

Name of Project: Competitive Program For Science Museums and Planetariums
(CP4SMP)

Awarded in Fiscal Year 2010 via NASA Research Announcement (NRA):
NNH09ZNE005N

Resulting Agreements: 18 Grants

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PROJECT DESCRIPTION

In Fiscal Years 2008, 2009, and 2010, Congress reallocated the NASA's Office of Education budget request in order to establish "*a competitive program as authorized by section 616 of PL 109-155 for science museums and planetariums to enhance programs related to space exploration, aeronautics, space science, Earth science or microgravity.*" In Fiscal Year (FY) 2008, Congress also established: "*To the extent possible, NASA is urged to use education funds to address the educational needs of women, minorities, and other historically underrepresented groups.*"

In FY 2008 and FY 2009 NASA issued separate NASA Research Announcements (NRA), which shared the title: ***Competitive Program for Science Museums and Planetariums (CP4SMP)***. CP4SMP is authorized by PL (Public Law) 109-155 SEC. 616. MUSEUMS: "*The Administrator may provide grants to, and enter into cooperative agreements with, museums and planetariums to enable them to enhance programs related to space exploration, aeronautics, space science, earth science, or microgravity.*" The FY 2009 NRA (also known as the call for CP4SMP proposals) NNH09ZNE005N specified "Should Congress continue funding CP4SMP in FY 2010, NASA may select FY 2009 proposals for funding rather than open a new competition." A total of 18 projects were selected for award using FY 2009 and FY 2010 funds from the proposals received under the FY 2009 NRA number: NNH09ZNE005N.

PROJECT GOALS

The basic goal of the CP4SMP project is to establish NASA's flagship investment in Outcome Goal 3: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

Specific grant-level objectives include but are not limited to:

- Promote life-long learning in America by students, educators, families, and retirees, using NASA-themed STEM concepts and missions via non-formal and informal education.
- Encourage, inspire and engage large and diverse audiences via NASA's contributions to everyday life within the Congressionally-defined technical areas.

- Improve understanding of NASA's missions, contributions to STEM disciplines, and STEM careers, including faculty in pre-K-12 and higher education settings.
- Link and engage providers of informal and formal education, including institutions of higher education, particularly HBCUs, Tribal Colleges, and other minority serving institutions using NASA content through pilot projects that enable educators, parents, retirees, or community leaders to carry the NASA content back to their households, school, after school groups, summer camps, 4-H communities, etc.

PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

CP4SMP primarily addresses Outcome 3 and supports outcomes 2 and 1 of the NASA education strategic coordination framework. In sum, the three outcomes require the Office of Education to fund activities that 1) establish strategic partnerships, 2) contribute to the development of the STEM workforce, and 3) attract and retain students in STEM disciplines needed to achieve NASA strategic goals.

The CP4SMP funding opportunity supports NASA's education goal to engage educators and students both in and outside the classroom and learners of all ages in science, technology, engineering and mathematics (STEM) related to NASA missions and careers. The CP4SMP project is uniquely positioned among NASA's competitive grant and cooperative agreement broad agency announcements because all NASA missions in exploration, aeronautics, science or space operations are eligible for support. CP4SMP also contributes to informal education more broadly by making NASA's remarkable resources--facilities, missions, data, images, and employees, including internationally known engineers and scientists-- more broadly known. CP4SMP grants are expected to encourage inquiry-based or hands-on education or learning focused on NASA's contributions to the STEM disciplines.

PROJECT ACCOMPLISHMENTS

The FY 2009 CP4SMP NASA Research Announcement received 67 proposals from 32 states and the District of Columbia. Proposals were selected through a merit-review process which included consulting with experts external to NASA. NASA's Office of Education and mission directorates collaborated to solicit and review the grant applications. In January 2010, NASA announced selection of nine (9) informal education institutions to share \$6.2 million of FY 2009 funds. The projects are located in Alaska, Colorado, Florida, Illinois, New York, North Carolina, Oregon and South Dakota. The nine grants range in value from approximately \$121,000 to \$1.16 million.

