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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



El Noticiero de NASA

Hispanic Community Newsletter on Mathematics and Science Education

Life on Mars?



What's Inside: Mars Czar Orlando Figueroa ■ Avondale School Renamed in Honor of Michael Anderson ■ Parents/Kids Section

Message from the Editor in Chief

Welcome to the first issue of El Noticiero de NASA, a NASA Minority University Research and Education Programs (MUREP) publication. This newsletter strives to engage the Hispanic education community in NASA's science, technology, engineering and mathematics programs. The underlying goals of the newsletter are to share information on achievements in NASA related education and research and foster networking among Hispanic educators, researchers, students and parents... "as only NASA can."

The newsletter advances its goals by covering education updates on NASA programs from elementary through graduate schools. It discusses key NASA research and development activities and provides features on Hispanics that are contributing to NASA's education and research missions. We will also update readers on research opportunities and NASA's participation at Hispanic education events.

I am a strong believer that parents play an essential role in their children's educational experiences. Every issue of the newsletter will provide parents and kids with bilingual educational resources and stories that build interest in space exploration. Discussions on education issues held at the Congressional Hispanic Caucus Institute (CHCI) 2003 Issues Conference exemplify this belief. Based on these discussions, the CHCI is slated to recommend to the United States President and Congress that policymakers work to increase parental involvement in Hispanic children's education.

I would like to acknowledge the many wonderful contributors to this inaugural issue of the newsletter. These individuals demonstrate that the Hispanic community and its friends are vibrant and extremely talented networks. Thank you!! As an integral element of newsletter outreach efforts, we will continue to involve our readers in the development of stories. I welcome your suggestions and I encourage you to contribute news about recent events, interesting developments and important advances in your mathematics and science programs.

I am excited about this newsletter and I hope that you enjoy reading it!

Milagros Mateu (Millie)
University Program Manager
Minority University Research and Education Programs

October 2003

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About the Cover

An artist's depiction of NASA's Mars Exploration Rover traveling on the surface of the Red Planet. A pair of rovers launched into outer space earlier this year and will reach Mars in January 2004. Graphic art courtesy of NASA.

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Avondale Elementary School Renamed in Honor of Astronaut Michael Anderson

By Kimberly Mounts
Estrella Mountain Community College

On August 29, 2003, students from Avondale Elementary School in Arizona gathered at an outdoor amphitheatre to celebrate the life and work of Columbia astronaut Michael Anderson. Along with city officials, NASA representatives and Anderson's family members, school district representatives joined students and teachers for a dedication ceremony officially renaming the school "Michael Anderson School".

Avondale Elementary School District Superintendent Dr. Cathy Safford said the school and the students had a special connection to Anderson. Not only was he once taught in the same classrooms, but he also e-mailed the students from space and took an Avondale Coyote t-shirt with him on the Columbia mission.

Joanne Sykes and Brenda Daniely, two of Anderson's three sisters represented the Anderson family. Daniely is a teaching assistant at the elementary school where Anderson's third grade photo is proudly displayed along with Columbia memorabilia, student drawings and NASA photos in the student library.

Having grown up in an air force family, Anderson's interest in flying was sparked at an early age. "Our parents raised us to believe we could do whatever we wanted to do," said Daniely. "Michael's presence in space was more than a goal, it was a lifelong path. He would be honored to have a school named after him. This is where his heart was...in education, in knowledge, in books, and in learning."

Michael Anderson School is a K-2 school located in Avondale, Arizona. It is part of Avondale Elementary School District #44, which includes five elementary schools and one middle school. According to Dr. Stafford, few records of the school's early days still exist. The first schoolhouse was built in the early 1920's in an area that was predominately agricultural. The Michael Anderson School is now located in the heart of the fastest growing area of Western metropolitan Phoenix, and serves a diverse population, with a majority of its students being of Hispanic heritage.



NASA astronaut Carlos Noriega speaks to a group of students in their native Spanish language

Many of the school's students had the opportunity to participate in Arizona's first NASA Awareness Day hosted by Estrella Mountain Community College's NASA Center for Success in Math and Science in October 2002. EMCC's NASA Center supports the NASA Center Schools Program, a K-12 outreach effort that seeks to inspire young students, like Anderson did, to "Dream big and work hard". Serving as a resource hub for educators, students and families throughout the Avondale region, the NASA Center fosters the idea of exploration and learning and encourages students in pursuing educational and career pathways in the math, sciences and engineering disciplines.

Avondale Elementary School Renamed (cont...)

Carlos Noriega, who originally met students from the Michael Anderson School at NASA Awareness Day, returned to the Valley to honor his friend and fellow astronaut at the dedication ceremony. Noriega, who was joined by astronaut Terry Virts, presented school officials with a commemorative gold coin honoring the crew members of the Shuttle Columbia.

“We are thrilled to rename our school in honor of a former student, who lived his dream...and reminded us on his last mission to Dream Big and Work Hard,” said Principal Dr. Janet Beason, referring to the inspiring e-mail message Anderson sent her students from space.

Two of those students, Ciley Thompson and Delia Ramales, represented the over 900 students who attend the

elementary school. Presenting in both English and Spanish, the girls shared what Anderson and his dreams meant to them.

“We were very sad when our astronaut, Michael Anderson, did not make it back to Earth safely, but we know he was called away for a bigger mission,” said Thompson, a second grader. “We are very proud of our astronaut and we would like for him to be proud of us. We promise to dream big and work hard, like he did.”

For more information on the Michael Anderson School and Avondale Elementary School District #44 visit www.avondale.k12.az.us. To learn more about the NASA Center for Success at Estrella Mountain Community College, visit www.estrellamountain.edu.

Viva Technology Helps Bridge Digital Divide in San Jose

By Anna Park
Viva Technology

200 students and a number of teachers and parents at Clyde L. Fischer Middle School and Overfelt High School in San Jose, California participated in the Viva Technology program sponsored and supported by NASA Ames Research Center's Equal Opportunity Programs Office around the start of summer. Inner city and rural Hispanic students applied technology to mathematics, engineering and science disciplines in NASA themed activities designed to boost their interest in pursuing technical college degrees.

Viva Technology is a nation-wide program for K-12 schools with special needs that was developed by the Hispanic Engineer National Achievement Awards Corporation (HENAAC). The students, teachers and parents at Fischer and Overfelt were among the first in the region to benefit from the program.

Program Director Frank Cano said, “Viva Technology gives students confidence to solve problems they sometimes thought were beyond them. It gives them and their parents tremendous amounts of information to plan and achieve their goals.”



