SPACE SCIENCE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Voyages in Education and Public Outreach
An Office of Space Science Newsletter

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**To Mars with MER**

*Geoffrey Haines-Stiles, Passport to Knowledge*

"I never thought science could be so exciting…" "Can I join a NASA club?" "…I learned that Mars isn't really red… and that rovers go really slow…" "Thank you for taking time out of your busy schedule to plan this joyful event…" "The egg drop was great, and if the egg broke, that meant the robot broke…" "Every person who helped MER get this far should be proud of themselves…"

Those were some of the comments from 270 Chicago-area youngsters who gathered at DePaul University on SpaceDay 2003 to participate in "Countdown to Mars," the first of 6 hour-long broadcasts in *Passport to Knowledge's* (P2K's) 2-year **To Mars with MER** (TMwM) project. The project includes videos, Web sites, hands-on activities (like the "Great Egg-Drop Challenge" that appealed to the Chicago kids) and regional outreach events—all designed to inform and excite youngsters and general audiences about the science and engineering—and people—of NASA's ambitious Mars Exploration Rover (MER) mission.

On May 1, the Chicago youngsters were joined by MER engineers, and linked by satellite to NASA's Jet Propulsion Laboratory (JPL) where Project Scientist, Joy Crisp, and others responded to questions—from Chicago, New York, Fort Collins, Colorado, and East Central Los Angeles. More than 120 PBS stations carried the broadcast, hosted by Bill Nye The Science Guy, live or on tape delay, reaching almost 2 million viewers, as well as NASA-TV. Nearly 300 "On-Air" e-mails came in during the broadcast, and were answered in real time by MER scientists and engineers at JPL, Arizona State, and Cornell, including Science Team Lead, Steve Squyres.

The May 1st event was just the beginning of TMwM. A primetime documentary, "Bouncing to Mars," premiered on participating PBS stations in summer 2003. Many stations plan to air or rerun this "behind-the-scenes" story of the time-pressured development of the MER mission this Fall. Two more programs for science centers, schools and planetariums are planned. On January 17, 2004, "First Look" originates live from the Houston Museum of Natural Science and JPL from 3:00-4:00 PM EST—shortly after the January 4th

*Some of the 270 young Chicagoans who were happy to learn about Mars and NASA's rover mission during "Countdown to Mars. "*

## On the Inside

landing of the first rover "Spirit" and focuses on initial science activities. On May 1, NEW VIEWS will link the St. Louis Science Center with JPL. The broadcasts, appearing on participating PBS stations and NASA-TV, are free for science centers, schools and noncommercial media to downlink and host public events, or record for future use. Both programs will be accompanied by a 2 hour block of live online interaction with Mars experts. Completing the set of 6 videos will be two more prime time documentaries for general audiences, "Six Minutes of Terror," airing close to the landing dates, and "Following the Water," will wrap up what are certain to be new discoveries about water and life on Mars in late Spring 2004.

Targeted outreach events are being planned for Houston, St. Louis, New York City, Minneapolis-St. Paul, and the Philadelphia region. Part of P2K's efforts will also support museum docent and K-12 teacher workshops in Durango, Colorado, at the Children's Museum and special presentations at the Western Planetarium Association meeting at the new Clark Planetarium in Salt Lake City, Utah, and at the 2003 Association of Science and Technology Centers meeting.

To find out more, you're invited to visit P2K's **To Mars with MER** Web site, http://passporttoknowledge.com/mars . *Voyages* readers are invited to contact Geoff Haines-Stiles or Erna Akuginow at (973) 656-9403 or via Email [ghs@passporttoknowledge.com ] to see how you and your constituents can participate. We especially wish to hear from NASA Aerospace Educators and Broker-Facilitators who are invited to participate on- and off-camera.

We hope that after the events those you reach and serve will echo these words from the Chicago youngsters.

"I talked about the entire experience for days afterwards…" "I hope to visit next year…" "I would like to do more studying in this direction…" "Thank you, NASA."

TMwM is funded with continuing support from NASA Office of Space Science and in part by a major grant from National Science Foundation. In TMwM, P2K is partnering with the DePaul University Space Science Center for Education and Outreach, the Space Science Institute, and JPL's Mars Public Engagement Office.

