

Opportunities in Science Mission Directorate Education and Public Outreach
Abstracts of selected proposals.
(NNH06ZDA001N-EPO)

Below are the abstracts of proposals selected for funding for the Opportunities in Science Mission Directorate Education and Public Outreach program. Principal Investigator (PI) name, institution, and proposal title are also included. 80 proposals were received in response to this opportunity, and 15 were selected for funding.

Jacqueline Barber/University of California-Berkeley
Advancing Teacher Leaders in Space Science: Supporting Coherent Science Instruction Among Teachers Nationwide, Using the New NASA/GEMS Space Science Sequence and Other NASA/SMD Content and Resources

In response to the need to create the next generation of NASA explorers and promote a space science literate populace, space scientists and educators from the University of California at Berkeley's Lawrence Hall of Science (LHS) and Space Sciences Laboratory (SSL) propose to collaborate on the Advancing Teacher Leaders in Space Science (ATLSS) project. ATLSS will create distributed and leveraged professional development centers nationwide to:

- (1) Help teachers and teacher leaders engage and educate students and other teachers in space science, utilizing innovative instructional strategies, effective curricular resources, and engaging content., and
- (2) Promote coherent use of NASA resources and content by teachers and teacher leaders.

Eight regional partners will host sites at science centers, planetaria, universities, and county/district education offices in: Tucson, AZ; Stockton, CA; Pierre, SD; Fredonia, NY; Chicago, IL; Albuquerque, NM; Carson City, NV; and Mount Pleasant, MI. With these strategic partners, ATLSS will provide sustained capacity building and reach out to underserved and underrepresented communities.

ATLSS Centers will provide professional development in the use of curriculum resources that help students construct essential, foundational understandings of standards-based space science concepts, with the NASA-developed GEMS Space Science Sequences for grades 3-5 and 6-8. Other NASA-developed resources, including hands-on lessons, websites, CD-ROMs, and materials that feature engaging mission-related content will be linked to the foundational content in meaningful, coherent ways.

Pairs of leaders from each ATLSS Center will attend professional development sessions presented by LHS and SSL staff. Regional workshops will follow, co-presented by regional leaders and LHS-SSL staff. ATLSS Center leaders will provide ongoing and sustained professional development and support to teachers in their regions, to help meet space science learning objectives.

ATLSS will include a capstone symposium featuring a range of implementation models that effectively integrate foundational space science content with NASA-developed resources.

**Emily CoBabe-Ammann/University of Colorado-Boulder
Project SPECTRA! Bringing Hands-On Engineering And Solar System
Exploration Data Stories To Middle And High School Students.**

Project SPECTRA! combines math and science in an engineering framework that emphasizes hands-on activities and data rich exercises for middle and high school students. Using spectroscopy as its framework, Project SPECTRA! explores how light can give us information about the planets in our solar system. Project SPECTRA! drives students to explore the space science and engineering by working with authentic data. Problem-solving and engineering builds add to the depth of the Project SPECTRA! materials.

Initial funding for the program has led to the development of three foundational lessons in spectroscopy, two engineering build lessons and one solar system data story that focuses on comparing Cassini data from Titan's atmosphere and Saturn's rings. This proposal seeks support to 1) complete two additional foundational lessons on spectroscopy of surfaces and the use of occultation to explore atmospheres, 2) develop three new engineering builds, and 3) expand the data stories aspect of project spectra to include 12 data stories from across the solar system, using data from a variety of NASA missions and programs. The data stories aspect of Project SPECTRA! has been demonstrated to be the most exciting and accessible to middle and high school students during formative evaluation. Members of the Solar System Exploration Educational Forum, among others, has offered to provide input for the new data stories, which will be available both as pencil and paper exercises and as computer-based animations. Finally, this proposal seeks support for an extensive evaluation program in multiple test-beds, including in-class and after school venues., as well as dissemination of Project SPECTRA! materials through a variety of established pathways.

