

Astrogram

Communication for the Information Technology Age

NASA, Carnegie Mellon 'cement' collaborative partnership

NASA and Carnegie Mellon University have reached agreement on a long-term lease under which the university will renovate 19,000 square feet

high-dependability computing research focus and its new information technology graduate program will serve to advance NASA's mission as well as set the stage for broader collaboration with Silicon Valley's high-tech community," Hubbard added.

"This agreement with NASA shows our commitment to our West Coast campus, and the value we believe it brings to the Silicon Valley community," said Carnegie Mellon University President Jared L. Cohon.

been working to develop a presence in Silicon Valley --to conduct research with NASA and valley companies, establish educational programs, offer special internship and work opportunities to students on the Pittsburgh campus, and develop closer ties with the nearly 3,000 alumni who live and work in the valley.

During this time, Carnegie Mellon officials have been collaborating with officials at Ames as they have been developing plans for the research park.

Late last year, Carnegie Mellon hosted a Founders' Day celebration to honor Silicon Valley leaders who have donated funds to support the establishment of the university's new West Coast campus. Founders include Chuck Geschke, Raymond J. Lane, Microsoft, Eric Schmidt, Sunil T. Wadhvani, C. Gordon Bell, David A. Coulter, Ali Kutay, Drew D. Perkins, Raj Reddy, Steve

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photo by Dominic Hart

NASA Chief Scientist Shannon Lucid shares a light moment with CMU President Jared Cohon (center) and Ames Center Director Scott Hubbard (right).

of space for its growing West Coast campus in Buildings 23 and 24 on the historic Shenandoah Plaza at Moffett Field.

The plaza is adjacent to Ames and is part of the 213-acre NASA Research Park the agency is developing. The university will lease the buildings for 15 years and can exercise additional options to bring the term of the lease up to 48 years. It also gives the university the right of first refusal to lease Buildings 17 and 20 on the six-building quadrangle. The university's West Coast campus and High Dependability Computing Program have been housed in Building 17 since 2001. Now, expanding educational and research programs require additional space. Building 20 could house up to 60 people, including students, visiting faculty and short-term visitors.

"We are delighted to sign this lease agreement with Carnegie Mellon, one of the world's premiere institutions of higher education, especially in the area of computer science," said Ames Center Director Scott Hubbard. "This agreement marks a significant milestone in the evolution of NASA Research Park. The combination of Carnegie Mellon's

renovations to Building 23 and 24 to be completed this fall. Because several buildings in the 70-year-old Shenandoah Plaza have been placed on the historic register, renovations must comply with the State Historic Preservation Office's guidelines. The renovation is being carried out by Turner Construction Co. of San José, with the architectural designs being created by the Architectural Resources Group of San Francisco.

Carnegie Mellon's West Coast campus opened in September 2002, with 56 students enrolled in two programs leading to a master of science degree in information technology. The course of study is built around unique hands-on, project-oriented, apprenticeship-based and individually mentored activities that emphasize teamwork and collaboration.

The campus also has a research agenda based on high-dependability computing. Carnegie Mellon received \$23.3 million from NASA in January 2002 to lead the High Dependability Computing Program, a research consortium of five universities.

Since 1999, Carnegie Mellon has

Astronomy Lecture Series

On Jan. 29 at 7 p.m., the Silicon Valley Astronomy Lecture Series will present Dr. Gibor Basri from U.C. Berkeley speaking about 'Failed Stars or Supergiant Planets: A Cosmic Identity Crisis' in the Smithwick Theater at Foothill College.

Basri, who has made pioneering observations of the mysterious objects called 'brown dwarfs,' will discuss the shadowy realms that lie between being a planet and being a star--a topic only recently investigated. He will explain how astronomers are learning to make more sophisticated distinctions about exactly what it takes to be a star.

The college is located on El Monte Road and Interstate 280, in Los Altos Hills. The event is free and open to the public. For more information, call the event hotline at (650) 949-7888. It is co-sponsored by Ames, the Foothill College astronomy program, the SETI Institute and the Astronomical Society of the Pacific.

O'Keefe discusses 'One NASA' initiative with employees

Recently, NASA Administrator Sean O'Keefe rolled out the agency's 'One NASA' initiative in a televised briefing and question-and-answer session with employees. 'One NASA' is designed to make better use of the agency's talents and resources, increase teamwork and minimize duplication.

"The 'One NASA' team has been out listening to people in the centers and enterprises about how we can better transfer information and collaborate better," O'Keefe said "We're trying to make the day-in, day-out activities we're doing more effective and more fun."

O'Keefe reminded employees that 'One NASA' is not about eliminating the cultural differences and identities of each NASA center, but about celebrating "the history, background and culture of each center." The initiative seeks "to build on those unique histories, those unique capabilities," he said, adding, "we don't want to ignore those origins, but to capitalize on them."

'One NASA' is about each individual putting forward his or her best efforts to achieve what is in the best interests of the agency, ensuring these efforts are aligned with agency goals and making the best possible use of agency resources.

As NASA employees who work for the American public, we are obligated, O'Keefe said, to make information about NASA programs "more accessible, more interesting and more usable." One way to do this is through the new 'One NASA' Web portal, which will provide a single point of entry to the millions of NASA Web pages. Roll out of this new portal is expected early this year.

O'Keefe cited the International Space Station as a "small example" of what we can accomplish collectively by pooling resources and capabilities across NASA centers and space agencies. No single field center has all the competencies and capabilities needed to accomplish NASA's missions and goals, O'Keefe said. And no single space agency has the resources to accomplish major programs to explore the reaches of space.

In order to meet the challenges of such large-scale systems integration efforts, we must understand the resource needs, including financial, personnel and technical requirements. The Integrated Financial Management Program, set for roll out in February, is an agency-wide effort to modernize NASA's financial and administrative systems and processes, to provide better management

information, and to improve the financial, physical and human resources management processes throughout the agency.

The 'One NASA' team was established in August 2002 as part of an initiative that came out of the agency's Freedom to Manage activity. Following the Administrator's 'One NASA' roll-out announcement, a survey of NASA employees was conducted, with more than 5,000 responding. The 'One NASA' team currently is analyzing the results of that survey. The information collected then

will be integrated with other data into a set of recommendations for action, and the 'One NASA' effort will be integrated with other change initiatives.

"NASA Ames has a long history of close collaboration with all NASA field centers, and we are fully committed to this important new initiative," said Greg Schmidt, Ames' representative to the 'One NASA' team.

Additional information about the 'One NASA' initiative can be found on the Internet at: www.onenasa.nasa.gov

BY ANN HUTCHISON 

Second SOLAR workshop held

The second annual SOLAR workshop was held recently in Huntsville, Ala., home of the SOLAR system and its development team. Thirty-five people, representing every NASA training center, attended the two-day workshop. Joe Mc Elwee, functional manager for SOLAR and NASA e-Learning, kicked off the workshop by sharing NASA's e-learning vision with the group.