Pat Cronin, V.P. from IBM, and Ray Mellado, Chair and Founder of HENAAC, speak with students at Viva Technology in San Jose

Phase one of Viva Technology took place over two days in early June, 2003, where 100 sixth grade students at Fischer participated in skills enhancement activities. Students were confronted with problems and activities based on key aeronautic concepts such as ‘how wings lift the plane’ and ‘the laws of motion’.

Viva Technology Helps Bridge Digital Divide in San Jose (cont...)

Local college students majoring in engineering and science at San José State University and Santa Clara University were also included in the program to act as captains for the young student teams. These captains discussed the academic challenges of college and prepared student teams for a quiz on key aeronautic concepts. Based on the test results, the teams then worked on an engineering design process to develop a futuristic plane for the year 2103. Students sketched two-dimensional planes, modeled the sketches with clay and designed poster boards of the concepts.

The students also interacted with dynamic Hispanic professionals from NASA Ames Robotics Education Center, the U.S. Air Force and IBM's Global e-business Services Group.

During the second phase in late June, high school students from Overfelt worked on activities similar to those for middle school students over two days, but with some additional challenges. The students worked in teams with their college captains from San Jose State University, Santa Clara University and the University of California, Berkeley to assess and analyze sets of images from Mars.

Students listened to Max Amaya, an aerospace engineer from NASA Ames Research Center, discuss his journey to

becoming an engineer. Following this presentation, teams of high school students sketched the plane of the future on paper and developed, assembled and painted a wooden replica of this plane. To add a twist, they had to complete the plane with a vital part missing.

Organizers held teacher and parent orientations at both sites. The orientations were designed to prepare educators and parents for the Viva Technology program. Mathematics and science teachers received tips to enhance their teaching styles. Parents were briefed in both English and Spanish about student activities, science and engineering career opportunities and methods to prepare their children for technical degrees in college. Lupita Armendariz from NASA Ames Research Center talked to parents at both institutions about future opportunities at NASA for their sons and daughters.

NASA Ames Research Center's commitment to prepare students for technical positions in the work force has led to increased support for Viva Technology Days in the San Francisco Bay area and key locations throughout California. Up to ten additional schools will participate in the NASA Ames Viva Technology program this school year.

Nanotechnology: Big Research Plans with Small Technology

*By Ignatius Hsu
Staff Writer*

A growing number of Hispanics in the sciences and engineering are turning to nanotechnology research as the field gains momentum and finds increasing support at government agencies. Nanoscale materials, which are about 75,000 times smaller than the width of a human hair, hold the potential to improve NASA's space exploration capabilities and are already finding their way into commercial products such as electronic circuits, stain proof clothing and sunscreen.

Dr. Marla Perez-Davis, Chief of NASA Glenn Research Center's (GRC's) Electrochemistry Branch, explains that nanotechnology provides "The ability to work at the molecular level, atom by atom, to develop and/or design materials and structures with fundamentally new properties and functions." Dr. Perez-Davis said that this field provides "The potential to result in major contributions to meet NASA's mission needs in all

Enterprises." She notes that NASA's nanotechnology research might lead to improvements in energy storage, power systems, biotechnology, electronics, medicine and many other fields critical to its needs.

Dr. Perez-Davis and her staff are among the rank of believers in the emerging technology. Her laboratory has invested three years studying the technical feasibility of nanotechnology in producing lighter, high-energy hydrogen energy storage and hydrogen/air fuel cells. Her team is studying the use of carbon nanotubes, which are high strength, low density conductors, in energy storage devices such as batteries.

NASA is making significant investments in nanotechnology research and development. Last year, it invested \$35 million focused on nanotechnology research on low power devices and high strength materials for use in outer space. Congress is on track to earmark a total of at least \$102 million to NASA for research in this field over a three-to-five year period. A steady stream of upbeat

Big Research Plans with Small Technology (cont...)



Student looking at epitaxially grown nanostructured thin films for super capacitors and fuel cell electrodes at the University of Puerto Rico

reports has bolstered political backing for the microscopic materials. For example, a 2001 National Science Foundation report projected that nanotechnology would blossom into a \$1 trillion a year global industry by 2015.

Minority institutions are benefiting from the increased attention on this specialized science. In January of this year, GRC began a partnership with the University of Puerto Rico-Rio Piedras Campus (UPR-RPC) to research fuel cells and lithium based battery systems. These complementary research activities are resulting in what Dr. Perez-Davis sees as “Education and training opportunities in an emerging field to underrepresented students.”

UPR-RPC developed a NASA University Research Center (URC) in collaboration with GRC to increase its research and education capacities. The Center for Nanoscale Materials (CNM) synthesizes, characterizes and applies nanoscale materials to high-energy storage devices, fuel cell applications and display technology.

“NASA research programs are the main catalyst in exposing us to nanotechnology,” said Dr. Carlos Cabrera, the CNM’s Principal Investigator.

Ten graduate students and 3 post-doctoral scientists are working with scientists to manipulate the properties of experimental materials such as nano-crystalline diamonds. These special diamonds have promising applications as electrical conductors in energy storage devices and as energy efficient flat panel displays.

The URC proposal took hold after UPR-RPC successfully completed a high school and university teaching project

known as the Training for Excellence on Nanotechnology Education and Research (NASA-TENER). For just over a year, Dr. Cabrera and his staff worked through NASA-TENER to strengthen nanotechnology research capabilities at UPR-RPC, increase student involvement in space research and at other NASA related disciplines and develop an appropriate nanotechnology curriculum in English and Spanish.

NASA-TENER has prepared over 200 students to meet the emerging needs of the booming nanotechnology industry. The program grew from 15 Hispanic students in 2001 to 200 students in 2002. Students at various stages of the education pipeline participated in the program’s workshops, presentations, research and/or coursework.

When asked about the future direction of the CNM, Dr. Cabrera enthusiastically discussed the UPR-RPC’s expansion plans. “We foresee our center expanding into nanobiotechnology and nanoarray sensors,” he said. In addition, the NASA URC grant will fund the CNM’s purchase and installation of a high-resolution \$700,000 transmission electron microscope to provide atomic resolution imaging of nanomaterials.

UPR-RPC continues to seek out new opportunities to tap into NASA’s network of researchers. Dr. Meyya Meyyappan, Director of the Center for Nanotechnology at NASA Ames Research Center in California, flew in to Puerto Rico to give a presentation in January of this year. Half a year later, Dr. Cabrera met with him again, this time in Orlando at the NASA Research Summit networking event. They have agreed to convene together in November to discuss establishing a working relationship between Ames and UPR-RPC.

Although nanotechnology has captured the attention of scientists and policy makers nationwide, some major regions are in danger of under-investing in this area. Texas is one state that has fallen behind. Nanotechnology investment in Texas is a paltry \$0.02 per person, compared with \$2.90 in California state and \$5.16 in Japan, according to a report released by the Texas State Technical College.