# *Awards*

## NASA Public Service Group Achievement Award to McREL

NASA's Public Service Group Achievement Award has been given to the education research laboratory, *Mid-continent Research for Education and Learning*, [McREL — http://www.mcrel.org], for its support of NASA's Genesis Discovery mission. One of ten regional education research laboratories in the United States, McREL has been supporting the Genesis solar sample return mission by translating mission science content into standards-aligned learning materials for teachers and the public since 1998. The award ceremony will be held October 2, 2003, at NASA Jet Propulsion Laboratory. For more information, visit the Genesis Web site at

http://genesismission.jpl.nasa.gov .

## Rosendhal Receives Outstanding Leadership Medal

At the 2003 NASA Honor Awards Ceremony, Dr. Jeffrey Rosendhal, director of the NASA Office of Space Science Education and Public Outreach program was recognized for his contributions to the NASA education program with the Outstanding Leadership Medal. The citation reads, "For your dedication and innovation in bringing the excitement and accomplishments of the Nation's space program to America's children."

*Dr. Jeffrey Rosendhal with NASA Administrator, Sean O'Keefe (L) and Deputy Administrator, Frederick D.Gregory (R). Photo Credit-NASA/Bill Ingalls.*

## ViewSpace Receives MUSE Award

*John Stoke, Space Telescope Science Institute*

**ViewSpace**, the multimedia astronomy product for planetariums [*see Voyages, issue 3*] has received an award from the American Association of Museums (AAM). At the AAM conference this May**, ViewSpace** was awarded a bronze MUSE award in the science category. The citation on the plaque reads: "In Recognition of the Highest Standards of Excellence in the use of Media & Technology for Interpretation and Education in Science."

Judges commented - "This was great. It was like seeing a sky show on my PC. And while the images were spectacular, it wasn't just about the images. The content was great, too — interesting, clear, well-presented, and wonderfully illustrated with these great photos." They were particularly impressed that the project was done in-house.

Another user commented: "With the **ViewSpace** project we have found, to our delight, that museum audiences will linger for long periods and drink in Hubble's amazing views of the universe".

For more information on **ViewSpace** and the MUSE awards, see http://www.mediaandtechnology.org/muse/2003muse_science.html .

## Communicator Award for Discovery Program Video

A 23-minute video overview of the **Discovery Program** and its 10 missions entitled, "Unlocking the Mysteries: NASA's Discovery Program" won 2 awards in The Communicator Awards 2002 Video Competition for Video/Film/Multi-Media Productions: one Crystal Award of Excellence (the top award) in the "Government/Other" category and an Award of Distinction for "Creativity—Writing." Shari Asplund, Discovery Program Office E/PO lead and Richard Goldberg, writer/producer in Television Productions at the Applied Physics Laboratory produced the video.

*Mid-continent Research for Education and Learning*, McREL, is now working with Ms. Asplund to develop a student activity and teacher guide based on the video. The guide is aimed at grades 5-8 and addresses several national education standards. Students will learn about Discovery and the missions, and then design a mission of their own. The CD will also contain one fun educational activity from each of the 10 missions.

For more on the **Discovery Program**, see http://discovery.nasa.gov/ or the Communicator Awards, see http://www.communicator-awards.com/ .


*Ms. Shari Asplund with the Communicator Crystal Award of Excellence.*

# Updates

## ROSS E/PO 2003 Awards

NASA's Office of Space Science is pleased to announce that final E/PO awards have been made for ROSS 2002-03. A total of 76 E/PO proposals were submitted in conjunction with new parent research programs and 35 of those proposals were selected for funding for a total of $570K. Combined with prior ROSS E/PO awards and the E/PO awards from the IDEAS program and Guest Investigator programs of Hubble and Chandra, there are over 100 currently active small grant E/PO projects underway across the country.

## Solar System Ambassadors Seize Opportunities

*Ms. Kay Ferrari, NASA Jet Propulsion Laboratory*

**Solar System Ambassadors** [*see Voyages, issue 5*] are a dedicated group of volunteers selected to bring the message of NASA's space exploration efforts to Americans through public presentations. Even unexpected developments cannot dampen their enthusiasm, as shown in the experiences of Ambassador and Army physician Keith Steinhurst. He was deployed to Iraq earlier this year and took advantage of the "opportunity" — hosting informal Ambassador events for the troops underneath the spectacular nighttime skies of Iraq. Tailoring his talks to the interests of his audience, Keith shared his knowledge of space exploration with soldiers eager for a break in a sometimes tense daily routine.