This year, participants also benefited from 14 presentations and a group discussion/break-out session. The SOLAR development team covered such topics as: SOLAR next generation objectives, SOLAR metrics, SOLAR capability update, SOLAR content development process, learning content management system study results and AdminSTAR interface solution. In addition, participants gained insight into the SOLAR strategic marketing plan, NASA e-learning and portals, and e-training services and the gov online learning center. The presentations about IT security awareness and training, tracking and reporting, course development, section 508, and ADL and SCORM standards provided some valuable information as well.

The SOLAR administrative team was proud to share the metrics demonstrating the benefits realized from software upgrades and hardware enhancements. The help desk reported an average of 226 trouble tickets per month last year and only 79 trouble tickets per month this year, a 402 per-

cent improvement! Of note, these tickets had to do mainly with password reset and instructions, not system discrepancies. The team also reported 48,526 active user accounts with 47,724 as the number of tests taken in all disciplines so far this year. As a final point, participants were given details of the AdminSTAR interface on SOLAR, a significant feature the team is planning to release by the end of the year.

An open group discussion of the SOLAR-end user input yielded excellent feedback. Among the ideas and recommendations was the re-design of SOLAR's 'bulletin board' feature to enhance collaboration among training centers. Also discussed was the NASA e-learning portal initiative and how this effort may impact SOLAR, new marketing approaches at the centers, key development areas for the SOLAR team to focus on next year and improvements to the current system.

An awards dinner followed the first day of presentations. Members of the SOLAR team were recognized for achievement in product development. Two special SOLAR Star awards were given to Louise Setzer and Colleen Davis for their help desk support throughout the year.

For further information, or to be placed on the SOLAR mailing list, contact Mercedes Sironi by e-mail at msironi@htshq.com or call (858) 495-0508.

National Hispanic University applauds Ames' diversity efforts

Recognizing Ames' efforts to increase the pool of qualified Hispanics in the mathematics and science professions in a joint effort with National Hispanic University (NHU), San José, NHU recently presented Ames with a plaque during the university's 21st Founders' Day dinner.



The partnership award plaque above was presented to Ames during the National Hispanic University's 21st Founder's Day dinner recently.

About 400 people attended the banquet at the Fairmont Hotel in San José. Ames' Executive Assistant to the Director Jack Boyd accepted the 'partnership award' on behalf of the center. Almost a year ago, Ames signed a memorandum of understanding (MOU) with NHU to work to encourage youth to pursue science and engineering careers.

"National Hispanic University is very appreciative of the partnership with NASA Ames," said NHU Vice Provost for Academic Affairs Josephine Hawkins. "One of our major goals for this year is to increase the number of Latinos and other minorities pursuing majors in careers in science and technology."

NASA has been very supportive through its robotics education, science teacher enhancement and other educational programs, she added.

"As a result of the MOU and the work we did with NHU, they are in the process of adding a math and science department," said Adriana Cardenas, chief of the Ames Equal Opportunity Programs Office, who also attended the event. "They have already begun recruiting for professors in math and science."

The plaque presented to Boyd reads, "For exemplary leadership, collaboration and partnership with the National Hispanic University in support of increased equity and access to higher education for Latinos and all Americans. It can be done!"

Providing resources and career development for science and mathematics teachers, field trips to NASA, and researching "distance learning" by use of Internet and other information technologies are several objectives of the MOU.

"Joint programs include a six-week summer robotics academy at Moffett Field," according to an NHU brochure distributed during the dinner. "Special

thanks to Dr. Henry McDonald, Dr. Ken Munechika, Adriana Cardenas and Ruben Ramos (all of Ames or formerly of Ames) for helping to make a difference by giving students hope that they too can reach the stars," the brochure continues.

Congresswoman Zoe Lofgren attended the robotics academy last summer and was quite impressed with the opportunities for students that the camp provided, according to Boyd.

"The dinner was called 'Changing Lives,'" Cardenas said. "It was a huge, formal event with hundreds of people, including big donors. Safeway presented a check for \$500,000. NHU is breaking ground for a new university in March."

"They will build a state-of-the-art campus on Story Road on an 11-acre, East San José campus," Cardenas added.

One of the parts of the project is "construction of a 60,000-square-foot academic

building to house classrooms, science and computer laboratories, library, conference center and faculty offices, with the capacity to accommodate 600 students at one time," according to the NHU Web site at: <http://www.NHU.EDU/>.

"To purchase the land and institute the first phase in the multi-phase master plan, the board of trustees of the National Hispanic University is proposing to launch a \$25 million capital campaign," the site also notes.

"NHU has \$12 to \$13 million raised already," Cardenas said.

Rigo Chacon, South Bay bureau chief of KGO-TV ABC, served as master of ceremonies, and Manuel Romero, a Time Warner artist, sang the national anthem and a closing piece, "My Way (A mi manera)."

BY JOHN BLUCK ▲

Former Ames employee passes on

Former Ames employee William James Snyder died of pancreatic cancer on Nov. 16, 2002, at his home in Battle Ground, Wash. He was 60 years old.

Snyder was employed by NASA for 35 years as an aerospace engineer, researching helicopters and coordinating the civil helicopter program throughout the NASA centers. Snyder worked at NASA-Langley from 1964 to 1977; he then came to Ames in 1977 and was here until he retired in 1997.

He was chief of the Advanced Tiltrotor Technology Transfer Branch at the time of retirement. He received the NASA Medal for Outstanding Leadership and contributions in the field of advanced civil rotorcraft in 1994. He was an active member of the American Helicopter Society for over 35 years and was awarded an Honorary Fellowship in the American Helicopter Society in 1997.

Snyder was an active volunteer with the Boy Scouts of America, where he mentored and encouraged young men. He prominently displayed a case of NASA awards to his troop and always shared NASA information with them. "His enthusiasm and passion inspired me to go on to college and want to work for NASA," stated present employee Carlos Torrez.

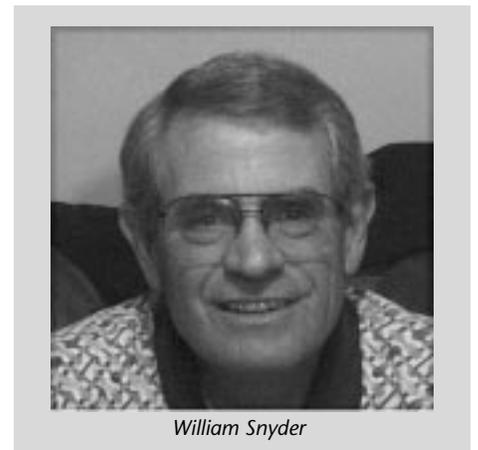
His favorite sport was golfing. He was a founding member of the Green Mountain Golf Course, where he spent many days golfing with his wife. He also served as treasurer of the club for the last two years.

Snyder was preceded in death by a son, James William, in 1998.