To address this shortfall, five universities in the University of Texas System recently formed an alliance to bring a statewide nanotechnology consortium, Nano at the Border (N@B), to students and faculty in the Rio Grande Valley. Two Hispanic Serving Institutions (HSIs), the University of Texas-Pan American (UTPA) and the University of Texas at Brownsville (UTB), are participating in this initiative. Both institutions receive funding from NASA’s Office of Education for other projects.

High Performance Computing for Research at John Jay College

By Douglas Salane, Ph.D.

John Jay College, The City University of New York

With the help of a three-year NASA Curriculum Improvement Partnership Award (CIPA), computer majors at John Jay College of the City University of New York are learning how to use high performance computing to solve problems that confront public agencies.

Over 300 computer and information systems undergraduates complete advanced course work on computing facilities at the John Jay Mathematics Department's CIPA Computer Clusters for Curricular Improvements in Computer Networking and Parallel/Distributed Computing (CIPA Cluster Computing Project). The NASA CIPA program provides Hispanic and black universities and colleges with resources, research and technology to develop a professionally trained scientific workforce. The United Negro College Fund Special Programs Corporation (UNCFSP) administers the CIPA program and has administered the John Jay CIPA Cluster Computing Project since its inception in 2001.

Prof. Douglas Salane, the project's Principal Investigator, notes that the CIPA Cluster Computing Project has as its foundation the simple but successful concept of clustering popularized by NASA. Nearly a decade ago, scientists at Goddard Space Flight Center developed the first commodity cluster, known as the Beowulf Cluster, by connecting a number of inexpensive personal computers to form an integrated system capable of solving compute and data intensive problems. The idea was so effective in high performance computing circles that it spread like wildfire to other NASA centers and to colleges and universities around the world.



Prof. Douglas Salane, the NASA CIPA Cluster Computing Project Principal Investigator and Prof. Sydney Samuel, Math Department Chair, examine cluster results at a CIPA computing facility in John Jay College

A number of courses were developed or revised at John Jay to prepare students to understand cluster computing concepts in an age where, as the popular commercial slogan notes, "the network is the computer." Networks such as distributed computers and the Internet are critical to computing infrastructures. Current CIPA student Raul Cabrera described his experiences. "Discussing and reading about parallel computing is fine," he said. "However, the greatest benefit to me was the actual hands-on experience using the computational cluster."

Take for instance John Jay's advanced networking course that introduces students to the NASA Information Power Grid (IPG) being developed at the NASA Advanced Supercomputing (NAS) Division of Ames Research Center. Modeled and named after the electric power grid, the IPG is a government, academic and industry collaboration to solve challenging computational problems using a network of high performance computers and other technologies. In upper level programming courses, students develop parallel programs using the Message Passing Interface (MPI), a widely implemented program interface for distributed memory architectures that allows programmers to develop applications for cluster computers and other distributed memory environments. Students in database offerings now have access to an enterprise-level database server and are learning how to use clusters to build reliable, high throughput information systems.

The CIPA Cluster Computing Project also sponsored the construction of computer facilities, including "the computational cluster," a twelve node, 24 processor Beowulf Cluster; a "distributed database cluster" to house enterprise level database systems and for Web development; a computer laboratory running the Linux operating system for projects in network and distributed computing; and a high performance network infrastructure to tie these facilities together and allow students to access the network from their homes.

Through this NASA award, John Jay provided fifteen students with the unique opportunity of contributing to the assembly of these computer facilities. These students also tutored other computer systems majors and worked on independent research projects with faculty members. Twelve students have since graduated from the Computer and Information Systems (CIS) program and each of them is pursuing a Masters degree in computer science, while 3 other students continue to work on the project.

High Performance Computing for Research at John Jay College (cont...)

One recent graduate, Gerardo Vasquez, noted that his experience helping to build the original cluster sparked his interest in high performance networking. Gerardo is now pursuing a Masters of Science in computer science with a specialization in networking.

Under the direction of Prof. Peter Shenkin, a database specialist, several students have converted a government incident-based reporting system into a relational database that runs on the distributed computing cluster.

Several students are working with Prof. Salane to develop John Jay computational cluster's capacity to solve complex computing problems. As part of this effort, Mr. Cabrera, one of Prof. Salane's students, recently installed the High Performance Linpack (HPL) benchmark on the computational cluster. This software package solves large linear systems of equations in a distributed memory environment and is also used to rank the top 500 fastest supercomputers in the world. The cluster computer achieved a respectable benchmark performance of twenty

gigaflops (billion floating-point operations per second). In addition, Mr. Cabrera and the project research assistant, a former CIPA student, installed a version of a message-passing version of the NAS Parallel Benchmarks from NASA. The NAS benchmark will help students to fine-tune the cluster and computer code that simulates fire and smoke propagation in buildings.

To help faculty members, staff and students keep current with this rapidly developing field, the CIPA Cluster Computing Project sponsors a colloquium series. Experts have spoken on high performance networking, parallel programming, distributed systems security, and web information systems.

The NASA sponsored CIPA Cluster Computing Project has given John Jay College computer majors the opportunity to become involved in state-of-the-art computing methods that have made high performance computing widely available and distributed information systems the norm.

HIGHLIGHTS

Mars Czar Orlando Figueroa

*By Ignatius Hsu
Staff Writer*

The quest to unlock the mysteries of life on Mars is capturing the imaginations of people from around the world, including NASA's Mars Czar Orlando Figueroa. He is ecstatic that his program's two Mars-bound rovers will land in January of next year to conduct a geological survey that will unravel many of the planet's secrets.

Figueroa said, "Mars is the first place in the solar system where we can seek an answer to whether we are the only living beings in the universe. It is also a tangible frontier for humans to explore."

With over 25 years of experience in the development and management of scientific missions, Figueroa provides leadership to thousands of NASA employees and contractors while managing the Mars Exploration Program's \$600 million annual budget. The development and launch of the

two Mars Exploration Rovers (MERs) were part of this effort. Figueroa said, "I can't think of any better job than to work with many great men and women in a quest to unveil the mysteries of another world."

As Figueroa directs this high profile program, he serves as a role model to Hispanic students and youth across the nation. Figueroa recognizes the attention he and his program are receiving, saying, "I am incredibly proud to represent the Hispanic community as a leader of the Mars Program. I hope that my example serves as inspiration for others to follow."

Growing up, Figueroa would monopolize his family's black and white television to watch programs about NASA. These shows ignited a flame inside the young boy to strive for a place at the Agency.

Figueroa graduated with a Bachelor of Science in Mechanical Engineering from the University of Puerto

Mars Czar Orlando Figueroa (cont...)