*Dr. Keith Steinhurst (second from right) and fellow members of the Army's 1st Medical Brigade in Tikrit, Iraq. Photo courtesy of Col. Anita Schmidt, US Army.*

Meanwhile back in Florida, Ambassador Robert Gass was hosting launch events for the Mars Exploration Rover missions. With help from Solar System Educator [*see Voyages, issue 2*] Erik Landstrom, and partnerships with the NASA Kennedy Space Center Visitors Center, Boeing and Cornell University, those who attended the event at Jetty Park on June 28 were treated to a smorgasbord of activities including a view of Mars through a 10-inch telescope, 3-D photos, a meteorite display, videos, speakers (Bill Nye The Science Guy and Steve Squyers, science lead, Cornell University) and games ("Guess My Weight on Mars" and "Let's Make a Martian Deal"). With IMAX and the documentary production company, Twist, set up for filming (along with local TV and newspapers), the park was filled to capacity. Even with steady drizzle that eventually caused the launch to scrub, crowd estimates were around 7,000 people.

For information on the Ambassadors program, see http://www.jpl.nasa.gov/ambassador/ .

## SSI Hosts Workshop for Scientists, Engineers, and Education and Public Outreach (E/PO) Professionals

With funding from NASA's Office of Space Science and the National Science Foundation, the Space Science Institute (SSI) hosted its 9th annual K-12 Education Workshop for Scientists, Engineers, and Education and Public Outreach Professionals, May 4-7 in Boulder, Colorado. The workshop offered participants the knowledge necessary to both contribute meaningfully to E/PO and to design and implement effective E/PO programs in connection with scientific research programs. In addition to these annual 4-day workshops, SSI offers special topic and institutional workshops to help scientists and engineers become better partners and supporters of professionals in formal and informal science education. For more information, please go to http://www.spacescience.org, and click on "Workshops," or contact Christy Edwards at edwardcl@colorado.edu, (303) 735-4880.

*SSI E/PO Workshop: (L to R) Doris Daou, E/PO Manager; Michael Allen,University Instructor; and Renee Gamba, Museum Education Curator, engage in the "Change Game," a simulation of school district education reform, while Paul Dusenbery, SSI, looks on. Photo taken during SSI's 2003 K-12 Education Workshop for Scientists, Engineers, and Education and Public Outreach (E/PO) Professionals.*

## Exceptional Needs Workshop Held

*Dr. Cass Runyon, Southeast Regional Clearinghouse*

The third **Exceptional Space Science Materials for Students with Special Needs** workshop was held at Goddard Space Flight Center, in July 2003. This year, more than fifty participants represented OSS Broker/Facilitators, OSS Forums and educators from 16 states across the country. Returning educators of students with special needs brought at least one partner educator from their state, helping to grow the program.

Again this year, workshop participants were exposed to simulations of many different disabilities ranging from vision and hearing loss to orthopedic impairments and several learning difficulties. Participants donned goggles which partially/fully limited their physical mobility and tactile sense and provided presenters with real-time suggestions for adaptations/modifications for use by all learners.

They toured the Maryland Science Center's Space Link and space science exhibits and saw the new planetarium show: "Hubble Heritage: Poetic Pictures". This IDEAS (*see page 12*) grant-funded show was a terrific inspiration to the educators who left with many ideas for their education settings. They also visited the National Air and Space Museum (NASM) with Dr. Steve Williams, the new NASM Education Director and Doug Baldwin, the Education Lead for the Smithsonian's new Stephen F. Udvar-Hazy center. While at NASM, they "explored" several space science-related Discovery Stations with "disabilities-on". The docents helped everyone to fully experience the activities before seeing the planetarium show, "Infinity Express and Stars Tonight".

Major lessons learned from this workshop:

- Have students work in small teams.
- Keep the instructions simple. Include graphics/images when possible to help them understand the instructions.
- Include auditory files and a glossary for Web sites when possible, along with graphics and color.
- Text on Web sites should be available in html and/or text format in addition to pdf in order for text readers to be able to serve the visually-impaired community.
- Include handouts at several different reading levels for audiences with learning and reading difficulties - graphics may remain the same.
- Design the activity with multiple modalities built in – repetition is good, as is the use of touch, sound, smell, and sight.

A listserv has been set up to facilitate communication among all parties interested in working together to foster better space science materials for use in the special needs settings. To join the listserv, contact Cassandra Runyon (cass@cofc.edu) or Kathryn Guimond (serch@cofc.edu) at SERCH. For a more complete summary of the workshop and the presentations, see http://serch.cofc.edu/serch/special/ENWSIII_outcomes.pdf .