He was born May 4, 1942, in Wheel-

ing, WV. He graduated from West Virginia University in aerospace engineering in 1965. He was happily married to his wife, Wanda, for 40 years. She was also employed at NASA, retiring as a contract specialist for Code JA.

Survivors include his wife, Wanda; one daughter, Mrs. Stephen (Karen) Abarr; one grandson, Adam Abarr, of Battle Ground; two sisters, Mrs. Charles (Susan) Rine, Mrs. Dale (Debra) Miller of Florida; five nephews, William Graham, James Graham, of Indiana, John Rine, of Florida, Jay Rine of North Carolina, Jonathan Reeve, of Florida; two nieces, Melissa Miller and Michelle



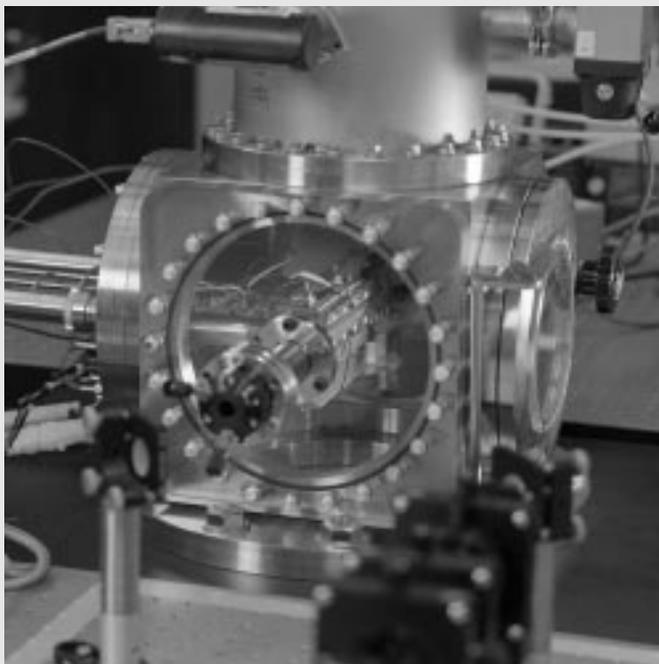
William Snyder

Miller of Florida.

Memorial contributions may be made to Hospice Southwest, P.O. Box 1600, Vancouver, Wash., 98664, in memory of Bill. Notes may be sent to the family at william.snyder@attbi.com.

From ground to space: at the frontiers of science

A major milestone has just been achieved at Ames with the development of a unique laboratory facility that di-



Shown above is a close-up of the Interstellar Simulation Chamber (ISC) set-up. The plasma created inside the chamber recreates the low-temperature, low-density and energetic conditions of the diffuse interstellar medium.

rectly simulates and probes the ionized gas that makes up the huge interstellar clouds that extend over billions of light years in space and cause the absorption of light emitted by stars. The new laboratory facility is located in the Space Science Astrophysics Branch and results from a collaboration between Ames' space research scientists and Los Gatos Research scientists through a Small Business Innovative Research (SBIR) contract awarded by NASA to LGR. The team, headed by Ames' Dr. Farid Salama, has specifically designed and built this new laboratory facility to gain a deeper understanding of the composition of our universe and of the evolution of galaxies, a major objective of NASA's space research program.

The idea of setting up this laboratory facility to simulate space environments began as a Director's Discretionary Fund (DDF) project initiated by Salama in 1996, and its realization represents a true success story for Ames' DDF program that provides seed funds for new (and risky) innovative research projects. This pioneering facility is made up of an Interstellar Simulation Chamber (ISC) that is coupled to a cavity ringdown spectrometer, an extremely sensitive device that detects the spectral signature (the 'fingerprints') of matter

at the molecular level. The ISC, the heart of the system, recreates the extreme environmental conditions that reign in interstellar space where average temperatures are as low as 100 Kelvin (less than -170 degree Celsius!), densities are billionths of Earth's (of the order of 10^{-16} - 10^{-17}) and interstellar molecules and ions are bathed in stellar ultraviolet and visible radiation. "These are harsh conditions - by our earthly standards - that are extremely difficult to reproduce in the laboratory and have long hindered efforts to interpret and analyze observations from space," said

Salama.

Among these observations are the so-called 'diffuse interstellar bands,' or DIBs that appear as gaps in the spectrum (range of frequencies or color) of light from distant stars and galaxies. The DIBs number a few hundred bands (about 300), are widespread in the interstellar medium and are caused by interstellar materials that absorb frequencies of light (or colors) in the spectral rainbow. This absorption leaves holes or 'lines' in the spectral rainbow. The identification of the DIB carrier represents a major challenge scientists have struggled with since the early 1900s. "Understanding the makeup of the interstellar medium will help us better understand the origin and evolution of life in the universe, a key objective of NASA's astrobiology and space science program that can only be achieved with the help of dedicated laboratory facilities such as the Interstellar Simulation Chamber," said Salama. "The other key characteristic of this type of new research is that it truly pushes the limits of science at the most fundamental level and supports Ames' contribution to the New Frontiers exploration program," he added.

Scientists now believe very large organic molecules (i.e., containing carbon and hydrogen) cause the DIBs.

Among the organic materials, polycyclic aromatic hydrocarbons (PAHs) might be the long-sought matter producing the interstellar bands. PAHs are good candidates to account for the infrared emission bands seen in the interstellar medium that contribute to the cooling channels of interstellar clouds. It is important to understand how PAHs absorb stellar radiation and how they emit it back, because it contributes to the global energy balance in space. The aim of the research performed using ISC is to provide such quantitative information for the analysis of astronomical spectra (range of frequencies or color) in support of NASA's space science and astrobiology missions. The principal objective is to study the interstellar medium (ISM) and to determine the physical and chemical properties of large interstellar molecules and ions (charged molecules). In particular, scientists are focused on acquiring a deeper understanding of the origin and the distribution of the complex organic matter - large carbon-bearing pre-biotic molecules - in space and how these molecules are able to withstand intense radiation from the stars and survive in the harsh ISM environment. The spectral signatures of organic carbon molecules have been identified in the interstellar medium not only in our galaxy, but in other galaxies as well, implying that carbon-based life could be possible throughout the universe.

In performing innovative research with the Interstellar Simulation Chamber and by measuring the spectra of large organic molecules and ions under conditions that mimic entirely the interstellar conditions, scientists will be able to discover important information about the composition of complex interstellar dust - in particular how much organic carbon is there. The ISC facility permits the scientific exploration of regions of interstellar space (diffuse regions) that couldn't be accurately mimicked in the laboratory until now. "ISC brings in critical data that enable the science community to address essential questions regarding the evolution of stars, the structure of the universe and the nature of the organic molecules in the ISM," said Salama.