**Emilie Drobnes/ADNET Systems, Inc.
NASA Family Science Nights: Changing Perceptions One Family At A Time**

We propose to refine and expand a successful pilot Family Science Night program, conducted during the 2006-2007 school year at Goddard Space Flight Center with support from the Solar Dynamics Observatory.

Parents and families have the greatest influence on children's attitudes towards education and career choices. If students' attitudes towards science, particularly the physical sciences, are not influenced positively by parental/familial attitudes, efforts to improve the quality of content and teaching of these subjects in school may be futile. Research shows that parental involvement increases student achievement outcomes, and family-oriented programs have a direct impact on student performance.

Based on this premise, the NASA Goddard Space Flight Center started a series of Family Science Nights for middle school students and their families. The program provides a non-threatening venue for families to explore the importance of science and technology in our daily lives by engaging in learning activities that change their perception and understanding of science - making it more practical and approachable for participants of all ages. Family Science Night strives to change the way that students and their families participate in science, within the program and beyond.

Through a partnership between the Heliophysics and the Astrophysics Science Divisions at NASA Goddard, we will enhance the current program and increase the frequency and content areas of Family Science Night events. Through extensive research and evaluation, we will develop a robust and exportable program which will eventually include a partnership with the two other Science Divisions at Goddard and prepare it for export to other NASA centers, science centers, schools, and home school groups.

Mary Dussault/Smithsonian Astrophysical Observatory
Observing With NASA: Facilitating Pathways For Authentic STEM Inquiry With Real Space Science Data Using A Robotic Telescope Network And An E-Learning Infrastructure

The Smithsonian Astrophysical Observatory (SAO), in partnership with the Space Telescope Science Institute (STScI), proposes to enable student and public audiences nationwide to join the community of NASA space science observers during the 2009 International Year of Astronomy and beyond, by providing them with universal access to SAO's MicroObservatory online telescope network. We will create and test an integrated suite of online tools and instructional resources for engaging new audiences in authentic observing experiences inspired by NASA's space science imagery. As a case study, we will develop and test strategies for using these new resources to enhance and deepen STScI's widely-used Amazing Space education program. This component of the project will inform the future development of many SMD Education and Public Outreach (EPO) programs that may wish to connect their audiences to (or draw them from) personal telescope observing experiences.

Our portfolio of "Observing With NASA" resources will include:

- 1) A customized online interface to the MicroObservatory telescopes that will allow users to control the telescopes to acquire images of objects in the solar system, galaxy, and beyond
- 2) Field-tested telescope investigations that link to specific NASA programs, missions and opportunities for further real-data research and exploration
- 3) Professional development experiences for educators
- 4) Tools to help other NASA educators use the telescopes, including graphic, software, and XML tools to create customized "Guest Observer" interfaces to the telescopes

The project has 3 intended audiences: students and teachers in grades 5-9; informal educators; and NASA EPO program managers who may wish to connect their own programs to Observing With NASA opportunities.

The program will connect to science and data resources from NASA's SMD programs in astrophysics and planetary science. It will contribute measurably to two of NASA's major education goals: attracting and retaining students in STEM disciplines; and engaging Americans in NASA's mission.

Jeffrey Gillis-Davis/University of Hawaii, Manoa
Tour Through the Solar System: Using NASA Data Sets For Inspiring High School Level Science And Mathematics Education Through Problem-Based Learning.

Education has always been a fundamental part of achieving the American Dream. We propose developing an engaging problem-based learning curriculum in planetary geology, geochemistry, and geophysics. Our partnerships with Upward Bound, GEAR UP Hawaii, the Hawaii Department of Education (HiDoE), and the Hawaii Space Grant Consortium will help ensure students throughout Hawaii receive high-quality education and a chance to grow their dreams.

