-based teaching often does not account for the students' broad range of pre-instructional conceptions and their diverse cultural backgrounds, which together can have a great impact on the students' ability to learn the scientific material. Effectively addressing these concerns could boost student recruitment into the field of oceanography.

The Ocean Science Concept-Driven Interactive (OSCI) teaching model that she developed (with funding from NOAA and the National Science Foundation) needed to be easily adoptable. Keeping in mind both physical and time constraints of a typical college environment, i.e., large class size at introductory level and 50 or 75 minutes class periods, she focused on integrating mini-lectures, reading, writing and focused group discussions into the curriculum. While certainly informative, traditional oceanography texts don't lend themselves to the promotion of an interactive learning environment. The online textbook that Dr. Cherrier designed, "Powerweb Oceanography," is a compilation of approximately 50 articles collected from newspapers, science magazines and science journals, organized into 4 units,



under the overarching conceptual framework of, "the ocean ecosystem; understanding the abiotic and biotic factors that define this system." Lecture material was distilled down to 10 mini-lectures, each providing the bare-bones information on topical areas. Homework assignments guide the students through the readings and make connections between the readings and the content of the lectures.

The assignments also provide the basis for focused discussions, class activities and occasional quizzes. Group projects (maximum 7 students) are an important tool for expanding the subject matter the students learn, culminating in an oral presentation, video or website, plus a formal 1000 word essay by each individual. Student grades for the projects are determined by both instructor and peer evaluation.

OCSI has been implemented in 3 different post-secondary settings and students at all 3 have had a very positive response to the class format. Students tend to do very well, though additional assessments comparing the effectiveness of this model to the more traditional teaching strategy are currently underway.

For more information, please go to www.famu.edu/index.cfm?a=osci&p=OSCIHome. You may also contact Dr. Cherrier at Jennifer.cherrier@famu.edu. The lectures from the model were recently selected for publication in the newly initiated **ASLO*** Web Lecture Series which provides downloadable peer reviewed lectures for ASLO member educators and researchers. The lectures will be available for download (<http://www.aslo.org/ectures/>) in 2010.

(*Advancing the Science of Limnology and Oceanography)

Cooperative Science Center Profile– ECSC

Cooperative Science Centers Create Postdoctoral Fellows Program

In an effort to increase research collaborations between institutions and provide direct support for programs that enhances NOAA's mission, EPP has required that each Cooperative Science Center create two postdoctoral positions. The two-year fellowship requires collaboration among the postdoctoral fellows, CSC scientists and NOAA scientists, and research that addresses NOAA science areas. Postdoctorates are required to have mentors at their respective institution.

Linda Johnson Miller, ECSC Program Coordinator



In October 2008, Linda Johnson Miller was selected as the ECSC Program Coordinator. Her responsibilities include assisting the Center Director in managing the operations and activities of the Cooperative Science Center.

Ms. Miller received her Bachelor of Science degree in Computer Information Sciences from Florida A&M University. Upon graduation, she worked in management information systems with Owens-Corning Corporation in Ohio. She was an adjunct instructor at Owens Community College where she taught Marketing on the Web. She later worked as Programming/Promotions Manager with a United Paramount Network Affiliated Television Station. After being away for more than 20 years, Ms. Miller returned home and joined her alma mater, Florida A & M University. The mother of three children, she has volunteered with the Nims Middle School's Digital Harmony project which provided computers in the homes of disadvantaged families.

ECSC Post Docs

Dr. Tanveerul Islam



"Tanveer" Islam received his B.S. from Bangladesh University of Engineering and Technology, Ph.D. from Texas Tech University, and did postdoctoral work at Texas A&M University's Marine Branch in Galveston. He is a nationally accredited Certified Floodplain Manager (CFM). Trained as an Urban and Land Use Planner, his interests include environmental planning, GIS, and natural hazards.