Planning has started for next year's workshop to be held in conjunction with the S2N2 Broker in Seattle, Washington.

*Workshop participants experience simulated impairments.*

## Partnership with the National Federation of the Blind

*DePaul University and Special Needs Resource Group*

As part of the effort of NASA's Office of Space Science to increase participation of people with disabilities in space science, DePaul University and the Special Needs Resource Group have initiated a partnership with the National Organization of Parents of Blind Children (NOPBC), which is a division of the National Federation of the Blind. Activities thus far include:

- A series of space science workshops and informational sessions at the 2003 NFB convention for students and their parents co-hosted by DePaul, the Wisconsin NFB affiliate, and the Boston Museum of Science (June 28 – July 4, 2003).
- An event for students for the Wisconsin Center for the Blind and Visually Impaired at

Yerkes Observatory with scientists and educators from the SOFIA mission.

• Participation in a planning group, lead by NFB Director of Special Programs, Dr. Betsy Zaborowsky, for a youth science camp, which will take place in Baltimore in the summer of 2004.

For more information please contact Bernhard Beck-Winchatz at bbeckwin@depaul.edu or Cass Runyon at cass@cofc.edu.

### Cosmic Questions in Washington D.C.

"Cosmic Questions: Our Place in Space in Time" [*see Voyages, issue 7*] will be on display in Washington D.C. at National Geographic's Explorers Hall from October 2, 2003 to December 31, 2003. The highly interactive traveling exhibition was developed by scientists and educators at the Harvard-Smithsonian Center for Astrophysics (CfA), with major funding from the National Science Foundation and from NASA's Universe! Education Forum at the Smithsonian Astrophysical Observatory. Dozens of scientists from the CfA and from other institutions around the world contributed to **Cosmic Questions** and its accompanying programs.

In its opening venues at Boston's Museum of Science and the Midland Center for the Arts in Midland, Michigan, the exhibition has been extremely well received by over 400,000 visitors, and praised for its ability to engage diverse audiences in exploring current discoveries and unsolved mysteries about our place in the universe:

*"We're made of the same thing as stars. I thought that was interesting because you never would think that." —13 year old girl, Midland*

For more information, visit http://cosmicquestions.org .

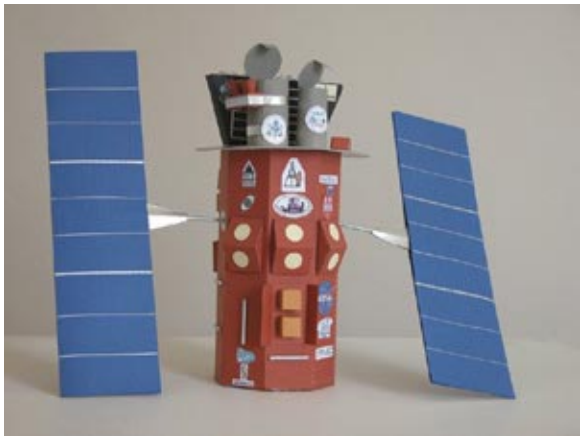

*A young visitor to Cosmic Questions gets a "feel" for the Milky Way's structure.*

# New Educational Products

### Build a Model of the Swift Satellite!

*Dr. Philip Plait and Dr. Lynn Cominsky*
*NASA Education and Public Outreach Group at Sonoma State University*

This fall, students will have a chance to get a hands-on feel for space science as they build a paper model of the Swift Gamma-ray Burst explorer satellite which is scheduled for launch in early 2004. When completed, the paper model stands about 30 centimeters high and 40 across. The model has representations of many of the components of Swift, including the three major telescopes, the solar panels, and much of the hardware the satellite uses to "swiftly" discover and pinpoint the locations of gamma-ray bursts, huge explosions which signal the births of black holes.



*Swift Model. Image courtesy of Monica Sperandio and the Italian Swift E/PO group.*

The model assembly activity is designed to be an informal and fun way to supplement the students' learning of such important concepts in the national science education standards as the electromagnetic spectrum (Swift's telescopes observe in gamma rays, ultraviolet, and optical light), science as a human endeavor (the design and building of a satellite in response to scientific questions), and of course the relationship of science and technology. The activity also fulfills many technology education standards, including developing an understanding of the attributes of technological design (in reading about the Swift

hardware and constructing the components). Working individually or in groups, students should not only enjoy building the model and learning something in the process but also having the completed satellite to display in the classroom.