Spacecraft observations of the planets have transformed these bodies from wandering points of light into fascinating real worlds more strange and diverse than imagined. We will take advantage of inspirational NASA data sets to engage high school students. Imagery and geophysical data sets will provide the basic foundation to help high school students learn science and mathematics concepts. Practical application and experimentation will lend tangible examples to abstract principles. To this end we will develop a curriculum that is comprised of (1) modular lesson plans, (2) teacher tutorials, and (3) hands-on laboratory experiments based on existing materials, so as not to reinvent the wheel, and supplement these with the latest NASA mission materials that we work with. Our task is to package these pieces into a coherent theme of planetary exploration that is aligned with national and Hawaii education standards in Earth and Space Science, Physical Science, Mathematics, and Technology.

Targeted in our educational population will be students in four Hawaii's Upward Bound Programs, who predominantly are low income and from families in which neither parent holds a bachelor's degree, and are of Native Hawaiian and Pacific Islander heritage - an underrepresented university demographic. We will provide the Hawaii Upward Bound Programs with a science and mathematics curriculum based on NASA data sets. Our combination of classroom and laboratory-based planetary studies will: (1) Promote STEM education, (2) Increase the number of high school students in the education pipeline, and (3) Increase the number of high school students interested in STEM education and career opportunities through increasing student proficiency in STEM areas and exposure to STEM occupations. To assess our achievement towards these goals we will build on the Upward Bound Programs' established evaluation efforts. To maximize dissemination of curriculum all materials will be available online. We will also promote materials by giving presentations and demonstrations at teaching workshops in Honolulu (in partnership with GEAR UP, HiDoE and the Hawaii Space Grant Consortium), at national meetings (such as the Lunar and Planetary Science Conference, the American

Geophysical Union, National Upward Bound meetings), and through the University of Hawaii Space Grant Consortium Hawaii-STEM pipeline.

James Harold/Space Science Institute

Finding NEO: Using The Search For Asteroids As A Framework For Engaging Web, Science Center, And Library Audiences In Astronomy, Mathematics, And Engineering Topics

The proposed work will develop a mini-exhibit consisting of video vignettes and interactive computer activities, to be delivered to small science centers and libraries. The content will also be delivered over the Web in partnership with existing, well established Web sites.

The exhibit will focus on Near Earth Objects (NEOs), asteroids, and asteroid research, topics which are both naturally engaging and provide opportunities to discuss a wide range of fundamental science, including the origins and evolution of the solar system, the role of gravity, and orbital mechanics. In addition, since the most common asteroid related question in the public's mind is essentially "Will we get hit?", asteroids provide an excellent opportunity to discuss mathematics topics relating to probability, statistics, and risk assessment. Combined with the engineering and physical issues of diverting asteroids, we have a framework which is both closely aligned with NASA research, and connects to each component of STEM education. Finally, by choosing a robust, small exhibit to deliver the content, we are able to build relationships with libraries and small science centers, institutions which reach diverse populations but often do not benefit from larger exhibit development programs.

The mini-exhibit will be designed to be extremely portable, inexpensive, and low-maintenance. The computer interactives will be game-oriented activities designed to address specific learning goals relating to the topic area. The video vignettes will focus on the role of amateur astronomers, who are playing a key role in certain areas of asteroid research. We will combine these activities and videos to deliver a three-fold message: how astronomers learn about asteroids, the significance of that research, and the role of backyard amateurs in the research. All content will be delivered in both English and Spanish in order to maximize its reach.

Nancy Leon/ Jet Propulsion Laboratory

Making Every Place The Space Place: Nurturing Old and New Partnerships for Formal and Informal Education

Key, central objectives:

We propose to bring already-developed NASA science, technology, engineering, and math (STEM) content to tens of thousands more people each month. To accomplish this goal, we will (1) expand our existing network of formal and informal education partnerships, and (2) update our partnership with the Boy Scouts of America. Expanding

and enhancing these partnerships will leverage the efforts already expended in developing extensive Science Mission Directorate (SMD) STEM content.

Ours is a unique NASA education and public outreach (E/PO) program called The Space Place. This program has been reviewed, evaluated, and proven to work.

Much of The Space Place program's mission is to deliver NASA Science Mission Directorate (SMD) content and messages to elementary school age children and their teachers. The program has developed a vast network of national and local partnerships to distribute a range of high-quality, content-rich, interconnected products.