Rico. Having completed his degree, Figueroa went straight to work for NASA while completing advanced courses in mechanical engineering at the University of Maryland. He started his career at Goddard Space Flight Center in Greenbelt, Maryland and continued to work there for 22 years in a number of engineering and project management positions. Before taking on the task of directing the Mars Exploration Program, Figueroa served as the Deputy Chief Engineer for Systems Engineering.

During his tenure, he earned a number of awards for his role as a distinguished engineer. Figueroa received the NASA Outstanding Leadership Medal for his contribu-

tions to the Small Explorers (SMEX) missions and the Maryland Science Commission's Community Stars Award for innovative educational programs.

Mars may be one of NASA's most important quests, but the agency will look to expand its space exploration activities to other planets. Figueroa summarized NASA's space research direction in relation to Mars, saying, "We will also visit several moons of Jupiter, where life friendly environments seem to exist. And beyond that, there are trillions and trillions of stars in the universe, many like our Sun, where there may be planets like Earth waiting to be discovered."

A NASA Success Story

By Stacy Dees

Mexican American Engineers and Scientists

Like most other seniors in industrial engineering, Jennifer Cordova is extremely excited about her upcoming December graduation at New Mexico State University (NMSU). Unlike other seniors, she will walk away with more than a diploma in her hand; she will take with her the invaluable experience of three separate internships at the NASA Kennedy Space Center (KSC) in Cape Canaveral, Florida.

As a member of the NMSU chapter of the Society of Mexican American Engineers and Scientists (MAES), Jennifer was eligible to be among the first group of participants in the NASA/MAES Undergraduate Scholars Program (NASA/MUSP). In fact, she is expected to be its first graduate. As a NASA/MUSP Scholar, she has received scholarships for tuition, money for attending academic and professional development conferences, paid NASA internships, and travel funds to get to and from the NASA internships.

Jennifer began her first research internship with the NASA KSC in the summer of 2002. As a Human Factors Intern, she was responsible for performing a task analysis of the Cargo Late Access task on the shuttle and an ergonomic analysis of the waterproofing shuttle tile task. Jennifer also conducted background research for a tool that will generate reports to help mitigate the effects of human error while performing critical tasks on the shuttle. Due to her motivation and strong work ethic, she was asked to stay and work during the fall semester in the NASA Cooperative Education (co-op) Program.



Jennifer Cordova at work in the Workforce Planning and Analysis Office at NASA Kennedy Space Center

Jennifer accepted the co-op offer, and has since completed two terms at KSC as a Workforce Planning and Analysis Co-op. Her co-op duties include performing statistical analysis on the current workforce, determining trends in past workforce data, and forecasting for future program (Orbital Space Plane) requirements for reassigning the workforce. In addition, Jennifer researched the impact of attrition on diversity at KSC and provided recommendations for a hiring strategy based on her data analysis.

When asked about her overall internship experience, Jennifer replied, "My personal experience at NASA Kennedy Space Center has been one filled with welcoming faces and supportive mentors. I have had the opportunity to work with so many amazing and talented people."

A NASA Success Story (cont...)

The knowledge sharing relationship between Jennifer and KSC was symbiotic. Jennifer said, “I have acquired skills that I have been able to apply to several school projects, while also sharing information with fellow co-workers what I have learned in school.” She added, “While at KSC, I have also seen several shuttle launches, and more recently the Mars Rover launches. I feel very fortunate to have had the opportunity to be a part of the ‘One NASA’ family.”

The internships motivated Jennifer to work at NASA. “I had the opportunity to collaborate with individuals who shared my work ethic while learning a great deal about the aerospace industry. These experiences increased my interest in pursuing a career with NASA.” Her hard work did not go unnoticed, as she has just accepted a civil

service position with the NASA KSC in the Workforce Planning and Analysis Department. Upon graduation, Jennifer plans on pursuing a Masters degree in Industrial Engineering while working full time for NASA.

Jennifer attributes her success to the inspiration and values her parents instilled in her, along with their constant support. She is the oldest daughter of Manny and Jessie Cordova of Albuquerque, New Mexico, and is an excellent role model for her younger sister, Camille. Jennifer is a shining example of how NASA can work with other organizations such as MAES to improve the lives of deserving students, “... as only NASA can.” With her future before her, Jennifer is prepared and confident to tackle the opportunities she will face as a new employee of the NASA KSC.

OFFICE OF EDUCATION NEWS

NASA Office of Education Has Strong Showing at Annual Congressional Hispanic Caucus Conference

NASA Office of Education was a proud sponsor and participant in the Congressional Hispanic Caucus Institute’s (CHCI’s) 2003 Issues Conference in Washington, DC on Sept. 22 and 23. More than 50 high school seniors and college students from around the country attended the NASA supported Emerging Leaders Keynote Lunch.

During his speech, Dr. Clifford Houston, Deputy Associate Administrator for Education Programs at NASA, encouraged students to explore opportunities at the space agency. Dr. Houston estimated that 25% of NASA’s workforce would retire within the next five years. He foresees that current students will step up to fill the agency’s future needs for talented scientists and researchers. “We’ve gone to the Moon, to Mars,” Dr. Houston said. “There’s no telling where we will go in the future, but we need your help to get there.”



NASA representative Dr. Clifford Houston and retired Lt. Col. Consuelo Castillo Kickbusch chat with a student after the Emerging Leaders Keynote Lunch at the Washington Convention Center, Washington, DC

NASA at 2003 Issues Conference (cont...)

At the lunch, Dr. Houston also announced the recipients of minority university space science education partnership awards, which included five Hispanic Serving Institutions (HSIs) and 11 other Minority Serving Institutions (MSIs). (For more details, read “*NASA Names Minority University Space Science Education Partners*”).

Following Dr. Houston, retired Lt. Col. Consuelo Castillo Kickbusch gave an emotional and heartfelt speech about her struggles overcoming poverty and illiteracy as a child to successfully complete college and eventually become the highest-ranking Hispanic woman in the Combat Support Field of the United States Army. She spoke about the problems facing the Hispanic community in education, such as the alarmingly high dropout rate of Hispanics in college. Lt Col. Kickbusch ended on a positive note about the community’s “*esperanza*,” or the great hope. “In this room are the leaders of the 21st Century... be proud,” she said.

These speakers made a lasting impression on number of students, including Xiomara Villalva, a student at Lafayette College in Pennsylvania. She noted that “The inspirational words of both Dr. Clifford Houston and Consuelo Castillo” made her realize that she owed the community a civic responsibility. When she returned to her campus from the conference, she began to volunteer in her community. Villalva said, “I was also personally convicted to be a mentor/role model for our community, and so now I’ve taken some time out from my school schedule to volunteer at a nearby elementary school.”