His research projects include 'Galveston Futures' that aims for resilient, sustainable and unified community on Galveston Island by encouraging civic participation in municipal planning. He investigated the nature of, and response to, Gulf of Mexico and Texas hurricanes that develop and make landfall very rapidly. The paper 'Origin, Distribution, and Timing of Texas Hurricanes: 1851-2006' will appear in the ASCE journal *Natural Hazards Review*. His works focus on coastal management, hurricane impact assessment, societal vulnerability, and integration of GIS into emergency management and have been published in journals such as *Natural Hazards*, *Journal of Planning Literature*, and *Journal of Applied Sciences*.

Dr. Stacy Smith



Dr. Stacy Smith graduated with a bachelor's degree from Virginia Tech in Blacksburg, VA. She later received an M.S. in Physical Chemistry from the University

of New Mexico. Dr. Smith attained her Ph.D. in Chemical Oceanography, specializing in Organic Geochemistry, from the University of Alaska Fairbanks under adviser Dr. Susan Henrichs. Her thesis title is Temporal and Spatial Variability of Sinking Particles in the Southeast Bering and an associated publication is entitled, "Temporal and spatial variation in the stable carbon and nitrogen isotopic composition of sinking particles and zooplankton over the southeastern Bering Sea shelf".

Her research interests include biogeochemistry, isotope geochemistry, nutrient cycling and the inorganic carbon cycle. She has participated in about 20 research cruises in the Bering Sea, the Norwegian Sea, the South Atlantic and the South Pacific oceans.

Students Representing FAMU Compete at Ocean Sciences Competition



Florida A&M University's Environmental Cooperative Science Center (ECSC) team of local high school students recently competed in the National Ocean Sciences Bowl at the University of South Florida's College of Marine Science in St. Petersburg, FL. Competing against 15 other high school ocean science bowl teams, the local squad took runner-up honors. The competition consisted of timed short answers and

detailed written responses to questions on science and policy associated with oceanography and marine science as well as on the contributions of the oceans to national and international economics, history and culture.

ECSC Bowl Team students included Samuel Ichite (Richard's High School), Erinma Kalu (Chiles High School), John Kershaw (Sacred Heart Home School), Xavier McGill (Florida High School), and Jason Moore (Richard's High School).

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Cooperative Science Center Profile– ECSC

Ocean Science Bowl Team, continued

The team is coached by FAMU ECSC graduate students Arianna Marshall and Zakiya Hoyett, a former Educational Partnership Program Undergraduate. Also accompanying the team were Dr. Larry Robinson (ECSC Director), Ms. Linda Miller (ECSC Program Coordinator) and Mr. Willie Stubbs (Environmental Sciences Institute, Environmental Health and Safety Coordinator). The team also competed at the Annual Conference of the National Organization of Black Chemists and Chemical Engineers in St. Louis, Missouri, April 15-18, 2009 and came in third place. *(Article courtesy of the Tallahassee Democrat and ECSC)*



2009 ECSC Annual Meeting, Jacksonville, Florida

The 2009 Environmental Cooperative Science Center (ECSC) Annual Meeting was held at the Hyatt Regency Jacksonville Riverfront Hotel in Jacksonville, Florida from February 8-11, 2009. The primary purpose for the meeting was to review and refine the Center's strategic plan. Joining the group were Commander Michele Finn, National Ocean Service Executive Officer; Jacqueline Rousseau, NOAA EPP Director; Gary Matlock, NOAA ECSC Technical Monitor; David Johnson, ECSC NOAA Advisory Committee Chair; the NOAA Advisory Committee Members; and the Center's Scientific Advisory Committee Members.

Dr. Charles Jagoe ECSC Distinguished Professor



Charles "Chuck" Jagoe is ECSC's Distinguished Professor. He received his B.S. from Clarkson University in New York, M.S. and Ph.D. degrees from the University of

postdoctoral work at Rutgers University. Trained as a zoologist, his interests include environmental sciences, ecology, and toxicology. From 1990 to 2008, he was a researcher at the University of Georgia's (UGA) Savannah River Ecology Laboratory, and held adjunct faculty appointments in UGA's Institute of Ecology, College of Public Health, and Interdisciplinary Toxicology Program. His work focuses on the transport, fate, and effects of pollutants such as heavy metals and radionuclides in aquatic, terrestrial and coastal systems.