Task 1: Expand Our Network of Partners

a) Newspapers

Among the products of The Space Place program are short monthly "news" articles for elementary students. The articles introduce current space and Earth science and technology topics and relate them to specific NASA missions. Several partnering newspapers regularly publish the articles on their children's pages.

The potential for expanding this network of newspaper partners is great. We will contact newspapers in small, rural communities, the locales of most of our 350 museum and library partners. (These museums each have a NASA Space Place display board, which we "restock" monthly with NASA materials.) Partnering as well with the local newspapers in these communities would reinforce NASA SMD messages and enrich the STEM experience of this rural audience.

b) NSTA and ITEA state affiliates

NASA has a large presence at the national conferences of the National Science Teachers' Association (NSTA) and the International Technology Education Association (ITEA). However, many additional classroom teachers are active in their own state affiliations. Most of the states have their own NSTA and ITEA affiliated organizations and state conferences, which many more classroom teachers can attend.

The Space Place program has contacted a few of these state affiliates and pilot-tested a new column for their newsletters. We will broaden the pilot test, refine the customized product, then expand the effort to offer it to all state NSTA and ITEA affiliates. These new partnerships will give us another way to reach classroom teachers with our SMD content.

Task 2: Update matrix of Cub Scout advancement requirements that can be met by The Space Place Web site activities.

Our main vehicle for presenting NASA SMD content we create is our award-winning Web site, also called "The Space Place." Many of the activities on this Web site have been approved by the Boy Scouts of America (BSA) as meeting the full or partial requirements for certain Achievements and Electives. In 2002, we created a matrix of those requirements with links to corresponding Space Place Web pages that can help Cub

Scout advancement. Since then, much new content has been added to Web site and some of the scouting requirements have changed. We will work with the BSA to update the matrix.

Significance:

The proposed tasks will leverage the work already done as part of the tried and true E/PO program, The Space Place. The expansion of our network of newspaper partners will work not only to reach a larger audience, but reinforce the SMD and STEM content we provide our museums and library partners for display. Linking up with state NSTA and ITEA affiliates will bring our materials into numerous classrooms. Finally, updating our partnership with the BSA will bring this valuable NASA informal education resource to a new generation of scouts.

Leslie Lowes/Jet Propulsion Laboratory

From Out-of-School to Outer Space: Exploring the Solar System with NASA

"From Out-of-School to Outer Space: Exploring the Solar System with NASA" fills a unique niche in NASA's SMD E/PO portfolio, providing science resources and training adapted for the unique needs of out-of-school time (OST) programs. It stems from recommendations from recent NASA-supported research and collaborative strategic planning with key representatives of the OST community and members of our project team.

Our objectives are to:

1. Enable OST professionals to provide engaging, enriching, unique-to-NASA, equity-based STEM experiences, by using their input to adapt three existing, educationally sound, SMD Planetary Science formal education curricula that are best suited for upper-elementary/middle-school OST use.
2. Partner with technical assistance providers at key OST intermediary organizations to develop a training model to build the capacity of OST program staff to incorporate these adapted NASA materials.
3. Pilot and evaluate this training with leaders in southern California and New York City, key markets for funding universal access to OST programs, serving populations with high percentages of underrepresented minority youth.
4. Provide for dissemination of the adapted activity guides, training model, and linkages to related NASA activities through the major OST and NASA education dissemination points.
5. Encourage the development of a community of practitioners and developers of NASA OST products and enable them to adapt future products by providing a central source of information, a communication mechanism, and a professional development workshop.
6. Provide suggested criteria for NASA SMD review of products for OST.

OST programs provide more flexibility for leaders to select their own content, pursue long-term projects, and focus on student interests. Science is valued as a critical means to serve the direct academic needs of youth, increase literacy scores, and provide the inspiration necessary for student success. However, many OST leaders are

paraprofessionals with little science training, so even the best-suited NASA materials must be adapted for OST use.