In the opposite end of the convention center at the exhibit hall, an eye-catching NASA booth provided participants with educational resources and handouts throughout the Conference. The prominent display caught the attention of Frank Reyes, Government Affairs at San Bernardino Community College, among others. Mr. Reyes said, “I learned from [NASA’s] display and found it very informative... from the beginning, the display was a very positive experience.” He added that Milagros “Millie” Mateu, the NASA University Program Manager who brought NASA to the CHCI conference, was helpful to him in the past. He said, “My experience in working with Millie has been extremely professional... she goes that extra mile.”

Visitors to the booth were treated with an advanced flight simulator developed at Glenn Research Center (GRC). The VisionStation’s hemispherical display immersed guests in a cockpit-like environment as they controlled the 1903 Wright Flyer or docked a space shuttle at the International Space Station. The simulations are used in NASA’s Science, Engineering, Mathematics and Aerospace Academy (SEMAA) programs, which serve historically underrepresented students in grades kindergarten through 12.

William Dedula, the VisionStation’s lead developer at GRC, noted, “We had quite a number of teachers visit our interactive exhibit and we’re confident that they will be sharing their experiences with their students.”

At the Conference’s main event, Hispanic members of Congress chaired summit discussions with policy experts, academic scholars, corporate executives and community leaders on education and over a dozen other vital issues



Participant and NASA staff review educational materials at the NASA booth of the Congressional Hispanic Caucus Institute Issues Conference, Washington, DC. Clockwise: Frank Reyes, San Bernardino Community College, Elizabeth Gonzalez, NASA HQ, Maria Torres, Glenn Research Center and Milagros Mateu, NASA HQ .

NASA Names Minority University Space Science Education Partners

NASA Headquarters Release 03-302 (abridged)

On September 23, 2003, NASA announced the 16 recipients of the 2003 Minority University College Education and Research Partnership Initiative in Space Science (MUCERPI) award.

Dr. Clifford W. Houston, NASA Deputy Associate Administrator for Education Programs, announced the winners at the Emerging Leaders Youth Workshop in conjunction with the Congressional Hispanic Caucus Institute (CHCI) Issues Conference at the Washington Convention Center.

MUCERPI offers minority universities an opportunity to develop academic programs and/or faculty and student capabilities in space science through close partnerships with major space science research groups. The capabilities developed under this initiative may include research, undergraduate or graduate courses or degree programs, pre-college or public outreach programs, and/or teacher training in space science.

"This initiative develops significant opportunities for students in the K-12 environment and students at minority institutions of higher learning to engage in space science exploration and research," said Dr. Adena Williams Loston, NASA Associate Administrator for Education.

"This initiative assists us in expanding the educational pipeline and future workforce," she said.

The 2003 MUCERPI awards include eight Historically Black Colleges and Universities (HBCUs), five Hispanic-Serving Institutions (HSIs), two Tribal Colleges and Universities (TCUs), and one predominantly minority university. The awards are three-year grants offering up to \$275,000 per year. MUCERPI's period of performance is January 1, 2004, to December 31, 2006.

"The success of this initiative comes from the willingness of our leading space science researchers to participate as active partners and to work seriously to help develop space science capabilities at minority institutions," said Dr. Edward J. Weiler, NASA Associate Administrator for Space Science.

The 2003 HSI recipients of the MUCERPI award are California State University (Los Angeles); California State University (San Bernardino, Calif.); University of Houston Downtown (Houston); University of Puerto Rico (Mayaguez, P.R.); and University of Texas-El Paso (El Paso, Texas).

To access full abstracts about each MUCERPI award on the Internet, Visit http://research.hq.nasa.gov/code_s/nra/current/NRA-03-OSS-03/winners.html

NASA RESEARCH DEVELOPMENTS

NASA Rovers to Investigate Past Life on Mars

NASA's twin Mars Exploration Rovers (MERs) will pierce the atmosphere of Mars at 12,000 miles per hour in January of 2004, their impact braced by airbags, to begin a 3-month long scientific mission of collecting scientific data on the conditions and environment of the Red Planet. The rovers will trudge through 40 meters of terrain each Martian day, armed with cameras to collect evidence of liquid water on Mars and environments that may once have been hospitable to life.

Orlando Figueroa, Director of the Mars Exploration Program at NASA Headquarters, said, "The Mars Exploration Rovers will provide an unprecedented view of Mars, mimicking what human geologists would do to confirm the existence of places where life could have evolved. This will set the stage for future exploration missions to follow."

NASA Rovers to Investigate Past Life on Mars *(cont...)*

The MERs, Spirit and Opportunity, were launched in June and July. Spirit is scheduled to land in a giant crater on Jan. 4, 2004 and Opportunity is scheduled to arrive at a site half way around the planet called Meridiani Planum on Jan. 24, Eastern and Pacific Time.

NASA's Mars Global Surveyor orbiter has identified deposits at Meridiani Planum of a type of mineral that usually forms in wet environments. Scientists have revealed through thirty years of studying Mars that it once resembled Earth. Images from the Mars Global Surveyor show large, relatively freshly formed channels and gullies. These landforms are evidence that water may have flowed to the surface in the recent past. Both rovers will examine rocks and soil for clues about whether past environments at their landing sites had conditions necessary to support life.

The MER landings will resemble the 1997 Pathfinder mission, but with far more advanced instruments, cameras and a greater capability to move on the surface of Mars. Each rover is outfitted with solar panels, six retractable

wheels, mechanical arms and a panoramic stereo camera. An array of sophisticated instruments will be used to search for evidence that liquid water may have existed on the planet. NASA satellites orbiting Mars will receive data from the MERs and transmit it to scientist back here.

The exploration program is not without its risks. Of nine attempts to land on Mars, only three were successful. "The rovers will use innovations to aid in safe landings, but risks remain," said Peter Theisinger, MER project manager at NASA's Jet Propulsion Laboratory (JPL) in a pre-launch press release on June 4. The JPL, a division of the California Institute of Technology, manages the MER project for NASA's Office of Space Science.

Mars recently captured the attention of stargazers worldwide. On Aug. 27, the fourth rock from the sun was as close as it has been to Earth in 60,000 years. As a result of this planetary alignment, Spirit and Opportunity will travel a significantly shorter distance to Mars than if they had been launched at other times.

Destination: Mars (K-4)

Traveling to Mars is not a new idea. We have done it for 25 years using robotic rovers. What is new is getting humans to land on Mars. Mars is farther than any other space travel by humans to date. The current Space Shuttle isn't built to travel this far. NASA is working on new ways to get us to Mars.

Supplies need to be sent to the planet. It is not practical to load everything on one ship. Researchers expect it to take up to six to eight trips.