The new experimental facility generates and maintains large carbon-containing molecules and ions under interstellar-like conditions, while simultaneously measuring their spectra. To ensure that the molecules are isolated, as in low-density interstellar regions, gaseous polycyclic aromatic hydrocarbon molecules are seeded in a beam of argon gas under high pressure and are expended into a closed high-vacuum chamber through a narrow slit. A high-voltage electronic discharge is applied across the

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NASA supercomputers aid breast-cancer research

Returning to Ames, Professor of Mathematics at Eastern Illinois University Suhrit Dey presented his latest breast cancer research findings at the November NASA Advanced Supercomputing (NAS) Division's new technology seminar. Dey is developing a system of mathematical equations to model the effects of chemotherapy, radiation therapy and immunotherapy on the growth and spread of breast cancer cells in the human body. Breast cancer currently plagues the lives of more than 2 million women in the United States. Dey is driven to eliminate this suffering using mathematics and computer simulations.

Among Dey's recent work is a series of equations accounting for the growth and spread of cancer used to model how these factors affect non-cancerous cells in the body. These new equations were integrated into Dey's three-dimensional dynamic animation, developed in part by his son Charlie Dey at the University of Illinois. The animation enables Dey to rotate the model in any direction and observe the movement of individual cancer cells in the body from all angles, especially in the breast area. Working with John Koontz of SkyNetworks in Champaign, Ill., Dey has improved the code for generating his three-dimensional dynamic animations. This requires massively parallel computations to be done in the message-passing interface (MPI) environment. MPI is a good alternative for parallel computation when a shared-memory computer system is unavailable, explained Dey.

An important part of Dey's work has been traveling the globe--from Scotland, to Italy, to India--to form collaborations and partnerships with doctors and deliver invited talks. Discussing his research findings with doctors provides Dey with feedback about his mathematical models. Dey has been working closely with one doctor in particular--Dr. Charles Wiseman, chief oncologist of St. Vincent Hospital in Los Angeles.

One of Dey's current research focuses is on the cause of recurring breast cancer cases. "The mathematical model reveals that when the main tumor is gone, that does not mean that the cancer is gone. The cancer cells could still be alive and gaining strength, especially if the immune system gets weaker" explained Dey. To determine what is needed to ward off recurring cases of cancer, and to increase the number of fighter T-cells, B-cells, and natural killer cells in the body to keep cancer at bay, Dey is experimenting with variables in his mathematical models such as stress, depression and side effects of medications, which weaken the immune system. Although cancer may be necrotic (dead cancer cells inside of a tumor) at

the primary site in the body, it could be metastasizing in another location, causing recurring cases of cancer. Bottom



Professor Suhrit Dey speaking recently at Ames. Dey presented his latest breast cancer research during the seminar.

photo by Tom Trower

line, said Dey: "It is important to continue therapy, even after the cancer at the primary site is gone--it is especially important to continue immunotherapy and medications."

One of the biggest obstacles in the path of Dey's breast cancer research has been collecting enough data to improve his model so that it can be compared to real patient data. "Data are hard to come by--pharmaceutical companies are very

hesitant to hand over data," said Dey. Dey's students at Eastern Illinois University have been very supportive of Dey's work, providing him with any patient data they have. Wiseman has also supplied Dey with valuable information supportive of the outcome of his three-dimensional model.

To reach his long-term goal--putting most, if not all of the human body into a single configuration--Dey will require more computer power. Currently running his models on a Pentium4 machine, taking two days to complete calculations, Dey is confident that he could complete them in under 20 minutes or less on a multi-processor, shared-memory supercomputer such as those housed at the NAS facility. Coupled with his determination and the support he receives from the medical community, Dey will continue fighting the cancer that kills so many Americans every year.

Suhrit Dey's breast cancer research was initiated after receiving grants from Dr. Bob Augustine, dean of the graduate school, Dr. Mary Anne Hanner, dean of the College of Sciences and Bud May, director of grants and research at Eastern Illinois University.

BY HOLLY AMUNDSON

Centennial of Flight inspires kids

In December, approximately 1,200 5th to 8th grade students visited Ames to participate in AeroExpo III, the third in a series of Ames-sponsored events celebrating the Centennial of Flight. Bob Jacobsen, airspace systems program director for NASA, was the featured guest speaker at the event.

Students toured Future Flight Central, the Vertical Motion Simulator, the 20-G Centrifuge, the Crew-



Above: Students check out the Rotorcraft Aircrew Systems Concepts Airborne Laboratory (RASCAL) helicopter at the recent Aero Expo III event held at Ames in December.



photos by Dominic Hart

Vehicle Systems Research Facility, the CAM mock-up, the 80x120 Wind Tunnel, the Fluid Mechanics, NeuroLab/Robotics, Air Traffic Management and Airspace Operations labs. Students ended the day with hands-on activities at Aero Village.

Students 'build' their own jetliner using an aircraft design software package created at NASA Ames.

Center Briefs

Creepy crawlers may unravel web of planetary mysteries

Researchers at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., created a micro robot reminiscent of the childhood character Charlotte from 'Charlotte's Web.' Dubbed 'spider-bot' for its spider-like appearance, this itty-bitsy, high-tech critter may one day chart the terrain on other planets and explore smaller bodies, such as comets, asteroids or the moon.

Spider-bots may also help with maintenance and repairs on the International Space Station. On Earth, they might fill in for humans by investigating hazardous materials or taking soil measurements on farms.

Biggest 'zoom lens' in space extends Hubble's reach

The Advanced Camera for Surveys (ACS), aboard NASA's Hubble Space Telescope, has used a natural 'zoom lens' in space to boost its view of the distant universe. Besides offering an unprecedented and dramatic new view of the cosmos, the results promise to shed light on galaxy evolution and dark matter in space.

Hubble peered straight through the center of one of the most massive known galaxy clusters, called Abell 1689. This required Hubble to gaze at the distant cluster, located more than 2.2 billion light-years away, for more than 13 hours.

The gravity of the cluster's trillion stars, plus dark matter, acts as a 2-million-light-year-wide 'lens' in space.

This 'gravitational lens' bends and magnifies the light of the galaxies located far behind it.

NASA captures three 'Best of What's New Awards' from Popular Science magazine

NASA's unprecedented work in space and Earth science captured three of Popular Science's 'Best of What's New Awards' for 2002.

The Mars Odyssey mission, the Gravity Recovery and Climate Experiment (GRACE) and the Aqua spacecraft mission were chosen in the aviation/space category.

Popular Science featured the 100 winners, chosen in 10 categories, in its December 2002 issue. Popular Science annually reviews thousands of new products and innovations.

To win, a product or technology must represent a significant step forward in its category.

Scientists say ancient asteroids, comets may have caused Mars rain

Scientists from NASA and the University of Colorado suggest the bombardment of comets and asteroids on early Mars caused cycles of rain that led to global flooding and the formation of Mars' river valleys and other water-sculpted landscapes.