His work has included studies of heavy metals in the environment, including the chemical and physical factors and processes that control mercury speciation and bioavailability, studies of mercury bioaccumulation in fish and wildlife, evaluation of the risks of contaminant exposure to sensitive and endangered species, and research on the consequences of metal exposure to organisms and populations. As a radioecology researcher, he examined factors influencing uptake and accumulation of radiocesium in lower vertebrates, and the movement of radiocesium through food webs. He is also interested in the biological consequences of long term exposure of organisms and populations to environmental radiation and other mutagens, including the development of biomarkers of DNA damage and genetic effects in exposed organisms. He has also explored linkages between metal pollution and proliferation of antibiotic resistance in bacteria in freshwater and coastal environments.

A major theme of his work is the necessity of examining multiple levels of biological organization, from cells to populations, to better understand responses to environmental stress. He is interested in the effects of chronic, low level exposure to pollutants, and in developing and applying biomarkers of exposure or effect. He has worked with biomarkers of protein turnover, oxidative stress, metal binding proteins, and examined effects of pollutants from the cell and tissue level (biochemical and histological responses) to the organismal and population levels (alterations in behavior, growth, and reproduction). He is especially interested in questions that bridge the fields of ecology, public health, and ecotoxicology, and improve risk assessment and environmental decision making.

Dr. Jagoe's current projects include metal accumulation and effects in reptiles, development and application of transgenic and invertebrate animal models for environmental toxicology, assessment of speciation, bioavailability and toxicity of arsenic in contaminated soils, and evaluating factors that control soil to plant transfer of radionuclides and metals. He is also interested in developing and applying new mathematical and statistical techniques to assess environmental data and to assess risk. His research has involved lab and field studies in New England, Canada, and the southeastern U.S., as well as field work in Russia and the Ukraine, including Chernobyl.

Each EPP Cooperative Science Center retains a Distinguished Scientist or Professor to develop and direct significant research projects for their center, ensuring coordination among partnering academic institutions and support of NOAA's mission.

NOAA Office of Education Educational Partnership Program 2009 Undergraduate Scholars

Eleven undergraduate students from minority serving institutions (MSIs) have been awarded research scholarships by the Educational Partnership Program. The scholarships provide hands-on training and experience to encourage undergraduates to pursue study in the NOAA fields, such as atmospheric or oceanic science, research, and remote sensing technology.

Scholarship students are eligible for up to \$8,000 of academic assistance per year for full-time study during the junior and senior years, a 10-week, paid internship (\$650 per week) for two summers, including a housing subsidy, round-trip travel to the internship site, and travel expenses to the program orientation in Silver Spring, Md.

To be eligible, a student must be a U.S. citizen, a full-time junior at an accredited college or university within the United States or U.S. territories and hold a cumulative grade point average (GPA) of 3.0 (based on a 4.0 scale) in all completed undergraduate courses and in the major field of study. A student must also major in a discipline area related to oceanic and atmospheric science, technology that support NOAA's programs and mission, such as the biological, social, and physical sciences; mathematics; engineering; computer and information sciences.

Angelica Betancourt-Negron is a physics major with a minor in geography at the University of Puerto Rico in San Juan, Puerto Rico. Angelica founded the Experimental Club of Meteorology and Astronomy at her university. Her career goal is to become a meteorologist or climatologist. Angelica is very interested in atmospheric processes, most importantly, the water cycle.

Patrina Bly is a mathematics major with a minor in secondary education at Elizabeth City State University in Elizabeth City, North Carolina. Patrina is

currently conducting undergraduate research at the Center of Excellence in Remote Sensing Education and Research. She has received training in GIS, Satellite imagery, and Dreamweaver. Last summer she participated in an internship as a member of a Polar Grid Team designing and developing a portal for a Polar Grid High Performance Computing System.

DeBie Dunn is an electrical engineering major at the University of Arkansas-Pine Bluff in Pine Bluff, Arkansas. Her academic plans include pursuing a Masters in Manufacturing Engineering. DeBie is interested in conducting research that will enhance her understanding of how to interpret data and satellite images.