The planet has to be made ready for humans when they land. A habitat module would be sent ahead of the crew to be ready for them when they land on Mars. Sometimes several launched vehicles would meet in space to combine and become one big unit. This unit will combine supplies and continue on to Mars.

The main command module will not land on the planet. It will orbit around the planet. A transit vehicle will send the astronauts down to the planet. The larger command vehicle would provide transportation for the long journey back to Earth.

There is not a definite landing date set for Mars. Scientists are hoping to leave Earth around 2016, land on Mars around 2018 and, finally, return to Earth around 2020. It took 4 days to reach the Moon. A trip to Mars will take about 180 days. We are not ready for a trip to Mars yet. We are headed in that direction.

Courtesy of NASA's Human Exploration and Development of Space Enterprise and NASAexplores <http://nasaexplores.com>.



Backpacking on Mars, an artist's rendition

Destino: Marte *(de kindergarten al cuarto grado)*

Viajar a Marte no es una idea nueva. Lo hemos hecho durante 25 años utilizando exploradores robóticos. Lo nuevo es enviar a seres humanos a Marte. Marte está más lejos que cualquier distancia cubierta por los seres humanos hasta la fecha. Los transbordadores espaciales actuales no tienen capacidad para viajar tan lejos. NASA está trabajando para encontrar nuevos medios de llevarnos a Marte.

Es necesario enviar suministro al planeta. No es práctico cargar todo en una sola nave. Los investigadores calculan que para ello se necesitarán de seis a ocho viajes.

Hay que preparar el planeta para recibir a los humanos. Para ello, se enviaría un módulo de hábitat antes que la tripulación para que esté listo cuando ésta llegue a Marte. Algunas veces, varios vehículos se encontrarían en el espacio para combinarse y convertirse en una sola unidad grande. Esta unidad reuniría los suministros y continuaría su viaje hasta Marte.

El módulo principal de maniobra y mando no tocará la superficie del planeta, sino que orbitará alrededor del planeta. Los astronautas descenderán sobre el planeta en un vehículo de tránsito. El largo viaje de regreso a la Tierra se hará en el vehículo de mando más grande.

No se ha fijado fecha definitiva para llegar a Marte. Los científicos esperan que la nave abandone la Tierra alrededor de 2016, llegue a Marte hacia 2018 y, finalmente, regrese a Tierra alrededor de 2020. Tomó cuatro días llegar a la Luna. Un viaje a Marte tomará unos 180 días. Todavía no estamos listos para viajar a Marte. Estamos avanzando en esa dirección.

Cortesía de la Empresa de Exploración Humana y Desarrollo del Espacio de NASA mediante NASAexplores, <http://nasaexplores.com>

NASA Resources in Spanish Part I *(Parents and Educators)*

By Teresa J. Kennedy, Ph.D.

Space Science Network Northwest (S2N2)

NASA is meeting the needs of our nation's Hispanic student population, the largest minority group presently found in the classroom, by translating many high-quality educational materials into the Spanish language. From kindergarten through grade twelve, a growing number of students are speaking Spanish or other non-English languages in their homes. This article is the first in a multi-part series that will examine NASA resources in Spanish.

NASA materials in Spanish provide educators with enriched science materials that involve and enhance the academic achievements of the entire student body, integrate literacy skills in reading and writing with scien-

tific inquiry and, specifically, provide these English Language Learners (ELLs) with the opportunity to learn grade level curricula. In addition, Hispanic family members who speak little or no English can use NASA materials that have been translated into Spanish to become more involved in their children's education.

The demand for Spanish mathematics and science resources is on the rise. Statistics released by the Census Bureau in 2003 illustrate that the number of Hispanics in American schools increased by 37% from Census 2000 to roughly 37 million today. According to the Census 2000, nearly half of the 27 million individuals that spoke Spanish as their primary language that year reported that they felt they did not speak English very well.

NASA is actively working to reach this audience. "NASA

NASA Resources in Spanish Part I (cont...)

produces a lot of important information for a large and diverse audience,” said NASA Administrator Sean O’Keefe in a press release on May 22, 2002. “Organizing and offering access from our primary Internet site to the Spanish-language material we produce reflects the agency’s interest in and commitment to our growing Hispanic audience.”

In November of 2001, NASA announced several Spanish-language versions of existing NASA websites. Dr. Jeffrey Rosendhal, education and outreach director of NASA’s Office of Space Science, commented on this announcement stating, “NASA is committed to explaining the results of its programs to the entire American public in all its diversity.”

A comprehensive document provides a listing of over 50 available online resources from NASA centers across the nation. This valuable resource can be found on Idaho’s NASA Regional Educator Resource Center website (http://www.uidaho.edu/ed/nasa_erc) by clicking on the link entitled “Materials in Other Languages.” The document is constantly updated as new resources are translated and is available online in two formats, printer friendly PDF and HTML.

Resources included on the list are educational briefs,

Recursos de NASA en Español (Parientes e Hijos)

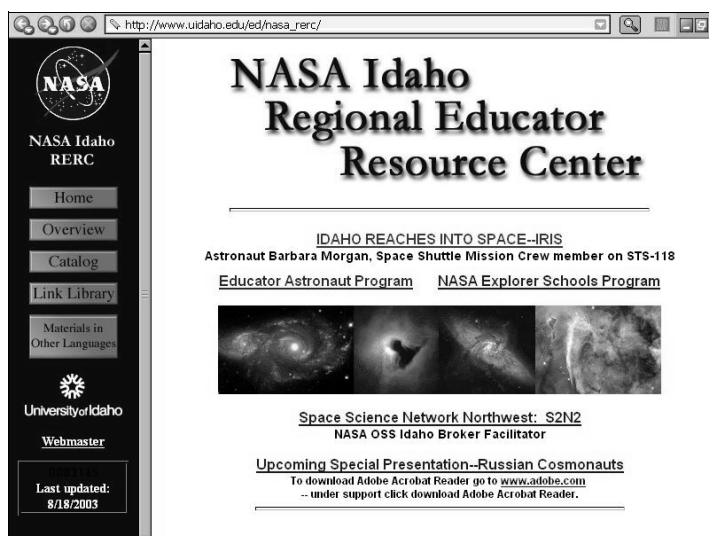
Autor: Dra. Teresa Kennedy

Red de Ciencias Espaciales del Noroeste (Space Science Network Northwest / S2N2)

NASA atiende las necesidades de los estudiantes hispanos, el grupo minoritario más numeroso en las aulas, traduciendo al español cantidades cada vez mayores de textos educativos de calidad superior. De kindergarten a 12avo. grado, un número creciente de estudiantes hablan en sus hogares español o un idioma que no es el inglés.

