

Name of Project: Competitive Program For Science Museums and Planetariums Plus Opportunities for NASA Visitor Centers and Other Informal Education Institutions (CP4SMP+)
Competed in 2011 via NASA Research Announcement (NRA): NNH11ZHA004N

Number and Type of Agreements Used: None
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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 (NRAs), 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." A total of 13 projects were selected for award using the FY 2008 funds. 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. Between FY 2008-FY 2010, Congress also reallocated the Office of Education's budget to establish a Visitor Center (VC) initiative. Congress directed NASA Visitor Centers to support the development of educational activities in science, technology, engineering, and mathematics (STEM). In 2011, a revised solicitation, ***Competitive Program For Science Museums and Planetariums Plus Opportunities for NASA Visitor Centers and Other Informal Education Institutions (CP4SMP+)***, was released.

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 (NASA-themed space exploration, aeronautics, space science, earth science, or microgravity, or combinations of these themes).
- 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 and available. 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 2011 CP4SMP+ NASA Research Announcement was released on 31 March 2011 and proposals were due 29 June 2011. Sixty-three (63) proposals from 30 states and the District of Columbia were received from NASA Centers, NASA Visitor Centers, museums, science centers and other institutions of informal education. These proposals requested amounts ranging in value from approximately \$154,000 to \$2 million. Examples of other institutions of informal education proposing include Challenger Centers and aquariums. Proposals will be reviewed through a merit-review process, which will include consulting with experts external to NASA. NASA's Office of Education and mission directorates will collaborate to solicit and review the grant applications. NASA's goal for announcement of selections is eight (8) months from proposal due date – in March 2012. All awards will have a maximum five-year period of performance. NASA may elect to make a full or partial selection of a proposal. Awards are subject to receipt of high quality proposals and Congressional appropriation of funds in FY 2012.

Should Congress continue funding CP4SMP+ in FY 2012, NASA may

- 1) select 2011 proposals for funding rather than open a new competition;
- 2) augment FY 2008 – FY 2010 CP4SMP+ awards (all proposers will be notified and required to submit a new or revised proposal);

All 31 previous CP4SMP grants were made using funds from years prior to fiscal year 2011. Two of the FY 2010 cohort awardees began their period of performance in FY 2011. Two awards (Adler Planetarium and Miami Science Museum) from the FY 2008 cohort were completed during the FY 2011 period. Periods of performance ranged from one to five years. Highlights from the results of these grants are listed below.

PROJECT CONTRIBUTIONS TO PART MEASURES

NASA Education FY11 Annual Performance Goal (APG) #8 stated: “420 museums and science centers across the country actively engage the public in major NASA events.” This APG was achieved by the Museum Alliance, a free-of-charge nationwide network of professionals at more than 420 science centers, planetariums, museums, aquariums, zoos, observatory visitor centers, NASA visitor centers, Challenger Centers, nature centers and park visitor centers. Created and managed by JPL, the Museum Alliance serves members in all 50 states, DC, Puerto Rico, and Guam, as well as over 20 other countries. The CP4SMP+ solicitation assisted NASA in attracting new partners to the Museum Alliance.

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

For the first time, the CP4SMP+ requirement for leadership of informal education projects to reside at informal education institutions (IEI) included NASA Visitor Centers. Selected projects will receive funds to support NASA-inspired STEM education activities, including exhibits. CP4SMP+ also provided limited K-12 teacher opportunities at NASA Headquarters and NASA Goddard via the Albert Einstein Distinguished Educator Fellows Program.

NASA has been developing a community of practice of the CP4SMP+ awardees to help them navigate NASA policies and processes including use of NASA logo, review of communications materials (CMR), educational product review, grants processes and resources, and reporting requirements. Communication is managed through a listserv for CP4SMP+ awardees and the CP4SMP+ Technical Officers at the NASA Centers. Webinars held for the community covered the use of the NASA Style Guideline for printed products and the NASA education product review, as well as an update on NASA grant issues.

The CP4SMP+ management team responded to requests for CP4SMP reports to the inventory of federal STEM education programs from OSTP and GAO, coordinating the response with the FY 2011 OEPM report.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Most of the FY08 cohort of awardees have completed the second year of their award and submitted their second annual reports, as required by NASA grant policies and regulations. All of the FY09 and a few of the FY10 cohorts have submitted their first annual reports. The reported total number of participants reached by all projects is given in the following table.