Lorielle Jackson is an environmental science major at Florida A&M University in Tallahassee, Florida. Lorielle has begun developing a research project involving loggerhead sea turtle hatching success in relation to light pollution on the beaches of Florida's coast. Lorielle participated in a summer camp at NOAA Environmental Cooperative Science Center(ECSC). She is interested in learning more about conservation and management of resources.

Courtney Jones is a chemistry major at Savannah State University in Savannah, Georgia. She is very interested in environmental assessment. As an intern last summer for National Marine Fisheries Galveston Lab, Courtney ran an analysis of fish biomass in La Parguara, Puerto Rico, using Arc Info. She plans to obtain a PhD, in management of marine resources. Courtney would like to be able to combine her skills in chemistry and GIS as an intern this summer.

Jamaris Moore is a mathematics and computer science major attending Mississippi Valley State University in Itta Bena, Mississippi. His interest in programming has led him to become a peer tutor in computer science and calculus. He plans to obtain a PhD in Applied Mathematics.

Sarah Newton is a physics major at the University of Arkansas at Pine Bluff. She participated in an internship last summer where she was trained in biophysics.

Rosimar Rios-Berrios is a physics major at the University of Puerto Rico-Mayaguez. In graduate school she plans to do her research on tropical climatology. Rosimar's goal is to obtain a PhD in meteorology.

Wilsharo Scott is a dual computer science and civil engineering major at Fisk University in Nashville, Tennessee. He plans to attend graduate school to obtain a degree in Civil and Environmental Engineering. Wilsharo is interested in an internship with where he can learn more about coastal and/or habitat restoration.

Amber Smith is an electrical engineering major at Tuskegee University in Tuskegee, Alabama. She has a concentration in communications, specifically, wireless communications. Amber is very interested in research related to tagging and tracking marine life.

David Wardlow is majoring in civil engineering at North Carolina A&T University in Greensboro, NC. He participates in research at the NOAA Interdisciplinary Scientific Environmental Technology (ISETCSC) Cooperative Science Center.



2008 EPP Undergraduate Scholars participate in NOAA's Annual Chesapeake Restoration Day.

NOAA Scholars

EPP Undergraduate Scholars Where Are They Now: Class of 2001

Erica Alston
Clark-Atlanta University
Mathematics

Erica is working as a computer engineer conducting earth science research at NASA's Langley Research Center. She is a PhD candidate in Atmospheric Science at Georgia Tech. Erica earned her bachelor's and master's degrees from Clark Atlanta University.

Alphonso Craig
Florida A&M University
Environmental Science

Alphonso is practicing law in Atlanta, GA.

Dawn Harris
North Carolina A&T University
Architectural Engineering

Dawn is a Project Manager for Sprint/Nextel in Washington, DC.

Pennie Mays
Florida A&M University
Environmental Science

Pennie is a construction and civil litigation attorney in Florida.

Jorge Peche
City College of New York
Electrical Engineering

Jorge received a graduate degree from New York University and currently works as a Patent Examiner with the U.S. Patent and Trademark Office in Virginia.

Jonathan Smith:
North Carolina A&T University
Earth and Environmental Science

Jonathan is pursuing a PhD at Howard University.



Dr. Croxton observing the rate of new shell growth on broodstock oysters

Graduate Sciences Program (GSP) student **April N. Croxton** completed her Doctorate Degree in Environmental Sciences from Florida A&M University (FAMU) in December 2008. Dr. Croxton is a full-time employee at NOAA's National Marine Fisheries Service (NMFS) Milford Laboratory in Milford, CT. Dr. Croxton's dissertation, entitled "Trophic Transfer and Immunotoxicology of Microphytobenthic-associated Polycyclic Aromatic Hydrocarbons to the Eastern Oyster, *Crassostrea virginica*," investigated the role of benthic microalgae in the trophic transfer of contaminants to bivalve species, and the subsequent effects of this exposure on the immune system of bivalves.