Los materiales de NASA en español proporcionan a los educadores materiales científicos actualizados que involucran y amplían los logros académicos de todo el estudiantado, combinan los conocimientos de lectura y escritura con la información científica y, específicamente, proporcionan a los estudiantes que estudian inglés

educator guides, brochures, wall sheets, lithographs, slide sets, videos with teacher guides, CDROM collections and interactive websites. Information regarding NASA’s international programs, including the International GLOBE Program, is also listed.



Idaho’s NASA Regional Educator Resource Center Website:
http://www.uidaho.edu/ed/nasa_erc

(pertenecientes al programa ELL, por sus siglas en inglés) la oportunidad de aprender programas de estudio a nivel de grado. Además, los familiares que no hablan inglés o lo hablan sólo un poco, podrán utilizar los materiales de NASA en español para involucrarse más en la educación de sus hijos.

La demanda de recursos matemáticos y científicos en español está aumentando. Las estadísticas publicadas por el Buró del Censo en 2003 revelan que el número de hispanos en los Estados Unidos es en la actualidad de unos 37 millones, lo que representa un aumento del 37% con respecto al Censo de 2000. Según el Censo de 2000, casi la mitad de los 27 millones de personas que hablaban español como idioma primario ese año reportaron que no consideraban que hablaban inglés muy bien.

Recursos de NASA en Español (cont...)

La NASA está trabajando activamente para llegar a ese público. “La NASA produce una gran cantidad de información importante para un público amplio y diverso” dijo el Administrador de la NASA, Sean O’Keefe, en un comunicado de prensa de fecha 22 de mayo de 2002. “Organizar y ofrecer acceso, desde nuestro sitio principal en el Internet, a nuestro material en español refleja el interés de la agencia por nuestra creciente audiencia hispana , y nuestro compromiso con el mismo”.

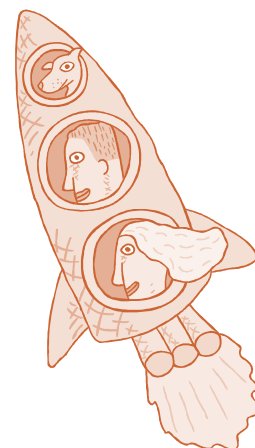
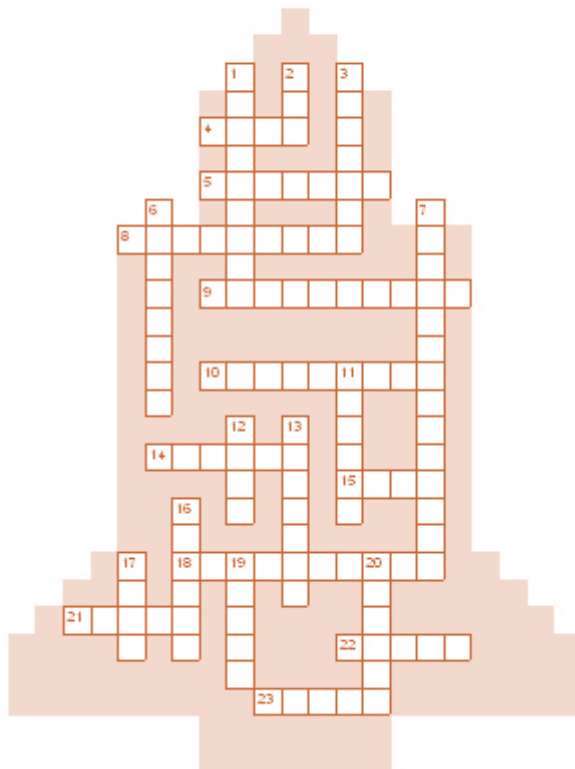
En noviembre de 2001, la NASA anunció la creación de varias versiones en español de sus actuales sitios en el Internet. El Dr. Jeffrey Rosendhal, director de educación y divulgación de la Oficina de Ciencias Espaciales de NASA, comentó sobre este anuncio: “NASA tiene el compromiso de explicar los resultados de sus programas a la totalidad del público estadounidense teniendo en cuenta toda su diversidad”.

En el Internet, ya existe un documento comprensivo que provee una lista de más de 50 recursos en línea de centros de NASA en todo el país. Este valioso recurso se puede

encontrar en el Internet del Centro Regional de Recursos para Educadores de NASA en Idaho en (http://www.uidaho.edu/ed/nasa_erc) haciendo clic en el enlace titulado “Materials in Other Languages” (“Recursos en otros idiomas”). El documento se actualiza constantemente a medida que se van traduciendo nuevos recursos y está disponible en línea en formato PDF fácil de imprimir y se puede ver a través de un visualizador (“browser”) de sitios en el Internet en formato HTML.

Entre los recursos incluidos en la lista se cuentan sumarios educativos, guías para educadores, folletos, hojas para pegar en la pared, litografías, juegos de diapositivas, vídeos con guías para maestros, colecciones de CDROM y sitios en el Internet interactivos. La lista contiene también información sobre los programas internacionales de NASA, incluyendo el Programa GLOBE Internacional.

Crossword: Keck Telescopes

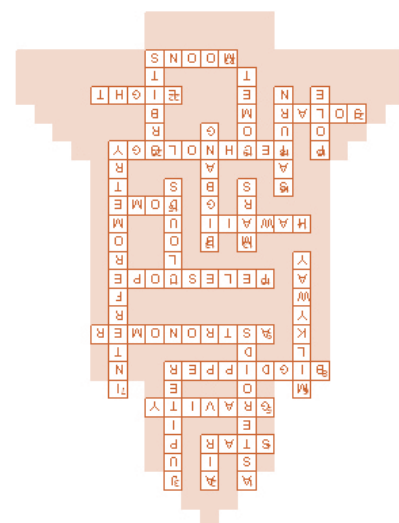


ACROSS

4. Our sun is a _____.
5. The force that keeps us from flying off into space.
8. Group of stars that looks like a soup ladle.
9. Scientist who studies the heavens.
10. An instrument used to see far away things, like stars and planets.
14. Big Island home of Keck Telescopes.
15. The rounded roof built to protect a telescope.
18. Our knowledge of science helps us create new _____.
21. Our star and all the planets orbiting it makes up our _____ system.
22. The sun puts out large amounts of this form of energy.
23. Most planets in our solar system have one or more of these going around them.