The researchers emphasize that the period when large comets and asteroids struck Mars appears to correlate with the formation of ancient rivers when water once flowed on Mars, and that both 'events' seem to have ended about the same time, between 3.5 and 3.8 billion years ago. The research was published in December in *Science* magazine in an article entitled 'Environmental Effects of Large Impacts on Mars.'

"The river valleys and large craters on Mars may both be about the same age geologically," said Teresa Segura, the paper's lead author. "We think that the two must be related, and our paper describes one possible connection." Segura, a graduate student in atmospheric and oceanic sciences at the University of Colorado, is based at NASA Ames.

The researchers modeled the impacts of asteroids and comets between 60 miles and 150 miles in diameter that bombarded Mars billions of years ago. Such impact events packed a huge energy wallop, equal to about 10,000 million megatons of dynamite depending on collision velocities, which were lower back then.

The impacts released water on Mars in four ways, the scientists say--from the vaporized asteroid or comet itself, from Mars' icy polar caps, from the ground where the crater formed and from the heat from hot 'ejecta' (a mixture of soil, rocks and water) that gradually baked water out of the martian soil.

When Mars eventually cooled down after an impact episode, scientists theorize, water that had evaporated into the atmosphere condensed into rain. During Mars' rainy periods, precipitation rates probably averaged between 1 meter and 2 meters a year, similar to Earth's average annual rainfall today.

"This happened dozens of times, maybe more, but after it rained, Mars would go dry," said Dr. Kevin Zahnle, a co-author from Ames. "In the times between impacts, the water sank back into the soil, where it lay dormant until the next time an impact occurred."

Scientists think the martian rains lasted for episodes ranging from months to decades and that, between bombardments, Mars returned to its typical cold, dry state. Besides bringing moisture, the impacts also caused Mars to warm up,

they say. During bombardment episodes, hot 'ejecta' from impacts kept Mars' surface warm for hundreds of years at a time.



The Isidis Valley Basin on Mars shows possible fluvial features eroded by precipitation. This photo is a daytime thermal image taken by the Thermal Emission Imaging System (THEMIS).

Photo credit: Mars odyssey THEMIS public data archive

The martian cratering record shows that there are at least 30 craters carved by impactors that are 100 kilometers or more in diameter. These were created during the planet's period of heavy bombardment by comets and asteroids more than 3.5 billion years ago.

Scientists do not know why a late heavy bombardment stopped about 3.5 billion years ago, according to Segura. "Our research provides some insight into what early Mars might have been like, but we've fit only a couple of pieces into the puzzle of Mars' past," Segura said.

Team members include Dr. Owen B. Toon, University of Colorado, and Dr. Anthony Colaprete, of Ames.

The project is funded by the University of Colorado Center for Astrobiology in Boulder and the NASA Astrobiology Institute (NAI) through Ames. The NAI is an international research consortium with its central offices located at Ames.

BY KATHLEEN BURTON ▲

NASA tests K9 rover in new 'Marscape' for future missions

NASA scientists and engineers are testing new technologies using a K9 rover in a newly built 'Marscape' test facility in preparation for future missions to Mars.

Testing is being conducted at Ames in a 3/4-acre 'Marscape' that has been designed to resemble the terrain on Mars. Constructed at a cost of about \$74,000, the test facility incorporates the environmental and geological features of Mars that hold the greatest scientific interest. The Marscape features a dry lakebed and outflow channel, a meteorite impact crater, a volcanic zone containing a dry hydrothermal spring and an area that scientists describe as "chaotic terrain."

"The goal of the K9 project is to integrate and demonstrate new robotic technologies that will enable NASA to meet the science goals of future Mars missions," said Maria Bualat, a computer engineer at Ames who is the K9 rover project lead. Scientists hope to utilize new robotic technologies during NASA's Mars Science Laboratory (MSL) mission anticipated in 2009.

"The whole purpose of this research project is to ensure that this rover is as autonomous and reliable as possible. Autonomous instrument placement capability is essential for future Mars exploration," said Dr. Liam Pedersen, principle investigator for the K9 rover instrument placement project.

Developed jointly at Ames and NASA's Jet Propulsion Laboratory (JPL), in Pasadena, the K9 rover is a six-wheeled, solar-powered rover weighing 145 pounds (65 kg) that measures 63 inches (1.6 m) high. The K9 rover is modeled after a rover named 'FIDO' (Field Integrated Design and Operations) developed at JPL about four years ago.

The rover's avionics, instrumentation and its autonomy software were developed at Ames. The rover carries a variety of instruments on board, including a compass, an inertial measurement unit and three pairs of monochromatic cameras used for navigation and instrument placement. The rover also carries a pair of high-resolution, color stereo cameras and CHAMP, an arm-mounted, focusable microscopic camera developed at the University of Colorado, Boulder. The rover's stereo cameras create a 3-D virtual map of the exploration site that scientists use to help navigate the rover to its intended target.

"Approaching science targets such as rocks and placing instruments against them to take measurements is an essen-

tial task for a planetary surface exploration rover," Pedersen explained. "This is necessary to acquire samples, determine mineralogy, obtain microscopic images and other operations needed to understand the planet's geology and search for evidence of past or present life."

Due to Mars' distance from Earth, even with commands being transmitted at the speed of light, it currently takes three martian days to complete the process of directing a rover to a targeted rock and placing the instrument on the rock to begin scientific analysis of it. Scientists at Ames hope to be able to accomplish that objective in a single day, thereby increasing the efficiency of obtaining science data in future missions.

David Smith, an Ames computer scientist, leads the research group responsible for developing the rover's automated planning and scheduling software. In previous missions, there has been very little automation of the planning and scheduling process for planetary rovers, according to Smith.

"What's unique about this software being developed at Ames is that it generates contingency plans to provide an alternative that can be executed when things go wrong," Smith said. "There is a great deal of uncertainty in operating a robotic system on Mars, so you need to be able to consider alternatives. By having options available, you increase the science return."

To increase the versatility of the software, scientists at Ames, JPL and Carnegie Mellon University are developing a universal architecture for robotics software named CLARAty, funded by the Mars Technology Program, to develop robotics capabilities at NASA centers and universities for future missions.

"NASA near-term Mars missions have very ambitious science goals that will require high levels of autonomy



photo by Tom Trower

A K9 rover is shown in the newly built Ames 'Marscape' test facility. The rover research has been conducted in preparation for future missions to Mars. The 'Marscape' was designed to resemble the terrain on Mars.

onboard the robot," said Bualat. "Our goal is to have a 'smart robot' that we can send off to Mars in 2009 that will take care of itself."

The K9 rover project's annual cost of approximately \$1 million is funded jointly by the Intelligent Systems Project under the Computing, Information and Communications Technology (CICT) program administered by NASA's Office of Aerospace Technology, and by the Mars Technology program, administered by the Office of Space Science, NASA Headquarters, Washington.