Since her youth, Dr. Croxton has had an interest in aquatic ecosystems, pursuing this passion by obtaining a Bachelor of Science in Biology from Virginia Union University. Upon graduating, she entered FAMU's Environmental Sciences Institute graduate program where she majored in environmental sciences with a concentration in aquatic toxicology. Dr. Croxton was introduced to NOAA's GSP through her participation in research projects in the EPP-sponsored NOAA Environmental Cooperative Sciences Center (ECSC) at FAMU and from former GSP participants.

In her new position as a fishery biologist at the Milford Lab, Dr. Croxton will continue to study the role of environmental stressors on the immune defense functions of bivalve species.



Kirk Butler, a class of 2004 EPP Undergraduate Scholar, has been accepted into the Veteri-

nary School at Tuskegee University in Tuskegee, Alabama. He will begin his studies in August 2009. Kirk's focus will be veterinary/medical research. Kirk received an undergraduate degree in biology from Morgan State University. As an EPP Undergraduate Scholar he interned in the NOAA Chesapeake Bay Office. Currently, Kirk is a laboratory technician at the University of Maryland Institute of Human Virology.



FAMU Environmental Cooperative Science Center (ECSC) and 2008 EPP Undergraduate Scholar **Sheritta Commey** presented a paper at the American Association of Limnology and Oceanography

(ASLO) Aquatic Sciences meeting in Nice, France, January 25-30, 2009. The paper, entitled "*Chemical Contamination Assessment of the Hudson Raritan Estuary as a Result of the Attack on the World Trade Center: Analysis of Trace Elements*," is being prepared for publication and will serve as the basis for Ms. Commey's undergraduate thesis in FAMU's Environmental Sciences Institute.

For more information on the NOAA Office of Education/EPP Undergraduate Scholars and the Graduate Scientists and their research, please visit the EPP website at <http://epp.noaa.gov>

A Scholar's Point of View: Dr. Michelle Hawkins

The Sky's the Limit!

By Michelle Hawkins, PhD



I was introduced to atmospheric sciences during my junior year at Howard University. My interest in Earth's atmosphere was sparked by my participation in a NASA funded facility located on campus, the Center for the Study of Terrestrial and Extraterrestrial Atmospheres (CSTE). When I first discovered this program, I was intrigued. I had always been interested in the planets so... I applied to CSTE, I was accepted, I worked on a project about Earth's ozone layer, and I was sold! My undergraduate major was chemistry and learning about the chemistry of the atmosphere was fascinating to me. I knew that whatever I would end up doing with my future, it would have to involve the atmosphere. Upon completion of my B.S. in Chemistry, I worked on climate change policy studies for The National Governors' Association and The Pew Center on Global Climate Change, before returning to my alma mater to pursue a doctoral degree.

The time that I spent working on my graduate degree was both memorable and challenging. My dissertation, "Investigation of Ozone Concentrations in the Tropical Atlantic Marine Boundary Layer during Saharan Dust and Biomass Burning Events" examined the influence of Saharan aerosols on the atmospheric environment over

the remote Atlantic Ocean. My graduate work was supported by the NOAA Center for Atmospheric Sciences (NCAS). I participated in two research cruises, the trans-Atlantic Aerosol and Ocean Science Expedition experiments (AEROSE-I and AEROSE-II) conducted aboard the NOAA R/V *Ronald H. Brown*. During the AEROSE experiments, I was responsible for continuous in-situ measurements of ozone while sailing through Saharan dust as well as biomass burning events (i.e., human-induced burning of vegetation, e.g., clearing of forests for agricultural use).

Living at sea was definitely a change of pace for this south-side Chicagoan! Looking back, participating in the AEROSE research cruises was the best thing I could have done for my educational and personal growth. My analyses of air mass history, satellite imagery, surface weather maps, and chemical and aerosol datasets allowed the characterization of four distinct meteorological regimes: marine background, dust, mixed dust and biomass burning, and biomass burning air masses. While traveling through the dominant dust regime, I found that ozone concentrations were reduced by up to 70%. Yet during AEROSE-II, ozone concentrations exceeding 150 ppb were observed more than 4,000 km downstream of a biomass burning source region. It was surprising to find such high ozone concentrations, so far away from the source of the burning. Dr. Vernon Morris at Howard University and Dr. Bruce Doddridge at NASA Langley Research Center were collaborators on this study. Our findings can aid in validating and improving photochemical and chemical transport models.