DOWN

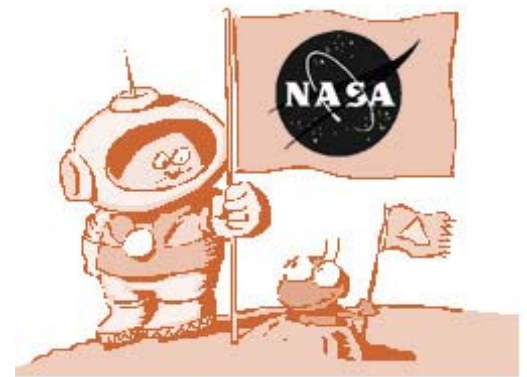
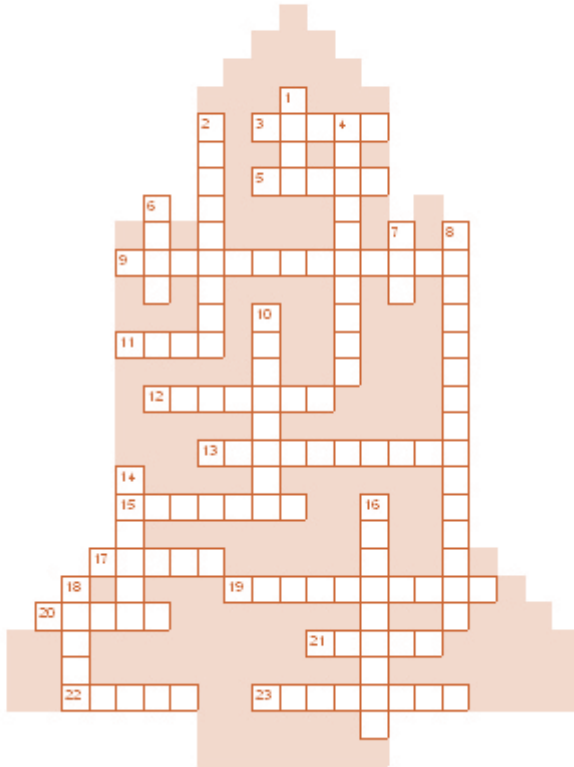
1. Chunks of rock in orbit between Mars and Jupiter.
2. Less of this to look through if telescope is atop a mountain.
3. The largest planet in our solar system.
6. We call our galaxy the _____.
7. Combining images from more than one telescope to make a much better image.
11. Fluffy-looking things that float in the sky and sometimes block our view of the stars.
12. Our nearest planetary neighbor, called "the red planet."
13. The huge "explosion" thought to be the beginning of the universe.
16. The sixth planet from the Sun, with beautiful rings.
17. The star Polaris is also called the North Star because it appear almost directly over the North _____.
19. Ice ball with a tail, sometimes seen in our night sky.
20. Earth does this around the sun, the moon does this around Earth.



ANSWERS

Crossword clues and answers courtesy of **The Space Place** <http://spaceplace.jpl.nasa.gov>

Crucigrama: Keck Telescopios

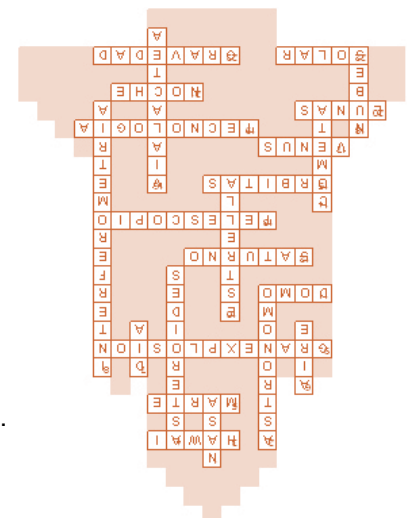


HORIZONTALES

3. Hogar en la "Isla Grande" de los Telescopios Keck.
5. Nuestro vecino planetario más cercano, llamado "el planeta rojo".
9. La enorme "explosión" que se cree que produjo el comienzo del Universo.
11. El techo redondeado construido para proteger un telescopio.
12. El sexto planeta desde el Sol, con hermosos anillos.
13. Un instrumento empleado para ver cosas lejanas, como las estrellas y los planetas.
15. La Tierra lo hace alrededor del Sol; la Luna lo hace alrededor de la Tierra.
17. El planeta que aparece como el tercer objeto más brillante del cielo, después del Sol y de la Luna.
19. Nuestros conocimientos científicos nos ayudan a crear nueva _____.
20. La mayoría de los planetas de nuestro Sistema Solar tiene uno o más de estos elementos que giran a su alrededor.
21. Período de tiempo del lado de la Tierra que está en dirección contraria al Sol.
22. Nuestra estrella y todos los planetas en órbita alrededor de ella forman parte de nuestro sistema _____.
23. La fuerza que evita que salgamos volando por el espacio.

VERTICALES

1. Abreviatura para la agencia espacial de los EE.UU.
2. Científico que estudia los cielos.
4. Trozos de roca en órbita entre Marte y Júpiter.
6. Si el telescopio está en una montaña, hay menos de esta sustancia a través de la cual debemos mirar.
7. La Tierra rota alrededor de su eje una vez por _____.
8. Combinación de imágenes desde más de un telescopio para producir una imagen mucho mejor.
10. Nuestro Sol es una _____.
14. Bola de hielo con una cola, que a veces se puede ver en nuestros cielos nocturnos.
16. Nuestra galaxia se llama la _____.
18. Cosas de aspecto esponjoso que flotan en el cielo y a veces bloquean nuestra visión de las estrellas.



Crossword clues and answers courtesy of *The Space Place* <http://spaceplace.jpl.nasa.gov/espanol>

CONTESTAR

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EVENTS

NASA Office of Education will participate in various forms at these Hispanic mathematics and science education events:

**15th Annual HENAAC Conference:
The Challenge of a Legacy of Excellence**
The University of Texas at Austin
Austin, Texas
October 16-18, 2003

HACU'S 17th Annual Conference
Hyatt Regency Orange County
Garden Grove, California
October 18-21, 2003

**MAES International Symposium and Career Fair:
A Journey of Discovery**
Arizona State University
Phoenix, Arizona
October 28-November 2, 2003

**Society of Hispanic Professional Engineers:
Eastern Technical and Career Conference**
Hyatt Regency Crystal City
Arlington, Virginia
November 13-16, 2003

**MAES International Symposium and Career Fair:
A Journey of Discovery**

The conference will bring together hundreds of college students and professionals from throughout the nation who are seeking jobs in the fields of science, engineering and computer technology.

NASA will hold a Teachers Workshop on Saturday, November 1, 2003. The event will draw 120 attendees. Registration to the event and attendance to the workshop are open to the public.

Email: questions@maes-natl.org
Website: <http://www.maes-natl.org/symposium2003>

**Society of Hispanic Professional Engineers:
Eastern Technical and Career Conference**

The Eastern Technical and Career Conference is the second largest Hispanic Engineering Conference in the Nation. Last year ETCC made strides in expanding the conference to reach over 1,000 students in attendance as well as having 50 Corporate Sponsors. Details on NASA's participation TBA.

Email: etcc@reg4.shpe.org
Website: <http://reg4.shpe.org/etcc/>