By constructing the model, the students will get a tactile feel for how the satellite is designed and how the instruments work together. The model comes in the form of a booklet, with the satellite components printed in vivid color. The students cut out the pieces and assemble the model using a few extra materials readily available in most classrooms. In the assembly instructions, each piece of hardware is designated by its real name ("magnetic torque wheels" and "Burst Alert Telescope", for example) and is labeled with a brief description of its function.

The model was originally designed by Monica Sperandio of the Italian branch of the Swift mission E/PO group, and has been redesigned and supplemented with descriptions in English by Sonoma State University scientific illustrator Aurore Simonnet.

The booklet is available in both Italian and English. It can be ordered or downloaded as a PDF at http://swift.sonoma.edu/education/index.html . Building the Swift paper model will engage your students and get them interested in the design and use of space satellites. For more information about Swift E/PO materials, please visit http://swift.sonoma.edu .

## Hubble Space Telescope Illuminated Photo Exhibit Now Touring

*John Stoke, Space Telescope Science Institute*

The Space Telescope Science Institute and the Midland Center for the Arts (MCFTA) in Midland Michigan have combined resources to create an exhibit entitled "Heavens Above: Images of the Universe from the Hubble Space Telescope."

MCFTA, an eclectic blend of art and science museums, is the first stop on the national tour of **Cosmic Questions** exhibit [*see Voyages, issue 7*] following it's premiere at the Museum of Science in Boston. MCFTA wanted to surround the **Cosmic Questions** exhibit with an astronomical photo gallery, to envelope the exhibit about the tools and techniques of astronomical science in an aesthetically rewarding celebration of astronomy's fruits. Mary Dussault of the NASA Universe! Education Forum suggested the Space Telescope Science Institute (STScI) as a good source of beautiful astronomical images. John Stoke of STScI's Office of Public Outreach was drawing up plans for a very inexpensive-to-tour Hubble photo exhibit when he received the call from MCFTA and the partnership was born.

**Heavens Above** consists of 30 illuminated light boxes, each 30x40 inches in size containing a high resolution Hubble image with caption. The images include introductory panels about Hubble, the scale of the images, and the correct interpretation of color in the images. The remaining 27 panels are primarily Hubble images complemented by several ground based images which are grouped into 'realms' such as solar system, stars and nebulae, and galaxies. A large plasma screen fed by a computer running STScI's ViewSpace program is also included.

The result was just what MCFTA was after - a top notch science exhibit enveloped in the beauty of the cosmos. Following their joint appearance at MCFTA, **Heavens Above** and **Cosmic Questions** will tour independently. The tour for **Heavens Above** will be managed by MCFTA. The exhibit will be available for loan for a multi-week period for a modest fee. For more information please contact John Stoke at STScI at stoke@stsci.edu.


***Heavens Above** Panel - Heart of the Whirlpool Galaxy.*

### What is Your Cosmic Connection to the Elements?

*James Lochner, USRA and NASA GSFC*

*"What is Your Cosmic Connection to the Elements?"* is a new high school level poster and teacher guide from the **Imagine the Universe!** E/PO group at NASA GSFC. It discusses our connection to the chemical elements and their cosmic origins. The poster visually connects selected elements created in the Big Bang, stars, supernovae, and cosmic rays to objects around us and the elements within us. The back of the poster contains panels with descriptions of these processes that teachers can display with the poster, as well as usage notes and a classroom activity. The teacher guide describes in detail the processes by which the elements are made and the overall composition of the universe.


*"Cosmic Connections" Poster.*

The teacher guide also contains eight classroom activities which highlight different aspects of the origins of the elements. For example, in "Kinesthetic Big Bang" students act out the nucleosynthesis of hydrogen, deuterium, and helium in the first few minutes after the Big Bang. "Cosmic Shuffle" is a card game for forming the fusion processes that occur in stars. In "What's Out There?" students calculate the abundance of elements in different substances whose composition is modeled using common kitchen staples. In "Nickel-odeon," students listen to the spectra of different elements by playing them on a musical keyboard. In "Grandma's Apple Pie," students put it all together by tracing the origin of the elements that are in an apple pie. These and the other activities were developed by teachers who attended the "Elements 2002" workshop at NASA GSFC in August 2002.