Through NCAS, I learned about the exciting science that NOAA scientists engage in, and the connection between scientific discovery and the delivery of information to protect lives and property. This factored strongly in my decision to pursue a career at NOAA. Currently, I serve as the User Requirements Lead in the Climate Services Division of the National Weather

Service. In this capacity I ensure that NWS Local Forecast Offices are equipped with climate information to meet the needs of their clients. I also function as a key point of contact and liaison for issues related to climate program planning and drought.



Michelle Hawkins and her dissertation defense committee at Howard University

The NOAA Center for Atmospheric Sciences, NCAS, is located at Howard University and is funded through a grant from the NOAA Educational Partnership Program. Comprised of a consortium of 6 universities, NCAS is working to train students to improve weather and climate predictions and to enhance understanding of regional air quality and its impact on climate and health.

Dr. Lubchenko, continued

scientists have an obligation to communicate their knowledge in a clear, credible, relevant and usable fashion.

Furthermore, she is on the record stating that management and policy decisions should focus on the common good and on the longer term. In closing her presentation, Dr. Lubchenko discussed speaking with President Obama about the challenges and opportunities that lay before NOAA. When describing to NOAA staffers the need to make a difference, for the sake of our children, the nation and the environment, she echoed his simple rejoinder, "Let's do it!"

Dr. Robinson, continued



Dr. Robinson speaking at the Senate Rayburn Building ceremony announcing the EPP Cooperative Science Center Awards

He earned his Bachelor of Science in chemistry from Memphis State University and his Ph.D. in nuclear chemistry from Washington University. He is a

member of the American Association for the Advancement of Science, Ecological Society of America, the National Association of Black Chemists and Chemical Engineers and Sigma Xi. Dr. Robinson is currently on assignment as a senior scientific advisor for the U.S. Department of Agriculture Cooperative State Research, Education and Extension Service in Washington, DC. He will begin the vice president position later this spring. (Article courtesy of the Florida A&M University Communications Office)

Dr. William Corso, continued



they might want to try an internship. Recognizing that PowerPoint presentations might be popular tools for meetings filled with senior executives, but were probably a lot less effective at capturing students' attention, the DAA was the first to skip the slides and grab a mike to wander around the stage, speaking to the students in an informal but informative style. In computerized post-orientation surveys, students uniformly clamored for less slides and more conversation, pointing to Dr. Corso's talk as the approach they preferred.

The DAA enjoys getting directly involved with younger students as well. His first opportunity arose when he was approached by his sons' school in Mississippi, and asked to speak to students. It's a role he's happy to play, speaking at schools whenever the opportunity presents. We were invited along to see him in action. While his enthusiasm for the ocean is obvious in

a one-on-one conversation, his passion really ignites in front of a group of students. Speaking to a couple of hundred juniors and seniors in a Science and Technology magnet program at Prince George's County's (MD) Herbert C. Flowers High School, Dr. Corso spent about 45 minutes telling them what NOAA does and helping them understand why they might care and what role they might play. He invited questions from the audience, and remained afterwards for students to approach him directly.

According to a new GAO report, as the baby boomer generation causes a huge retirement wave, about one-third of federal workers will be eligible to retire by 2012. That includes nearly two-thirds of career executives and almost half of other supervisors across the federal government. Energy and environmental agencies will be among the hardest hit. EPP is an essential part of NOAA's effort to ensure that mission-critical requirements are met by well educated and skilled candidates. NOAA's new Administrator, Dr. Jane Lubchenko has repeatedly underscored her belief in the importance of science informing the decisions that people make, i.e., giving decision-makers access to information that they can understand, use and believe is credible.



Dr. Corso gives a Flowers High School student career advice

It's vital that the best and the brightest learn about NOAA, and are enthusiastic about pursuing career paths that ensure they are part of NOAA's future.

NOAA's National Ocean Service (NOS) is the nation's premier science agency for oceans and coasts.