Reproduction quality images of the K9 rover are available at: <http://amesnews.arc.nasa.gov/releases/2002/02images/k9/k9.html>

BY MICHAEL MEWHINNEY ▲

Ames graduate student furthers genome research

In the era of different fields of science merging together to break boundaries for research, Dr. Charles Wade and his student Manny Ramirez of Ames, Dr. Peter Stein of the University of Medicine and Dentistry of New Jersey, Bruce Conklin and Nathan Salomonis of from GenMAPP (Gene MicroArray Pathway Profiler) are bringing biology and computer science together. They are using new revolutionary tools, GenMAPP and Affymetrix, to organize and enhance cutting edge genome research in biology.

Ramirez, who is a graduate student working with Wade and Stein, has contributed a series of 47 gene maps for rats on GenMAPP, which include information about rats' genes and their interaction pattern. The activity was designed to provide tools to analyze data from NASA's primary mammalian model.

"The new maps were created to address the needs of the bioinformatics community. This effort will greatly aid the rat genome project database and individuals using micro-arrays," said Wade.

In an effort to get a deeper understanding and to put the genome puzzle together, Ames is collaborating with non-profit organization GenMAPP and a private company, Affymetrix, to learn more about the pathways of genes. Affymetrix technology manufactures gene microchips to analyze DNA arrays. This electronic information is then transferred into GenMAPP, the state-of-the-art software program, which groups gene data by biological function and interaction within genome and produces a colorful map with a legend to indicate what is happening such as changes in biological substances. Starting with original data mixed in tables of thousands of numbers, GenMAPP distributes and displays the data in a clear, consecutive way. GenMAPP is designed to visualize gene expression data and DNA array in a biological context with the graphical and more intuitive format.

With this new tool the researchers are making novel observations, which promise to lead to a better understanding of DNA-arrays and discovery of treatments for many diseases. GenMAPP allows the researchers to map expression data from their gene profiling experiment directly in the context of biological cascades. It also allows researchers to view additional detailed information about any item on the map.

Thus, GenMAPP facilitates the analysis of the large amounts of data produced by the experiments.

"The beauty of this project is that it is highly accessible and useful for many researchers and interested public around the world. Many people are working to put this project together and everyone is really positive and willing to take on any challenges," said Ramirez.

Now any researcher doing research on rats can download these maps from GenMAPP and work in both Affymetrix and GenMAPP as these sites are connected. The GenMAPP Web address is <http://www.genmapp.org/> and the Affymetrix Web address is <http://www.affymetrix.com/index.affx>

"We are going to publish more maps and continue working with more organizations," said Ramirez.

Ramirez has a degree in computer science and is currently enrolled in the bioinformatics graduate program at University of California, Santa Cruz. Ramirez has more than 10 years of experience with high tech companies such as Hewlett-Packard and Agilent Technologies. "Bioinformatics is a new field that allows us to join efforts of biology and computer science, to integrate computer science into biology, so we can understand life science better," said Ramirez.

BY VERONIKA SOUKHOVITSKAYA ▲

Ames aids western pond turtles

"For, lo! The winter is past, the rain is over and gone; the flowers appear on



photo by Donald Chuck

Western pond turtles (on wooden plank) are shown in the Ames marshland area.

marmorata, is a dark brown or dull yellow-olive turtle of modest size about 4-6 inches long. The species occurs from Oregon to Baja California and should probably be called a stream and river turtle because that is its preferred habitat in the wild. In some areas it is most abundant in sewage treatment ponds. This turtle is a dietary generalist that eats just about anything it can outrun and overpower. These requirements don't limit it to eating roadkill; it also consumes slow-moving aquatic invertebrates and perhaps aquatic vegetation (presumably the slow-moving kind). Pond turtles are preyed upon by persistent raccoons and they compete for food with non-native species such as largemouth bass and bullfrogs.

Although the U.S. Fish and Wildlife Service doesn't classify it as a threatened or endangered species, the California Department of Fish and Game considers the western pond turtle a species of special concern. Its population numbers are declining throughout its range due largely to habitat changes associated with human activities. With a life span of more than 42 years in the wild, this species seems adapted to riding out environmental ups and downs if it has the basics for survival and reproduction. A small population now seems to be established at Ames, where we hope our management of natural resources will help it to thrive.

For additional information about the wildlife at Ames, contact Chris Alderete, wildlife biologist at ext. 4-3532.

BY MICHAEL MCGOWAN ▲

the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land" (Quoted from the Old Testament, The Song of Solomon).

Well, no promises about the rain and I've always wondered how the voice of the turtle might sound. However, I may soon find out because western pond turtles have recently been added to the list of wildlife at Ames. Chris Alderete, Code QE wildlife biologist, has documented their presence here for the first time during surveys he conducted last May and June.

The western pond turtle, *Clemmys*

NASA Ames/RIACS 2003 summer student research program

NASA Ames and the Research Institute for Advanced Computer Science (RIACS) invite qualified applicants for the 2003 Summer Student Research Program (SSRP).

The purpose of this program is to provide talented university students in the information sciences the opportunity to team with researchers at NASA Ames to address information technology challenges of future NASA mis-

sions. This opportunity includes

- Spending a 10-week summer session at Ames (with the possibility of returning the following summer); and
- Travel support to attend a conference and present a paper on the research conducted during the summer.

During 2002, 10 students were accepted into the SSRP and joined five returning students. They spent a stimulating summer at Ames working on chal-

lenging problems in areas such as artificial intelligence, software engineering and spoken dialog systems.

SSRP provides an opportunity for students to gain experience and expertise solving challenging problems at the forefront of information technology and space science.

For more information as well as application procedures for this program, visit: <http://www.riacs.edu/ssrp/>

Travel Manager training set

As part of the Integrated Financial Management Program (IFMP), Ames is rolling out the new travel application, Travel Manager, in February 2003. Travel Manager is an automated, Web-based tool used to prepare and approve travel authorizations and vouchers.

The Travel Manager team has established a comprehensive training program. Below are questions and answers that address Travel Manager training.

Q: When will training be offered?

A: Training will be offered beginning Feb. 10 through April 4. It is recom-

mended that you attend training close to your rollout date. Codes A, C, D, F, and I will begin using Travel Manager on March 3. Codes J, N, Q, S, T, and Y will begin using Travel Manager March 24.

Training classes will be offered according to your role in Travel Manager. For a description of Travel Manager roles and a training schedule, refer to the Travel Manager Web site at www.travelmanager.arc.nasa.gov.

Q: Will training be mandatory?

A: Although training is not manda-

tory, it is strongly recommended.

Q: Is Web-based training available?

A: Web-based training is available through SOLAR and is accessible through the Travel Manager Web site at travelmanager.arc.nasa.gov.

Q: How will I get access?

A: All users needing access to Travel Manager must obtain a system access request form. Once the form is received and processed, users will be emailed their login information.

San José Mercury News visits Ames



photos by Tom Trower

Joe Natoli, president and publisher (top left), David Yarnold, executive editor and senior vice president (bottom center), Dennis Ryerson, vice president and editor of the editorial pages (top right), and other members of the San José Mercury News senior management team toured Ames recently and met with Center Director Scott Hubbard.