This project uniquely addresses NASA's Education Outcome 3: Engage Americans in NASA's Mission by targeting a community on the crossroads between formal and information education. Often taking place at schools, and held accountable for school success related goals, OST programs strive to provide informal instruction relevant to formal education goals.

OST programs serve large numbers of low-income and minority young people. Reaching this audience traditionally underrepresented in STEM careers can help to sustain the NASA workforce, and engage more Americans in NASA's mission. We focus on the upper-elementary/middle-school age when children are deciding if they "like" science, using solar system content because these national and state standards are typically addressed at that time.

We will meet our objectives in phases, using formative evaluation to assure quality and usability of the products and training, and summative assessment to determine impact of our work:

- . Formation of guiding committee for assessment of candidate formal education products, adaptation suggestions, and training model input
- . Adaptation and field testing of adapted curricula
- . Development of adaptation guidelines and review criteria
- . Development and delivery of training model and supplemental video
- . Dissemination of products to major NASA and OST conferences and websites

Appropriate linkages to related NASA activities and content information will be identified by the guiding committee and embedded in the adapted activity guides, associated training, and dissemination sites.

By making widely available the activity guides, training models, guidelines, website, and list server for the community of practitioners, our project empowers the OST and NASA communities far beyond the specific groups we reach to use and produce NASA materials for future OST settings.

Sandra Preston/The University of Texas at Austin
The Texas Connection: Elementary and Secondary Teacher Professional Development Via Videoconference

Texas is a big state -- 1,244 km (773 miles) from east to west and 1,289 km (801 miles) from north to south. The state is as diverse as it is big, with over 45% of its student population of Hispanic ethnicity. We'll use videoconferencing technology to connect with the 20 education regions in Texas to develop, test, and implement professional development workshops for 500 3rd-8th grade teachers across the state. Science specialists from the 20 education regions in Texas and the Texas Regional Collaboratives will train as co-facilitators at a workshop at McDonald Observatory to assist with this project. As a result, 3rd-8th grade teachers will be able to participate in professional

development via videoconferencing, without leaving their geographic area. They will receive STEM content that will enable them to facilitate hands-on, inquiry-based activities with their students that cover core concepts in Earth and Space Science and meet National Science Education Standards, Texas Essential Knowledge and Skills, and Texas Assessment of Knowledge and Skills for science.

We are building this project based on existing knowledge and products. Deliverables from past NASA grants create a rich cache of resources that we will share with teachers who participate in this project. Resources range from activities, to Web sites, to NASA Pipeline materials. Process and outcome evaluation will take place.

This project addresses NASA's SMD Portfolio for Elementary and Secondary Education by providing professional development and training opportunities to educators, equipping them with the skills and knowledge to attract and retain students in STEM disciplines, providing deeper content understanding and competence, and confidence in teaching STEM disciplines. It provides curricular support resources that use NASA SMD content to enhance student skills and proficiency in STEM disciplines, inform students about STEM career opportunities, as well as communicate information about NASA's mission activities.

Daniella Scalice/NASA Ames Research Center
NASA and the Navajo Nation 2: The Moon

"NASA and the Navajo Nation 2: The Moon" represents an opportunity to continue an emerging collaboration with, create unique educational materials for, and deliver professional development programming to an underrepresented constituency. The proposed activities build on prior successful efforts, and offer a chance to implement valuable lessons learned. The overarching goals of the project are:

- Inspire and engage Navajo youth in schools and communities on the Navajo reservation to become culturally and scientifically knowledgeable about the Moon;
- Promote a sustainable partnership between NASA and the Navajo Nation.

The specific objectives of the project are:

- Create educational materials for use on the Navajo reservation which weave together NASA science and Navajo knowledge of the Moon;
- Engage both NASA scientists and Navajo cultural leaders to provide professional development opportunities for Navajo educators with the materials;
- Provide opportunities for education leaders within NASA and the Navajo Nation to interface and work toward future collaborations;
- Initiate dialogue with colleges and universities on the Navajo Nation and its surrounds toward the further integration of higher education into the collaboration.