**For more information please go to the NOS website:
[http://
www.oceanservice.noaa.gov/
about/](http://www.oceanservice.noaa.gov/about/)**

Congress Creates STEM Education Caucus

Members of Congress recognize the need for effective science, technology, engineering and mathematics (STEM) education as critical to the nation's future workforce. According to their website, the Congressional STEM Education Caucus is responsible for providing the means and methods for the advancement of "three kinds of intellectual capital." These include 1) scientists and engineers, who will continue the research and development that is central to the economic growth of our country; 2) technologically proficient workers who are capable of dealing with the demands of a science based, high technology workforce; and 3) scientifically literate workers and citizens who make intelligent decisions about public policy and who understand the world around them.

In cooperation with the National Science Teachers Association, the STEM Caucus maintains a website and an email listing of current STEM legislation.

For more information on the STEM Education Caucus and to receive updates on current STEM legislation, visit their website at :
<http://www.stemedcaucus.org/>

STEM Legislation Introduced 111th Congress

S.7 (Reid-NV)

Introduced 1/6/2009

Education Opportunity Act of 2009

Expands educational opportunities for all Americans by increasing access to high-quality early childhood education and after school programs, advancing reform in elementary and secondary education, strengthening mathematics and science instruction, and ensuring that higher education is more affordable, and for other purposes.

HR 365 (Bordallo-GU)

Introduced 1/9/2009

Ocean and Coastal Mapping Integration Act

Authorizes the NOAA Administrator to establish joint ocean and coastal mapping centers of excellence (including a joint hydrographic center) in institutions of higher education to conduct specified activities, including: (1) research and development of innovative ocean and coastal mapping technologies, equipment, and data products; and (2) mapping of the U.S. outer continental shelf, and for other purposes.

HR 300 (Ehlers-MI)

Introduced 1/8/2009

National Oceanic and Atmospheric Administration Act

Reestablishes in the Department of Commerce the National Oceanic and Atmospheric Administration (NOAA), headed by an Under Secretary of Commerce for Oceans and Atmosphere, who shall serve as the Administrator of NOAA.

Maintains within NOAA: (1) the National Weather Service; (2) programs to support efforts, on a continuing basis, to collect data and provide information and products regarding satellites, observations, and coastal, ocean, and Great Lakes information; and (3) programs to conduct and support research and education and the development of technologies relating to weather, climate, and the coasts, oceans, and Great Lakes. Establishes a Science Advisory Board within NOAA.

Terminates the Reorganization Plan No. 4 of 1970 (the executive order that established NOAA).

Requires the Administrator to develop and submit to Congress a NOAA reorganization plan. Prohibits the Administrator from closing, consolidating, relocating, subdividing, or establishing a facility of NOAA unless there has been specified prior public and congressional notification, and an assessment of any proposed changes.

Prohibits, except as provided, a NOAA activity or function that is converted to contractor performance under Office of Management and Budget Circular A-76 from being performed by the contractor or any subcontractor at a location outside of the United States.

HR 705 (Ehlers-MI)

Introduced 1/27/2009

National STEM Education Tax Incentive for Teachers Act of 2009

Amends the Internal Revenue Code to allow certain full-time elementary and secondary school teachers of math, science, engineering, or technology courses a refundable tax credit for 10% of their undergraduate tuition up to \$1,000 in any taxable year. Increases such credit amount to \$1,500 for teachers in schools serving children with disabilities.

HR 957 (McCaul-TX)

Introduced 2/10/2009

The Green Energy Education Act of 2009

Authorizes higher education curriculum development and graduate training in advanced energy and green building technologies.

H. Con. Res. 53 (Johnson-TX)

Introduced 2/12/2009

Referred to the House Committee on Education and Labor Recognizing the Achievement of Parity Among African Americans in Computer Science

Recognizes the achievement of Dr. Clarence Ellis, the first African-American to obtain a PhD in computer science and calls on federal agencies to increase the diversity of our nation's science and technology workforce through increased education and research programs.