Slips, trips and falls

Falling down on the job isn't just an expression. It happens, literally, all the time. Nationwide, falling is the most common kind of workplace accident. It is second to ergonomics at NASA Ames.

With the rainy season here and the morning dews already upon us, now is a good time for center employees to be aware of the hazards associated with slips and falls. Wet shoes and floors, whether from a recent rain, sprinklers or simply the morning dew, tend to make floors extremely slick. A simple slip, with or without a fall, can have lasting health effects. Here are some sensible suggestions to help you avoid falling down on the job.

- Wear appropriate shoes for the weather conditions. Avoid heels or soles that are slippery in wet weather.

- Avoid walking across lawns. In addition to the grass being slippery, wet lawns and the resultant wet shoes significantly reduce your traction when entering a building.

- Wipe your feet on mats as you enter a building to reduce your chances of slipping on the floor.

Let's be safe and enjoy the winter season. Contact maintenance if you encounter a building without a doormat or the Ames Safety Office if you become aware of a potential slipping hazard.

Ames Exchange sponsors employee sports and social clubs

The NASA Ames Exchange supports many clubs at Ames to promote the welfare and morale of Ames employees. Joining a club provides an opportunity to meet ones colleagues while participating in an activity you enjoy. The 11 active clubs at Ames include ballroom dancing, big band, bowling, golf, model airplane, radio, sailing, softball, toastmasters and volleyball.

If you are interested in forming a new club, e-mail Stephanie Langhoff for a copy of the criteria and procedures for club recognition by the Exchange. In the remainder of this article, each of the club presidents describes the activities of their club, and provides contact information should you decide to join. Please consider joining an Ames Exchange-sponsored club. It is fun!

The Ames Ballroom Dance Club, with more than 60 members, meets every Tuesday starting at 5:15 p.m. in the old Navy Recreation Center (Bldg. 944) on Edquiba Road across from McDonalds. We offer professional instruction in beginning and intermediate level ballroom/nightclub dances, such as waltz, foxtrot, tango, cha cha, rumba, bolero, salsa, samba, swing, hustle and two-step. Lessons are followed by casino rueda classes (salsa danced in a circle with a caller). Try us out – the first night is free! Quarterly dues are \$30. The drop-in rate is \$5. For information, contact: hwang@dm1.arc.nasa.gov.

If you like big band swing and want to make music with others, the Ames Big Band may be of interest to you. The group meets regularly to rehearse and play jazz primarily from the big band swing era. Although a relatively new club at the center, the Ames Big Band has already played excellent swing era music at a few center events, and plans to continue to do so. The band meets almost every Thursday evening, from 5:30 to 7:00 p.m. at the former Navy Recreation Center (roughly across the street from the NEX II). Contact Bill Reynolds at: wcr@thermo.stanford.edu or David.D.Alfano@nasa.gov.

The All-Ames Bowling League meets on Tuesdays at Palo Alto Bowl, 4329 El Camino Real, at 6:00 p.m., for a night of games and fun. The league works on a handicap system, so all skill levels are welcome. Membership is accepted for current and former Ames staff and family, student interns and temps. For the 2002-2003 season, there are 10 registered teams, each with a minimum of four players. Our season runs through April 29, 2003, with a sweeper/championship meet on the final week. Annual bowling league registration dues are \$16.00 for men and \$14.25 for women. The weekly bowling

fee is \$16.00. For more information or to start a team for the 2003-2004 season, contact Toby Garcia at ext. 4-1382 or tgarcia@mail.arc.nasa.gov

The purpose of the Ames Golf Club is to interest center personnel in golf by sponsoring tournaments and matches. Everyone, regardless of ability, will have an opportunity to participate and be-



come acquainted with the rules and general etiquette of the game of golf. Members can play about 13 tournaments per year at a variety of 18-hole golf courses in the Bay and Monterey areas. Anyone interested in the Golf Club, check <http://slserver.arc.nasa.gov/agc/index.html>.

The Ames Model Aircraft Club is open to all Ames employees, contractors, resident agencies, their families and guests. Radio-controlled airplane and helicopter pilots are welcome, and flight instruction is available. Membership in both the Academy of Model Aeronautics and the club are required to fly on base. The club flies from the north end of Parsons Road on weekends and holidays. Please contact Dan Petroff at ext. 4-5850 or Mark Sumich at ext. 4-6193.

The Ames Amateur Radio Club (<http://www.hamradio.arc.nasa.gov>) provides a matrix of related services, technologies, people, skills, equipment, opportunities and resources to those interested in radio-based communications technologies for educational, public service, emergency communications and recreational purposes. The Amateur Radio Relay League (<http://www.arrl.com>) affiliated club station (NA6MF) and club members support a wide variety of HF, VHF and UHF communications modes. The club conducts a weekly amateur radio net every Tuesday at noon on 145.585 MHz (Simplex) and meets as a group every third Thursday at noon at the NA6MF club station. Our Web site at <http://www.hamradio.arc.nasa.gov> provides more information about the club and becoming 'radio active.'

The Ames Sailing Club provides a forum for all center employees and

guests interested in the sport of sailing. We facilitate access to Bay Area sailing schools and charter companies. The club gets together the 2nd Thursday of the month, February through November, from 11:30 a.m. to 1:00 p.m. We hope to continue our history of attracting world-class speakers to discuss topics of interest to sailors (racing, chartering, boat maintenance, design, tides/currents). The club is a fantastic opportunity for those interested in learning to sail and compete in our informal, fun, Wednesday night races out of Redwood City. See our Web site at: <http://sail.arc.nasa.gov> or contact Jeff Smith at ext. 4-2586.

The Softball club is one of the oldest and largest clubs at Ames. Boasting more than 600 members, the league is "fun-petitive," where having a good time is more important than league standings. The games start in May and run through August. One game per week is scheduled between Monday and Thursday. Games are played on one of two fields at Ames' Chase Park, with play starting at 5:30 p.m. Membership is accepted for all hard-badged employees and their families, with all skill levels welcome. A \$100 membership is charged for each team. At the end of the season, a happy hour is held to recount memorable plays and games during the season. Call Bob Bilikas at ext. 4-1773 for more information.

The purpose of the Jetstream Toastmasters club is to improve speaking and communication skills. The positive environment of the club creates an ideal atmosphere for beginners and enthusiasts. We meet every Monday in building 269, room 179 from 12:00-1:00 p.m. For more information, visit our Web site at: <http://jetstream.arc.nasa.gov/>. Point of contact is Samson Cheung at ext. 4-2875. His e-mail address is: cheung@nas.nasa.gov.

