

Environmental Literacy Grants Program

Grants for Formal K-12 Education FY12

Overview of Funding Announcement

In July 2010, NOAA's Office of Education (OEd) issued a request for applications to support K-12 education projects that advance inquiry-based Earth System Science learning and stewardship directly tied to the school curriculum, with a particular interest in increasing climate literacy. To address this goal, this solicitation supported service-learning and professional development projects related to NOAA's mission in the areas of ocean, coastal, Great Lakes, weather and climate sciences and stewardship. Successful projects catalyzed change in K-12 education at the state, regional, or national level through development of new programs and/or revision of existing programs to improve the environmental literacy of K-12 teachers and their students. The funding opportunity had two priorities: Priority 1 was for innovative proof-of-concept projects (1-2 years in duration), while Priority 2 was for full-scale implementation of educational projects (3-5 years in duration).

Awards

Five institutions received awards under this funding opportunity totaling over \$3.5 million. The awards are summarized below. For more information regarding specific awards, please contact the Federal Program Officer (FPO) listed below or oed.grants@noaa.gov.

Priority 1:

Project Title	PI/Institution	Full Amount Awarded
Earth System Science for Elementary Teachers (ESSET)	Christine Purkiss, Angelo State University	\$403,436
Great Lakes Revealed: Piloting Professional Development for High-Need Educators using NOAA's Science on a Sphere and an Inquiry- and Problems-based Approach to Learning Climate and Earth Science	Nicole Kowrach, Museum of Science and Industry	\$446,580

Priority 2:

Project Title	PI/Institution	Full Amount Awarded
Global Rivers Environmental Education Network: Great Lakes Science and Service Learning Initiative (GLSSLI)	Lisa Bardwell, Earth Force	\$677,192
Into the Woods (ITW): Using student research in the urban environment to enhance Elementary School Environmental literacy	Peter Schmidt, Queens College	\$1,355,463
Environmental Literacy for All: Creating Comprehensive Environmental Service Learning and Professional Development for Diverse K-12 Students and Teachers	Anne Burnett, NatureBridge	\$682,742

Summaries

Title: Earth System Science for Elementary Teachers (ESSET)

Institution: Angelo State University

PI: Christine Purkiss

FPO: Stacey Rudolph (202-482-3739, stacey.rudolph@noaa.gov)

Summary: Angelo State University (ASU), in partnership with Texas borderlands school districts and the National Weather Service Office in San Angelo, Texas, are recipients of a NOAA Environmental Literacy Grant Priority 1 grant titled "Earth System Sciences for Elementary Teachers" (ESSET). This project will: 1) Increase the knowledge and skills level of 25 elementary in-service teachers regarding best practices for teaching integrated Earth System Science concepts in a learner-centered, outdoor environment; 2) Increase teachers' ability to align integrated science content with Texas' standards-based curriculum and NOAA's Education Strategic Plan; and 3) Integrate concepts of environmental stewardship with teachers' newly acquired pedagogy and science content. Participants will receive nine semester-hours of ASU graduate credit, and a variety of tools and equipment for their classrooms following successful completion of this 18-month project. Anticipated results include increases in overall integrated science content knowledge, best practices, and self-efficacy for participating teachers. Scaling-up this proof-of-concept project to catalyze change across Texas will occur near the end of ESSET.

Partners: National Weather Service - Weather Forecast Office in San Angelo, TX; Global Forecast Center of The Weather Channel; Regional Education Service Center; and ASU College of Sciences.

Title: Great Lakes Revealed: Piloting Professional Development for High-Need Educators using NOAA's Science on a Sphere and an Inquiry- and Problems-based Approach to Learning Climate and Earth Science

Institution: Museum of Science and Industry

PI: Nicole Kowrach

FPO: Stacey Rudolph (202-482-3739, stacey.rudolph@noaa.gov)

Summary: This project pilots a new professional development course in climate and earth science literacy at a museum-based Institute for Quality Science Teaching (IQST). The Great Lakes Revealed project will develop instructional strategies that enable upper elementary school teachers to incorporate NOAA data and visualizations developed by the SOS[®] Users Collaborative Network, the Great Lakes Environmental Research Lab, and the WATER Institute (University of Wisconsin) into the delivery of inquiry- and problem-based lessons in earth science. While taking advantage of global visualization models that bring to light environmental systems at work worldwide, this project also focuses on the Great Lakes region. IQST was founded at the Museum of Science and Industry in Chicago to provide professional development services to teachers who lack confidence in their science knowledge and inquiry skills, and serve a high percentage of students at risk for under-achievement in STEM.