The proposed activities outline a comprehensive approach to materials development and implementation, and fall into several sequential phases: Product Research, Product

Development, Field Testing, Finalization and Delivery, and Implementation and Professional Development. Each phase will incorporate activities which both advance the growth of the partnership, and employ tools to evaluate our efforts as thoroughly as possible.

NASA's education goals and conceptual basis for its Education Portfolio parallel the educational priorities and natural implementation patterns of the Navajo Nation; this project duly embodies the values of both organizations. By working at the community, classroom, and college level, this project connects activities across the NASA Education Strategic Framework, and addresses all three of NASA's education goals: Engage Americans in NASA's mission, Attract and retain students in STEM disciplines, and Strengthen the future workforce of NASA and the nation.

Robert Semper/Exploratorium

Total Solar Eclipse: Stories from the Path of Totality

This proposal from the San Francisco Exploratorium builds on the popularity and success of previous NASA partnerships to bring public programs, educational resources, and live coverage of two rare total solar eclipses to homes, schools, universities, museums, and news venues worldwide.

Working with NASA's Sun-Earth Education Forum, we'll send NASA and Exploratorium scientists and educators, along with our "Live@ the Exploratorium" technical crew, to the northern reaches of China in 2008, and to the mysterious island of Rapanui (Easter Island) in 2010. In the field, team members will work with local communities to set up more than half a ton of equipment and, via satellite and the Internet, transmit live eclipse images in real-time to an international audience of tens of millions of people, both through the public media and NASA-TV. These Webcast programs will feature NASA scientists and educators interpreting the eclipses, which cannot be seen in the United States, for a global audience. Program content in 2008 will focus on International Heliophysical Year; in 2010, on Solar Maximum.

In addition to these live programs, the Exploratorium will also update its award-winning Web site to archive these presentations for ongoing availability. We'll stream the program live to the five-million-plus virtual "residents" of the online world of Second Life, and make portions available through the National Science Digital Library and on popular video-sharing venues such as YouTube. We'll also work with the Asian-American, Hawaiian, and Pacific Islander communities in the United States to develop a new educational Web site that will focus on the celestial navigation traditions and accomplishments of the Pacific Islands.

Together, these programs offer exciting live presentations, as well as long-term sustainable resources and dissemination for NASA on an international scale.

Stephanie Shipp/Lunar and Planetary Institute

Science and Education Faculty Collaborations to Improve Earth and Space Science Teacher Preparation

A collaboration of scientists and science education specialists, working with the Association for Science Teacher Education (ASTE), and the National Association of Community College Teacher Education Programs (NACCTEP), propose to offer Faculty Institutes for faculty involved in teacher preparation.

The two-day institutes will: 1) immerse 60 participants each year in best science education practices for use in teacher preparation with respect to space and Earth science; 2) utilize appropriate curricular support resources for teacher educators that leverage NASA Science Mission Directorate (SMD) content and data to enhance student skills and proficiency in STEM disciplines and communicate information about SMD mission activities; and 3) create a network of teacher education faculty from community colleges and universities nationwide.

The Pre-Service Institute Collaborative will strengthen the abilities of teacher preparation faculty in providing professional development in space and Earth science to future educators. As a result, these future teachers will be equipped with the skills and knowledge to attract and retain students in STEM disciplines and deeper content understanding and confidence in teaching space and Earth science. The Institutes created and refined will serve as a professional development model for pre-service faculty institutes that can be used by future professional development providers.

Amy Simon-Miller/NASA Goddard Space Flight Center Solar System on a Sphere

We propose to create two fully stand-alone programs about the Solar System for the 'Science on a Sphere' (SOS) apparatus developed by NOAA. The SOS consists of a six-foot diameter spherical projection screen suspended in the center of a room and a set of projectors that illuminate the sphere on all sides. The projectors are coordinated so the sphere will appear to be, for example, a rotating Earth showing evolving weather patterns. SOS systems are currently set up and operating in 14 museums and science centers across the country, including at the Goddard Visitor Center, but only one stand-alone program has been developed for them, the 'Footprints' presentation recently created at Goddard Space Flight Center. We plan to use the existing experience here at Goddard to create these new programs for the SOS. Stand-alone programs for SOS are in high demand by the institutions currently housing the systems. A potential audience of millions of viewers a year exists for these programs. We will combine science, educational, and visualization expertise to produce one program telling the story of NASA's Solar System exploration and another highlighting the exciting discoveries on Jupiter, with an eye to producing more programs like this in the future. Our objective is to teach general and targeted audiences about the Solar System and NASA's role in its exploration.