The text for the booklet and the activities are posted on the **Imagine the Universe!** Web site at http://imagine.gsfc.nasa.gov/docs/teachers/elements . Hardcopies of the poster and teacher guide can also be ordered from the Web site.

# Educational Programs

### The Night Sky Network: Activity Kits, Training, and Community-Building for Amateur Astronomy Clubs

*W. Michael Greene, NASA Jet Propulsion Laboratory*

The Navigator Public Engagement Program at NASA JPL is working with the Astronomical Society of the Pacific (ASP) and the Astronomical League to create the **Night Sky Network**, an umbrella organization to meet some of the ongoing needs of the astronomy club community.


Many of the 50,000 amateur astronomers in the United States engage in some form of public outreach. According to a recent survey, 86% of amateurs involved in outreach belong to one of the more than 600 astronomy clubs in the country. Amateurs surveyed cited the need for three things: 1) ready-made, themed materials, 2) training in astronomy content and presentation skills, and 3) networking with other amateurs doing outreach. Each club that joins the **Night Sky Network** receives a free outreach kit. The first kit in development is a PlanetQuest kit with hands-on activities and multimedia presentation materials. The kits are designed to be used in a variety of settings, including classrooms, youth group meetings, and community college events, as well as outside under the stars. The kit comes with a 35-minute training video. Other training needs will be met though teleconferences and regional workshops. The **Night Sky Network** beta Web

site, launched in July 2003, promotes community-building within the network and allows online enrollment.

*The PlanetQuest activity kit.*

Twenty-nine **Night Sky Network** astronomy clubs in 23 different states are now evaluating the effectiveness of the program and the PlanetQuest kit with students, families, and the general public in a variety of venues. As Barry Beaman with the Rockford Amateur Astronomers in Illinois reported, "Our first try and it was spectacular!"

Early next year, PlanetQuest kits will be distributed to several hundred clubs around the country which agree to host at least ten events a year using these materials. A second kit focused on the expanding universe and black holes is being developed with the involvement of the Universe! Education Forum. Arming astronomy clubs with materials, training, and a vibrant network will create increasingly effective ways for NASA to inspire and inform students and the public.

The **Night Sky Network** joins a growing list of outreach initiatives working with amateur astronomers. Examples include Cassini's Saturn Observation Campaign, the Deep Impact observing campaign, the Sun-Earth Connection Education Forums's after-school astronomy club program, the Space Place astro club newsletter program, and NASA's Solar System Ambassador program (*see story on page 4 - a number of Ambassadors are amateur astronomers*).

For additional information on the **Night Sky Network,** see http://nightsky.jpl.nasa.gov .

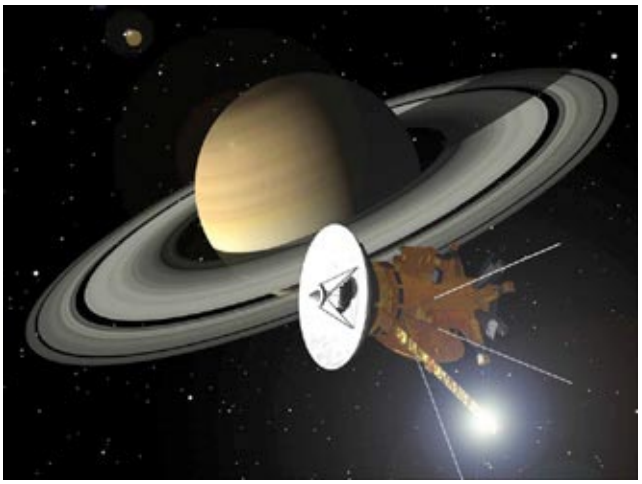
## Saturn Observation Campaign

*Alice Wessen, NASA Jet Propulsion Laboratory*

Armed with contagious enthusiasm and odd-looking telescopes and/or powerful binoculars they usually set up camp around dusk. They talk about Saturn and its magnificent rings while waiting for the proper moment. Once their target is in sight, they point and fine-tune their instruments. Then they finally share their eyepieces and the shows begin.

They are the members of the **Saturn Observation Campaign**, an effort by the Cassini Outreach program to promote space exploration and prime the public for the deluge of stunning images and scientific data that the Cassini-Huygens spacecraft will send when it arrives at Saturn in July 2004. In 2002, the inaugural year of the campaign, 140 space fans answered the call. They came in all shapes and forms, lived across the five continents and probably had little in common other than their passion: to share their love for space observation.

