Climate Change Education Funding – NSF, NOAA and NASA
Goals & Objectives

Climate Change Education has become a priority for funding in the past several years. Recently three federal agencies (NSF, NASA, and NOAA) each received funding to support research and programs focused specifically on Climate Change Education. Following is a summary of the goals expressed in solicitations for climate change education by the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA).

NSF

The National Science Foundation established the Climate Change Education (CCE) program in FY 2009 to support the growing need for climate change education amongst diverse stakeholders and the general public. NSF plays two roles in advancing climate change education (1) to prepare a new generation of climate scientists, engineers and technicians to provide innovative and creative approaches to understanding global climate change and to mitigate its impact and (2) to prepare U.S. citizens to understand global climate change and its implications in ways that can lead to informed, evidence-based responses and solutions. CCE projects are expected to fully incorporate current understanding of how people learn, integrate multidisciplinary climate science and education, and synergize and scale up effective climate change projects developed elsewhere. In FY 2009, the Education and Human Resources Directorate (EHR) put forth a Dear Colleague Letter, which resulted in 12 funded projects. In FY 2010, the CCE program announced the Climate Change Education Partnership (CCEP) program, and funded 15 projects.

Dear Colleague Letter: Climate Change Education

In FY 2009, the Education and Human Resources Directorate (EHR) issued a Dear Colleague letter to provide funding in emerging areas of climate change education, with a focus on development of the climate science professional workforce, public understanding and engagement on climate change issues, and informed decision-making associated with adaptation to and mitigation of climate change impacts. Although specific goals were not spelled out, priority was given to projects that address preparing innovators for the workforce and fundamental topics in Climate Change Education (CCE), including:

- strategies for scaling up and widely disseminating effective curricula and instructional resources
- assessment of student learning of complex climate issues as it translates into action
- addressing local and national STEM educational standards and policy for teaching CCE
- professional development in climate change literacy for policy decision makers at all levels (local to national)

The program was particularly interested in multi-disciplinary proposals that integrate questions and approaches across disciplines and result in partnerships, including those among K-12 education, higher education, the private sector, and related non-profit organizations, in both formal and informal settings, as well as climate-related policymakers.

CCEP-I

The Climate Change Education Partnership (CCEP) program was established in FY 2010 as a joint effort between EHR, the Directorates for Geosciences (GEO) and Biological Sciences (BIO), and the Office of Polar Programs (OPP). The overarching purpose is to establish a
coordinated national network of regionally-based or thematically-based partnerships devoted to increasing the adoption of effective, high quality educational programs and resources related to the science of climate change and its impacts. The program addresses fundamental needs related to identifying, developing, implementing and disseminating effective education strategies that serve the literacy and workforce goals of the overall CCE program. Each CCEP must include representation from at least each of the following communities: climate scientists, experts in the learning sciences, and practitioners from within formal or informal education venues. Each CCEP should be organized around either geographic regions that share similar climate change impacts, or major climate impact themes (e.g., sea-level rise). Partnership activities are expected to be grounded in comparable levels of climate science and learning science expertise, and go beyond commonplace methods or dissemination or outreach to provide transformative implementation on significant scales. The CCEP program is a two-phase program:

- CCEP-I grantees receive up to 2 years of funding to support synthesis, network-building, and strategic planning activities leading toward potential Phase II Partnerships
- CCEP-II funding will be available through a future solicitation program to CCEP-1 awardees and equivalent partnerships and will be used for full-scale implementation of mature strategic plans that serve the larger goals of the CCE program

**NASA**

The NASA Global Climate Change Education (GCCE) project was initiated in 2008 as a coordinated effort between NASA’s Office of Education and Science Mission Directorate. NASA’s role in climate change is to contribute to the scientific basis for sound decision-making and to facilitate the development of educational activities that assist society in appropriately using that information. The GCCE project extends the results of NASA’s Earth Science Program to the education community. The project was designed to improve the nation’s STEM education, and enhance students and teachers literacy about global climate change and Earth system change in elementary grades through lifelong learners. Each funded proposal is expected to take advantage of NASA’s unique contributions to climate change to enhance student experiences and improve educator’s ability to engage their students. Awards have been given in 2008, 2009 and 2010. The GCCE Project considers projects in three funding categories:

1. Improve K-12 teacher competency for global climate change education
2. Strengthen the teaching and learning about global climate change within formal education systems
3. Provide opportunities for undergraduates, pre-service teachers, and/or in-services teachers to actively engage in global climate change science research

The goals of the GCCE project are to:

- Improve the teaching and learning about global climate change in elementary and secondary schools and college campuses, and through lifelong learning
- Increase the number of students, particularly high school and undergraduates, using NASA Earth Observation data/Earth system models to investigate and analyze global climate change issues
- Increase the number of undergraduates prepared for employment and/or to enter graduate school in technical fields related to climate change

In addition to the specific goals, NASA considers cultivating diversity a management philosophy and core value for all NASA education efforts, and the GCCE project seeks proposals that give sincere consideration to this philosophy.
NOAA's Office of Education has two grant programs that fund projects related to climate change education, Environmental Literacy Grants (ELG) and the Bay Watershed Education and Training (B-WET) program.

Environmental Literacy Grants support environmental literacy and promote a diverse workforce in ocean, coastal, Great Lakes, weather and climate sciences. ELG focuses on both informal/nonformal science learning and formal K-12 education, with funding for each area in alternating years. ELG supports Goal 1 of NOAA’s 2009-2029 Education Strategic Plan, and specifically focuses on:

- Outcome 1.2 – Educators understand and use environmental literacy principals
- Outcome 1.3 – Educators, students and/or the public collect and use ocean, coastal, Great Lakes, weather and climate data in inquiry and evidence-based activities
- Outcome 1.4 – Lifelong learners are provided with informal science education opportunities focused on ocean, coastal, Great Lakes, weather and climate topics

Informal/Nonformal: The goal of the informal/nonformal funding opportunity is to support projects that engage the public in educational activities that utilize emerging and advanced technologies and NOAA assets to improve understanding and stewardship of the environment, with specific interest in projects that:

1. Facilitate outdoor experiences involving scientific inquiry and exploration of the natural world apart from formal K-12 curricula
2. Visualize, display and interpret data to improve understanding and provide a system’s perspective of Earth’s dynamic processes

Formal K-12: The formal K-12 opportunity supports K-12 education projects that advance inquiry-based Earth System Science learning and stewardship directly tied to school curriculum, with particular interest in increasing climate literacy. To address this goal, this solicitation supports service-learning and professional development projects. Target audiences include K-12 students, pre- and in-service teachers, and providers of pre-service teacher education and in-service teacher professional development. There is special interest in projects that address reaching groups traditionally underserved or underrepresented in Earth System science.

The Bay Watershed Education and Training (B-WET) program is an environmental education program that emphasizes experiential learning in watershed settings and highlights regional priorities in six specific regions: California, Chesapeake Bay, Gulf of Mexico, Hawaii, New England and Pacific Northwest. B-WET promotes locally relevant, systematic experiential learning in K-12 education. NOAA recognizes that knowledge and commitment built from firsthand experience, especially in the context of one’s community and culture, is essential for achieving environmental stewardship. Carefully selected experiences driven by rigorous academic learning standards, engendering discovery and wonder, and nurturing a sense of community connect students with their watershed, help reinforce an ethic of responsible citizenship, and promote academic achievement.

The B-WET program is primarily delivered through competitive funding that promotes Meaningful Watershed Educational Experiences (MWEEs), which is an experience that meets the following criteria:

- is investigative or project oriented
- is an integral part of the instructional program
• is part of a sustained activity
• considers the watershed as a system
• is enhanced by NOAA products, services, or personnel, where appropriate