Legislative summaries are excerpted from the Library of Congress Congressional Research Service. For more information please go to the STEM Education Caucus website or the Library of Congress THOMAS website: <http://www.thomas.gov/>

Events and Conferences

Scenes from the 2008 NOAA Scholars Presentations



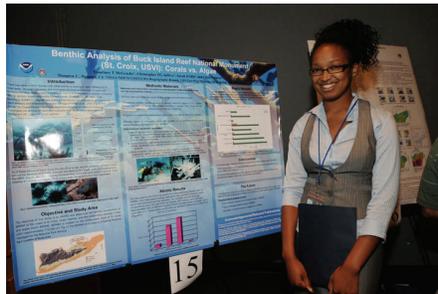
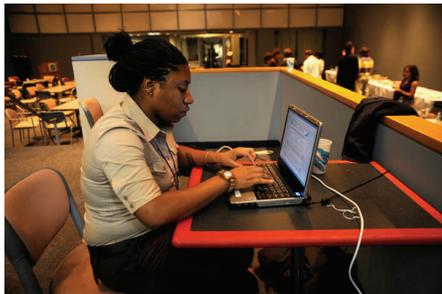
07/25/09 – 07/28/09
National Council of La Raza
Annual Conference
Chicago, IL
www.nclr.org

08/30/09 – 09/03/09
American Fisheries Society (AFS)
Annual Meeting
Nashville, TN
www.fisheries.org

September 2009
Minority Access National
Conference
www.minorityaccess.org

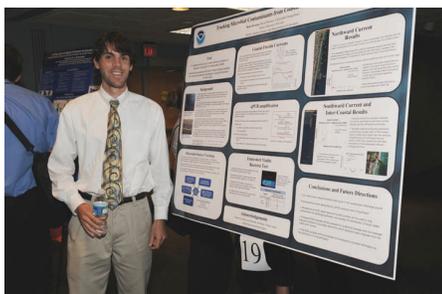


October 2009
Thurgood Marshall Leadership
Institute
New York, NY
www.thurgoodmarshallfund.org/leadership/leadership.htm



10/08/09 – 10/11/09
Society for the Advancement of
Chicanos And Native Americans in
Science (SACNAS)
Dallas, TX
www.sacnas.org

10/31/09 – 11/02/09
Hispanic Association of Colleges
and Universities (HACU)
23rd Annual Conference
Orlando, FL
www.hacu.org



11/04/09-11/07/09
Mexican American Engineers and
Scientists Symposium and Career
Fair (MAES)
www.maes-natl.org



11/12/09 – 11/14/09
NOAA Education and Science
Forum
Howard University
Washington, DC
www.gs.howard.edu/atmosci/default.htm



NOAA Office of Education
FIFTH EDUCATION AND SCIENCE FORUM

November 12-14, 2009

Hosted by:

The NOAA Center for Atmospheric Sciences (NCAS)

Howard University

Washington, DC



This forum is designed to bring together academics, government and private sectors, and the general public who are committed to building a well-educated and diverse scientific workforce.

Featured Opportunities:

- Professional Development Seminars
- Graduate School and Career Fair
- Student Travel Awards
- Oral and Poster Presentations
- Pre-College Activities for Middle School Students
- Networking

Information on forum registration, accommodations and abstract submissions are available on the NCAS website: www.ncas.howard.edu

*Phone Inquiries:
202-865-8678*



**The NOAA Educational Partnership Program Cooperative
Science Centers**



National Oceanic and Atmospheric Administration
Cooperative Remote Sensing Science and Technology Center



**NOAA's Cooperative Remote Sensing Science
and Technology Center at the City College of
the City University of New York**



**The NOAA Living Marine Resources
Cooperative Science Center at the University
of Maryland Eastern Shore**



National Oceanic and Atmospheric Administration
ECSC
Environmental Cooperative Science Center

**The NOAA Environmental Cooperative
Science Center at Florida A&M University**



**The NOAA Interdisciplinary Scientific
Environmental Technology Cooperative
Science Center**



**The NOAA Center for Atmospheric Science at
Howard University**



www.epp.noaa.gov

301-713-9437

Educational Partnership Program

Office of Education

National Oceanic and Atmospheric Administration

U.S. Department of Commerce