Denise Smith/Space Telescope Science Institute
The International Year of Astronomy and Beyond: Libraries as a Pathway to Inspiring, Engaging, and Educating Tomorrow's Explorers

In 1609, Galileo Galilei turned a new piece of technology towards the heavens, triggering a scientific and cultural revolution of our understanding of the universe and our place in it, a process that has accelerated in our day through NASA-sponsored observatories and space probes. The International Astronomical Union has proclaimed 2009 the International Year of Astronomy (IYA), in recognition of the continuing legacy of Galileo's initial observations - and the accompanying opportunity to spread interest in astronomy's contributions to science and culture.

The Space Telescope Science Institute (STScI) and the Smithsonian Astrophysical Observatory (SAO) propose to bring the NASA Science Mission Directorate's (SMD) contributions to the story of astronomical observation and discovery to communities across the nation through an IYA-themed traveling exhibition designed for libraries and the formal and informal science education audiences that they serve. By providing free and convenient access to educational materials and programs, libraries play an important role in nurturing a lifelong journey of discovery for both children and adults. The IYA presents a unique impetus for libraries to incorporate NASA content and expertise into these offerings.

STScI and the SAO will develop and disseminate the traveling exhibition in partnership with the American Library Association (ALA). The proposed effort leverages existing STScI, SAO, and ALA expertise, and includes: 1) IYA-themed exhibit panels; 2) accompanying educational resource collections that invite further learning and discovery; 3) coordinated speaking opportunities that connect local scientists - and their stories - to the youth and families in their communities; 4) professional development for librarians and scientists; 5) formative and summative evaluation. As few NASA E/PO programs target libraries, the proposed work will extend NASA SMD resources to new audiences. The ALA connection also provides a unified approach to reaching and leaving a lasting legacy with formal and informal science education audiences.

James Thieman/NASA Goddard Space Flight Center
Sun-Earth Day

Sun-Earth Day, a yearly celebration of the Sun and its impact on Earth and the Solar System, is a highly effective and popular Education and Public Outreach program produced by NASA's Sun-Earth Connection Education Forum. Annually, Sun-Earth Day (SED) highlights a theme and uses special events throughout the year to inspire and help participants learn about the science of Heliophysics. Since 2001, a team of scientists and educators from NASA/Goddard Space Flight Center and UC Berkeley Space Sciences Laboratory has engaged tens of millions of people around the globe in NASA's Heliophysics science and discoveries with unprecedented success. We will build upon the legacy of past "Sun-Earth Days" and take advantage of high-leverage opportunities to

enhance K-14 education and inspire America's public with the wonders of our Sun and space environment. We will augment the SED 2008 theme "Space Weather Around the World" with additional activities to highlight the International Heliophysical Year, and produce two more years of SED with new themes and activities. Tapping the global excitement of the 400th anniversary of Galileo's pioneering use of the telescope, the theme for SED 2009 will be "International Year of Astronomy: The Sun - Yours to Discover." For SED 2010, we will draw energy and excitement from the upcoming "solar maximum" to engage the community in the Sun's magnetic personality and its impacts on humans. In 2010, the SED theme will be "SolarMax: Human Impacts," which will focus attention on space weather and the sunspot cycle that is expected to peak around that year. For this solicitation, we will expand existing efforts and develop new coordinated activities in 2008, 2009, and 2010. All components will feature heliophysics mission launches, heliophysics data and scientists, and partnerships with the broad space science and education communities. Independent project evaluation will measure impact of SED.