In May, \$7.0 million of FY 2010 funds were used to support grants to nine (9) additional informal education institutions. The awarded project budgets ranged from approximately \$177,000 to \$1.25 million. The projects are located in Arizona, Connecticut, Indiana, Louisiana, Maryland, Minnesota, Ohio, Utah and Washington.

Participating organizations include museums, planetariums, Challenger Centers, aquariums, and other institutions of informal education. All grants have a maximum five-year period of performance.

The first cohort of grantees (awarded in May 2009 using FY 2008 funds) began their work in Fall 2009 in California, Colorado, Florida, Illinois, Iowa, Minnesota, Michigan, Montana, New York, North Carolina, Vermont and Washington. The 13 grants have a maximum five-year period of performance and range in value from approximately \$100,000 to \$900,000 each. The initial results of these grants are discussed below.

PROJECT CONTRIBUTIONS TO PART MEASURES

Selected projects work with the NASA Shared Service Centers in Mississippi, other appropriate NASA Field Centers and with NASA's Museum Alliance, a nationwide network of more than 400 science centers, planetariums, museums, aquariums, zoos, observatory visitor centers, NASA visitor centers, nature centers and park visitor centers. Created and managed by JPL, the Museum Alliance is a free service provided to educators at over 400 museums, science centers, planetariums and similar institutions of informal education in the United States and beyond. There are Museum Alliance members in all 50 states, DC, and Guam. Each time NASA issues a call for CP4SMP proposals, new institutions and individuals learn about and join the Museum Alliance. CP4SMP assisted NASA in attracting new partners to the Museum Alliance.

IMPROVEMENTS (e.g. project management, efficiencies, etc.) MADE IN THE PAST YEAR

The first CP4SMP project meeting for FY 2008 and FY 2009 awardees began at NASA Headquarters March 2-3, 2010 and concluded at the Center for the Advancement of Informal Science Education (CAISE) Informal Science Education (ISE) Summit on March 3-5, 2010 at the Hilton Hotel, Washington. CAISE sessions were sponsored and coordinated by the National Science Foundation Information about these sessions can be found at: <https://informal.jpl.nasa.gov/meetings/> and <http://caise.insci.org/ise-summit>.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

The FY 2008 cohort of awardees submitted their first annual reports, as required by NASA grant policies and regulations and copied to the JPL CP4SMP managers for analysis. Highlights from these reports include:

- NNX09AL36G: At the American Museum of Natural History in New York City, 94 high school students participated in the first sessions of the *NASA Science Research Mentoring Program (SRMP)*. These courses, offered at no cost to participants, were “Secrets of the Solar System”, “Wonderful Universe”, “Stars”, “Dynamic Earth”, and “Tools of Astronomy. The top 18 students who have taken at least three of these courses will be selected for the mentoring program and gain entry into City College of NY’s competitive STEM Institute and take two different six-week math and science courses at the Advanced Placement level. <http://education.amnh.org/NASASRMP>