Partners: Office of Science Director at the Chicago Public Schools; Directors of Science and Mathematics Education and Teacher Development at the Illinois Institute of Technology; **Great Lakes WATER Institute at the University of Wisconsin-Milwaukee**; Collaborative Research

Associates; **NOAA Office of National Marine Sanctuaries and Great Lakes Environmental Research Lab (GLERL); Thunder Bay National Marine Sanctuary; and NOAA Science on a Sphere Users Collaborative.**

Title: Global Rivers Environmental Education Network: Great Lakes Science and Service Learning Initiative (GLSSLI)

Institution: Earth Force

PI: Lisa Bardwell

FPO: Stacey Rudolph (202-482-3739, stacey.rudolph@noaa.gov)

Summary: The Great Lakes Science and Service Learning Initiative (GLSSLI) is a collaborative effort to take Earth Force's proven science-based service learning approach to scale in Michigan by institutionalizing the model within Michigan school districts. By working with the Michigan Community Service Commission's Learn & Serve program and the Great Lakes Stewardship Initiative we are able to leverage statewide structures to make grants directly to school districts, support school districts as they institutionalize the programs and provide ongoing professional development to educators. Scaling the GREEN model will deepen student understanding of science by working directly on the environmental problems facing their communities and develop the skills and

Partners: **NOAA Great Lakes Environmental Research Laboratory;** Great Lakes Stewardship Initiative (A Project of the Great Lakes Fishery Trust); and Michigan Community Service Commission (Learn and Serve Michigan Program).

Title: Into the Woods (ITW): Using student research in the urban environment to enhance Elementary School Environmental literacy

Institution: Queens College

PI: Peter Schmidt

FPO: John McLaughlin (202-482-2893, john.mclaughlin@noaa.gov)

Summary: "Into the Woods" will improve environmental literacy among 125 NYC Elementary teachers (and their students) by enhancing content knowledge about the Earth System and extending their classrooms outdoors into Nature. Partnerships with parks and environmental organizations will evolve into school stewardship and service learning. ITW starts with five Elementary GLOBE books that link science, math, and literacy. Fiction becomes reality during field training that uses the GLOBE books as blueprints for how teachers can guide their students to conduct their own research to enhance understanding of the environment. We will train teachers to design and supervise grade-appropriate research projects using GLOBE protocols in local parks; support them during those projects; and host annual research symposia where their students will present their results. ITW's template of immersing teachers and students in environmental research can become a national model for improving environmental literacy in all school systems.

Partners: NYC Department of Education Children First Networks through Center for Innovative Public Education Association; York University's Wallerstein Collaborative for Urban Environmental Education; Bronx River Alliance; Coastal Research and Educational Studies of

Long Island; Research Works, Inc. and **NOAA/Cornell University Sea Grant (Kingston office)**).

Title: Environmental Literacy for All: Creating Comprehensive Environmental Service Learning and Professional Development for Diverse K-12 Students and Teachers

Institution: NatureBridge

PI: Anne Burnett

FPO: Stacey Rudolph (202-482-3739, stacey.rudolph@noaa.gov)

Summary: NatureBridge is expanding its highly successful, 41-year environmental education model through teacher engagement and service learning programs to empower the next diverse generation of climate and environmentally literate citizens. Through partnerships with schools, districts, and environmental organizations, service learning opportunities will be established for civic engagement in NatureBridge students' home communities. This engagement effort includes the creation of new climate literacy curriculum, the application of cutting-edge monitoring technology and online resources for public participation in scientific research, the exposure of youth to STEM career options, and the significant increase in diversity of students served by NatureBridge programming. This work will be informed by and benefit from NOAA assets across our service areas. By strengthening existing and creating new teacher engagement programs throughout our organization, teachers will become fully versed in the principles of environmental and climate literacy. These programs will focus on increasing accessibility, diversifying our participants, and incorporating best practices and climate literacy content.

Partners: National Parks Service; Stanford University; UCLA/Center X Graduate School of Education and Information Studies; Seattle Public Schools; Los Angeles Unified School District; San Francisco Unified School District; Cupertino Union School District; Sharefest Community Development, Audubon Center at Debs Park; **NOAA Climate Program Office; Channel Islands National Marine Sanctuary; Olympic Coast National Marine Sanctuary; Office of National Marine Sanctuaries; Gulf of the Farallones National Marine Sanctuary; Cordell Bank National Marine Sanctuary; and San Francisco Bay National Estuarine Research Reserve.**