The **Saturn Observation Campaign** is open to amateur and professional astronomers and gives astronomers an opportunity to share their knowledge and passion for space exploration with their communities. Partnering with local organizations, volunteers use their imagination to hold fun and educational activities — whether by organizing viewing events, giving lectures or coordinating hands-on activities. For more information on how to join the campaign and stories from this year's events, please see http://soc.jpl.nasa.gov .



*Artist illustration - Cassini at Saturn.*

## Students Design Dust Counter Instrument for Pluto Mission

*Mike Buckley, Johns Hopkins University Applied Physics Laboratory*

In what could be the ultimate distance-learning project, students from the University of Colorado at Boulder are putting together an instrument for NASA's New Horizons spacecraft that will travel billions of miles from Earth on a journey to Pluto and the Kuiper Belt to study space dust.

The Student Dust Counter, which is designed to detect dust particles produced by collisions between asteroids, comets and Kuiper Belt objects will be the first science instrument on a NASA planetary mission to be designed, built and "flown" by students. With faculty supervision, the students will also distribute data from the instrument and lead a comprehensive effort to bring their experiences to classrooms of all grade levels over the next two decades.

New Horizons is scheduled to launch in 2006, reach Pluto as early as 2015, and then explore at least one object in the Kuiper Belt region beyond Neptune. The Student Dust Counter could yield important discoveries — no dust detector has ever flown that far from the Sun. "The instrument could give us the most detailed accounting yet of dust particle concentrations in the outer solar system," says Dr. Alan Stern, New Horizons principal investigator and director of the Southwest Research Institute's Space Studies Department in Boulder.

"We have our work cut out for us, but that's why the project is so exciting," says Gene Holland, an aerospace engineering graduate student and the instrument's student project manager. "The students feel like what they're doing will make a real difference."

The team is currently developing a Web site and preparing for a science and engineering peer review by mission staffers as well as other students. The team also plans to build high school level curricular modules on topics like Pluto and the Kuiper Belt, the role of dust in forming planetary rings, and designing space instruments.

"This team has a unique opportunity to both educate and inspire the students who will follow them," says Dr. Fran Bagenal, a University of Colorado astronomy professor and the science leader on the New Horizons education-public outreach team. "There are kids in kindergarten today who could be working on this when New Horizons reaches Pluto."

For more information on the New Horizons mission, see http://pluto.jhuapl.edu .

*The Student Dust Counter team at the University of Colorado-Boulder includes (from left) Faculty Advisor Mihaly Horanyi, Anselm Fernandez, Chelsey Bryant, James Mack, Tim Chanthawanich, Matt Colgan, Ervin Krauss, Mike Neeland, New Horizons Principal Investigator Alan Stern, Vaughn Hoxie, Otto Krauss, Beth Grogan, Student Project Manager Gene Holland, New Horizons Science Team Co-investigator Fran Bagenal, and Nick Bunch.*

# NASA OSS Support Network Profiles

*This is the third in a series of articles which highlights contributions of the organizations of the NASA OSS E/PO Support Network (ESN). The 12 groups which make up the Support Network are involved in coordinating and integrating the OSS E/PO program. They provide a point of entry for individuals and organizations wishing to participate in the OSS E/PO program. A brochure describing the Support Network can be found at http://spacescience.nasa.gov/education/resources/ecosystem/brochure_low_res.pdf .*

**DePaul University Broker/Facilitator**
DePaul University

The DePaul Space Science Center for Education and Outreach serves as one of the seven regional Broker/Facilitators funded by OSS to encourage and facilitate the development of partnerships between the space science and education communities. DePaul University is located in the heart of Chicago. As a Broker/Facilitator the Space Science Center serves the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, and Wisconsin. The DePaul Broker/Facilitator team consists of Dr. Lynn Narasimhan, a mathematician and currently the Executive Director of the Center, astrophysicists Dr. Jim Sweitzer and Dr. Bernhard Beck-Winchatz, Director and Associate Director of the Center, Ms. Karen Cullen, Assistant Director, and Ms. Victoria Simek, Special Projects Manager.