- New Science on a Sphere (SOS) units, planetary data display projection globes from NOAA, were installed at both the Castle Challenger Learning Center (CLC) of the San Joaquin Valley in Atwater, CA (NNX09AL34G) and the Denver Museum of Nature and Science in Denver, CO, (NNX09AL70G). In California, the SOS was introduced to the public at a local Chamber of Commerce event. 7500 people visited the CLC this year, up from 4000 visitors the previous year. In Denver, 220 Museum Galaxy Guides were trained in the control of the SOS with a Wii remote, for demonstrations with the public as part of the existing Space Odyssey exhibit. Since the SOS opening, about 220,000 visitors and 52,000 students have visited the exhibit.
- NNX09AL79G: As part of the project *Montana's Big Sky Space Education: The NASA ExplorationSpace at ExplorationWorks!*, the ExplorationWorks Museum in Helena, MT collaborated with MIT to deliver "The Knowledge Station", an interactive exhibit and software on solar system exploration, including an experience for users to travel to the International Space Station, Mars and Jupiter's moon Europa. A new program element, the Distinguished Aerospace Speakers Series, included hosting a NASA-Ames scientist and MIT graduate student with Helena students. Using the extensive videoconferencing equipment and capabilities of the Montana School Boards Association facilities, ExplorationWorks connected 120 Helena elementary school (grades K – 5) students to interactive events about NASA research and space.
- NNX09AL32G: The Iowa Children's Museum in Coralville, IA designed and built a new aviation exhibit, *Take Flight: The Science of Aviation*, that delivers NASA's Informal Education Program to the public by providing high-quality active learning experiences for children and their families outside the formal school classroom setting. Fifteen diverse, engaging exhibit components promote aeronautics and build understandings about the forces of flight. The exhibit has resulted in increased attendance to the museum by youth ages 8 to 12 years old, and is also attracting new paying attendees rather than simply providing a new exhibit for their regular members who get free admission to the museum. The exhibit received the following local awards in 2009: Iowa City Chamber of Commerce Economic Development Award; Iowa City/Coralville Convention & Visitors Bureau Attraction of the Year; Iowa Cultural Corridor Alliance Excellence in Collaborative Partner Programs.
- NNX09AL35G: In San Carlos, CA, the Hiller Aviation Museum's *Aviation Adventure Center* program added laboratory workspace to its Flight Sim Zone and has had 5,700 school children with 1,300 adult chaperones in 264 separate programs, 300 scouts in 24 programs, 90 children in 14 after school programs, and 3,500 weekend and family visitors over 22 weeks. The Travelling Flight Science Lab (TFSL) version travelled to Evergreen Aviation Museum in McMinnville, OR for five months; as a result the Evergreen's management is planning to acquire similar equipment to outfit their own flight simulation lab based on the specification of the TFSL project. TFSL is scheduled for stints at three other aviation museums in Pueblo CO, Dallas TX, and Windsor Locks CT.
- NNX09AL39G: The Science Museum of Minnesota's (SMM) *Climate Change Education* project featured the fabrication of three Earth Buzz kiosks and installation of one at the University of Minnesota's Institute on the Environment <http://www.sciencebuzz.org/kiosks/future/ione/population>. Two other kiosks are slated for Barnard College (New York) and the University of Wisconsin. The Barnard Earth Buzz kiosk will be organized around key and current questions about climate change with responses from scientists at GISS and other experts across disciplines. Members of SMM's Climate Change Crew Youth Team aged 16-18 entered into a national contest, the Dream Reborn Story Contest, and won the opportunity to have their story told through the production of a music video. The Climate Change Crew has been invited to perform this winning

song at conferences being held throughout the Twin Cities that relate to climate change, social justice, and sustainability.

- NNX09AL31G: The Miami Science Museum is developing an interactive, 3-D virtual world (VW) exhibit to help students in grades 9–12 develop a better understanding of climate change and related careers. The virtual exhibit, *Earth Lab*, will utilize NASA data and models to depict climate variability. *Earth Lab* is a “proof of concept” study for a series of future interactive VW exhibits in *Teen Second Life*. The museum has collaborated with GISS to produce ten videos that contain visualizations of historic temperature data and future temperature scenarios. They selected the first cohort of 15 students from Miami-Dade County Public Schools for the project’s Summer Academy for student input to the design of VW and field trips including NASA KSC.

Because the FY2009 and FY2010 CP4SMP grantees have just been funded and been able to begin their work, it is too early to collect or report data about grantee performance for the FY 2009 and FY2010 cohorts.

A complete list of the FY 2008, 2009, and 2010 Grant Selections including short abstracts can be found at the following URLs on the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES):

<http://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=192240/Selected%20Proposals%20CP4SMP%202008.pdf>

<http://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=216807/2009%20Selection%20Table.pdf>

<http://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=229483/2010%20Selection%20Table.pdf>