No. of Programs	Higher Ed Students	K-12 Students	K-12 Educators	Adults	Family
22	16	30,078	2,713	5,515	1,239,499

Highlights from these reports include:

- NNX09AL35G (FY 2008 Cohort):** In San Carlos, CA, the Hiller Aviation Museum’s Aviation Adventure Center Flight Sim Zone this year had 5,480 school children with 1,447 adult chaperones in 274 separate programs, 306 scouts in 22 programs, 99 children in 12 after school programs, 661 children in 195 summer day-camp programs, and 5,834 weekend and family visitors over 39 weeks. The combined total participants for the first two years was 26,996, each of whom received intensive, hands-on programming lasting at least 45 minutes. The Travelling Flight Science Lab (TFSL) version travelled to Evergreen Aviation Museum in McMinnville, OR for five months and was utilized in 140 programs for 841 people, then at Weisbrod Aircraft Museum in Pueblo, CO, where it was utilized by 325 people with 120 total hours of operation. TFSL is scheduled for stints at two other aviation museums in Dallas TX, and Windsor Locks CT.
- NNX09AL39G (FY 2008 Cohort):** In St. Paul, MN, the Science Museum of Minnesota’s (SMM) *Climate Change Education* project’s Climate Change Crew Youth Team aged 16-18 developed and implemented a 6-week curriculum on urban agriculture and healthy eating for 60 youth ages 6-14. The Climate Change Crew’s “Change is Needed” video has had thousands of views on YouTube, and won \$1000 in the Dream Reborn Story Contest (<http://www.youtube.com/watch?v=9BhbHppGFWs>).
- NNX09AL31G (FY 2008 Cohort):** 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. The Museum also hosted NASA Associate Administrator for Education Leland Melvin and his avatar in a virtual conversation with students.

- **NNX09AL68G (FY 2008 Cohort):** A part of Seattle Aquarium’s *Exploring Ocean Science from Space (EOSS)* project, the “Salmon Homecoming” event celebrated Northwest Native American culture and brought nearly 4,500 people to the Aquarium including nearly 200 teachers / chaperones and nearly 800 students from tribal and other schools located throughout Western Washington. Tribal communities worked closely with the Aquarium to bring science content for their students into the event and benefited from opportunities to access STEM science education during the event. The *Latino Family Night* was an evening of exploring Aquarium exhibits, learning about science and experiencing STEM-based hands-on activities for 445 multi-generational Latino community members who typically do not have access to the Aquarium. Spanish interpreters throughout the facility provided conversations and presentations to the guests.
- **NNX10AL88G (FY 2009 Cohort):** From Rapid City, SD, The Journey Museum’s *Journey to Space* project features a traveling Geo Dome (inflatable planetarium) to present standards-based earth and space science topics. The Geo Dome was featured at the Lakota National Invitational (LNI) in December 2010 and provided planetarium presentations to Gear UP students. Gear UP is designed to increase the number of American Indian and low-income students who achieve success in higher education. The dome was also part of the North Dakota Technology in Education (TIE) conference, which focuses on teaching materials, instructional practices, and technology applications for teachers.
- **NNX10AD94G (FY 2009 Cohort):** The National Mining Hall of Fame and Museum, Leadville, CO, completed creation of an informal, interactive, educational exhibit that will inspire and enthuse visitors to the exciting benefits and developments of space exploration as it relates to the nation’s mining industry. The NASA-funded exhibit *Expanding Boundaries: Harrison Schmitt and the New Mining Frontier* opened in August 2012. There are two goals for this exhibit:
 - Communicate information to inspire excitement and convey benefits of space exploration as it relates to the mining industry and our everyday lives.
 - Commemorate and honor Apollo 17 astronaut geologist Harrison Schmitt and share his contributions and experiences to foster interest in exploration and STEM disciplines.
- **NNX10AD90G (FY 2009 Cohort):** The Oregon Museum of Science and Industry (OMSI) in Portland, OR, took delivery of two Magic Planet spherical display systems and began the selection process for student interns from the Oregon Space Grant Consortium colleges to develop the programming for the system. In the *Earth from Space: Exploring Satellite Data to Better Understand Global Systems*, the Magic Planet systems will tour rural libraries and other institutions.
- **NNX10AK13G (FY 2010 Cohort):** In Hartford, CT, the Children’s Museum of Connecticut opened the new 350-square-foot Mars exhibit *Blue Planet, Red Planet: Exploring Planetary Science* on March 16, 2011. It has been viewed by more than 13,000 people. Associated educational materials have been pilot-tested by over 1000 people, and about 500 people in family groups tested the LEGO Mindstorms robots that will be used in classroom programs.
- **NNX10AK14G (FY 2010 Cohort):** The Arizona-Sonora Desert Museum near Tucson, AZ, held its first annual *Laurel Clark Earth Camp* for 20 middle and 20 high school students. Its first Earth Camp for Teachers was attended by 16 teachers, about half of whom will be launching after-

school Earth Clubs at their schools in addition to incorporating Earth Camp materials in their classrooms (<http://desertmuseum.org/earthcamp>).

- **NNX10AK17G (FY 2010 Cohort):** Pacific Science Center in Seattle installed a new Zeiss Spacegate Duo digital projection system and is updating its existing planetarium shows to incorporate NASA content. To date, 501 shows have reached 14,844 general public visitors, and 127 school shows have reach 5,143 students and teachers.

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>