As explained by Dr. Narasimhan, "Our general approach as broker/facilitators is to identify communities of potential partners for space science education initiatives, create opportunities to assess the interests and needs of the communities, and collectively develop action plans to address the needs. In the process, we recruit small groups of advisors or consultants from the communities who act as our partners in developing plans that are educationally or operationally sound while being accessible to or appropriate for the targeted community." As an example they have established a Chicago Teachers' Advisory whose purpose is to develop ways to bring space science to the students of Chicago Public Schools. Events initiated by the Advisory have reached close to 400 teachers over the past four years and have resulted in a number of self-sustaining projects in space science.

A second example is their work with the Great Lakes Planetarium Association (GLPA). Over half of planetarium attendees in the United States visit modest-sized planetariums like those of the GLPA. These planetariums primarily serve K-12 audiences. The DePaul Broker/Facilitator program has been helping to strengthen capability for GLPA members through a small grants programs, PLATO (*see Voyages, issue 8*), and by brokering professional development in space science to GLPA members.

The team is also deeply committed to serving smaller groups with special needs. An example is the work done by Beck-Winchatz who played a pivotal role in helping to create and then publish "Touch the Universe" (*see Voyages, issue 7*), a book which featured Hubble images made tactile for the visually impaired.

The DePaulBroker/Facilitator sees itself as a learning organization committed to understanding, serving and adapting to the unique needs of educational communities in their region. For more information, visit http://analyzer.depaul.edu/NASABroker .

*DePaul Broker Team: (L-R) Dr. Jim Sweitzer, Dr. Lynn Narasimhan, Ms. Victoria Simek, Dr. Berhard Beck-Winchatz, Ms. Karen Cullen.*

# *On the Horizon*

## SUN-EARTH DAY 2004: VENUS TRANSIT

Starting at sunrise on June 8, 2004, the planet Venus will be visible as it moves across the face of the early morning sun. (Always use safe viewing procedures!) For actual viewing locations and times, go to http://sunearth.gsfc.nasa.gov/sunearthday . The last time humans witnessed this event was on December 8, 1882 when it was watched by millions of people across the world, from the crowded streets of Bombay to the deserts of the American southwest.

The **Sun-Earth Day** Web site is loaded with fascinating resources for students and teachers, as NASA's Office of Space Science hosts "Transit of Venus" its 2004 'Big Event' for Sun-Earth Day.

This year's goals include:

- Sharing OSS Space Science mission's research with formal and informal education communities.
- Supporting an education and public outreach event that will celebrate Sun-Earth Connections to the transit of Venus.
- Sharing the significance of the transit of Venus research and observations via cultural stories, history, interviews, web links, and activities.

Educational Programs will include:

- A NASA/CONNECT TV program about how the transit of Venus set the scale of the Solar System.
- Student Observation Network study of the transit of Venus using a simple and safe solar telescope.
- Student lab experiment on calculating the Astronomical Unit with transit observations.
- Multi-curricular resources in science, math, history, literature, arts and music.
- The Solar-Planetary Connection including Venus our Sister Planet.
- A Web cast of the entire transit from Spain.
- Web chats and interviews with scientists discussing why Venus and Earth are so different.
- Online archives of Transit images taken by amateur and professional telescopes.
- Library of Congress materials and other historical documents from past transits.
- Exoplanet Research.

For more information see http://sunearth.gsfc.nasa.gov/sunearthday .

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## IDEAS Program Solicits E/PO Proposals

NASA's Office of Space Science and the Space Telescope Science Institute are pleased to announce the opportunity to apply for an Initiative to Develop Education through Astronomy and Space Science (IDEAS) grant. The Call for Proposals may be found at the program Web site at http://ideas.stsci.edu .

The following are highlights from the Call:

- The grant provides start-up funding for innovative, creative education and public outreach programs that feature active collaboration between astronomers/space scientists and formal education/informal education professionals.
- Astronomy/space science must be the primary area of focus used to promote science, mathematics and/or technology education and/or public outreach.
- Proposals may request:

- Up to $20,000 for programs to be completed in one year. (Programs may request additional time, up to two years, due to school schedules, etc. which the panel review will consider.); OR

- From $20,001 to $50,000 for programs which may request up to two years to complete.

The deadline for submitting a 2003 IDEAS grant proposal is October 24, 2003, 5:00 PM EDT. If you are interested in more information regarding IDEAS, please send email to ideas@stsci.edu.

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If you would like to receive an electronic copy of future newsletters, contribute an article or just have questions about getting involved with the NASA OSS E/PO Program, contact Larry Cooper, Editor, at Larry.P.Cooper@nasa.gov . Prior issues of *Voyages* are online at http://spacescience.nasa.gov/education/news .