The Ames Volleyball Association is designed to promote the enjoyment of recreational beach volleyball at the center. Over the years, the noontime volleyball games on the beach courts across from the Café have become part of the informal fabric of life at Ames. Perhaps you have noticed the games but have not stopped to consider that you could be out there in your bare feet. In the warm days of the spring and summer, there is nearly always a pickup game going on and all comers are welcome. Skill level is not an obstacle. If there is interest in leagues, tournaments or instructional sessions, we will gladly facilitate those. Please stop by and join a game or just bring your lunch and watch. Call or send e-mail to Jack Stanley at: jstanley@mail.arc.nasa.gov or call ext. 4-2210.

Ames holds IFMP 'expo'

In just six weeks, the Ames IFMP Expo Team formulated, organized and delivered a successful 4-hour event recently. The main objective for having the 'expo' was to provide the commu-

a unique face-to-face opportunity for individuals to ask questions about IFMP.

The ballroom was filled to maximum capacity as individuals took turns addressing the panel. Indeed, the panel

question and answer session was 'lively' -- a highpoint of the expo.

Representing the IFM Program, in traditional expo style, were the Core Financial, Budget Formulation, PDM, STARS and Travel Manager project modules. Each project module table was well staffed with team members who answered questions and provided 'hands-on' demonstrations. A change management

workshop was held that provided an overview of Ames' transition model. In addition, the training group provided Core Financial training schedules 'on demand' that kept a corner of the ballroom buzzing throughout the entire event.

The overall evaluation rating for Ames' IFMP Expo was 4.16, which equates to "good." The feedback from the evaluations was very positive. In fact, one participant wrote that a second expo might be good to have after Core Financial goes 'live.'

For more information about IFMP at Ames, visit the Web at: <http://www.ifmp.arc.nasa.gov>.

OneNASA e-mail

The OneNASA e-mail initiative is in response to the 'OneNASA' philosophy of the President's Management Agenda (PMA). The purpose of the initiative is to unify the email-addressing scheme for all civil servants, thereby presenting a more united image to the public. Thus, all civil servants' e-mail addresses will now have a suffix of '@nasa.gov.'

Ames' go-live date was Dec. 9, 2002. Two town hall meetings were held in December to address this e-mail initiative. The slides are available for download on the Web at: <http://ittrain.arc.nasa.gov>.

All NASA civil servants should do the following by Jan. 17:

- 1) Retrieve your new '@nasa.gov' e-mail address at: <https://isd.jsc.nasa.gov/onenasaemail>
- 2) Change your 'Reply-to Field' on your e-mail client
- 3) Use your new e-mail to send a test mail to yourself
- 4) Optional: create a signature field in your e-mail

This change does not affect your old e-mail address. All e-mails sent to your new e-mail address will be directed to the e-mail account you now have and your old e-mail address will continue to work for at least 6 months.

For your convenience, Code JT has established a page on the Web at: <http://amesemail/onenasa.cfm> that lists the FAQs, instructions on how to change your reply-to field and how to create a signature field.

If you have any concerns or questions regarding the OneNASA e-mail initiative or would like to submit a waiver request, contact the IT support center (ITSC) at ext. 4-2000 or e-mail the OneNASA e-mail account at: OneNASAEmail@mail.arc.nasa.gov



photo by Dominic Hart

Ames employees attending the recent IFMP expo.

nity with information and hands-on demonstrations of the various IFMP project modules. The expo featured some new methods of face-to-face communications such as a message from Ames Center Director Scott Hubbard, a panel question-and-answer session and a change management workshop.

Implementation support team lead Greg Josselyn launched the expo with Hubbard's videotaped 'welcome' that told about the value and importance of IFMP on both a local and global level. In addition, the six-member panel, comprised of a few of the center's IFMP leaders (four steering committee members and two process owners), provided

Mystery of Martian rivers debate held

Chris McKay, of Ames, took part in a lively debate about water on Mars at an American Geophysical Union (AGU) session in December at the Moscone Center in San Francisco.

McKay discussed "the cold, dry flow model for Mars gullies and rivers" during a section of the debate that focused on two different climate scenarios on early Mars: warm and wet, versus cold and dry.

Dr. Michael Carr of the U.S. Geological Survey (USGS) and other Mars experts participated in the debate.



photo by Dominic Hart

Ames' Chris McKay speaks at the recent Mars conference held in San Francisco.

VPP STAR Tip

Workers interviewed report and can provide examples of managers, including the top manager, seeing something that appears hazardous and insisting upon making sure that the work is safe.

...Margaret Richardson, in *Preparing for the Voluntary Protection Programs*, Copyright © 1999 by John Wiley & Sons

NASA, Carnegie Mellon 'cement' collaborative partnership

continued from front page

W o z n i a k ,
A n d r e a s
Bechtolsheim,
Adam Beguelin,
Scott Dietzen,
Edward H.
Frank, Mark S.
Kamlet, James
Mitchell, Gor-
don Moore,
James H. Morris
and E. Scott
Russell.

For more in-
formation about
Carnegie Mellon
University and
its West Coast
campus, visit
their Internet
Web site at:
www.cmu.edu.

Additional
information
about NASA Research Park is available
on the Internet Web site at: <http://>



Ames Center Director Scott Hubbard (right) and CMU President Jared Cohon (center) sign the new lease agreement as NASA Chief Scientist Shannon Lucid and CMU Vice Provost for Research Duane Adams (left) look on.

photo by Dominic Hart

researchpark.arc.nasa.gov

BY MICHAEL MEWHINNEY ▲

Two NASA senior managers named AIAA fellows

Two senior managers from Ames have been selected as Fellows by the American Institute of Aeronautics and Astronautics (AIAA). Selection of AIAA Fellows is confined to those who have distinguished themselves in the field of aerospace and who demonstrate strong potential for leadership.

Ames Center Director Scott Hubbard was named a Fellow for "outstanding leadership of the Mars exploration program, significant contributions to astrobiology, the understanding of radiation detection materials and devices, and successful management of the Lunar Prospector mission." For more than 25 years, Hubbard has made significant contributions to research, technology, development and management of space missions, with an outstanding record of success in formulating new concepts and developing space exploration initiatives. Hubbard is acknowledged as the originator of the Mars Pathfinder mission and was the project manager for the Lunar Prospector mission that launched on Jan. 6, 1998, and discovered water ice at the north and south poles of the moon.

Also named a 2003 Fellow was John W. "Jack" Boyd, executive assistant to Hubbard. Boyd was selected for "50 years of outstanding contributions to the aerodynamics of supersonic fighters and bombers and extraordinary managerial and leadership contributions to the goals of NASA, the world of aeronautics and astronautics, and engineering education." After receiving his bachelor's degree in aeronautical engineering from Virginia Polytechnic Institute in 1947, Boyd started his career at the National Advisory Committee for Aeronautics, serving as an aeronautical engineer conducting numerous experimental studies in supersonic aerodynamics. Boyd also has served as an associate administrator at NASA Headquarters, and as deputy director at NASA Ames and at NASA Dryden Flight Research Center, Edwards, Calif.

Presentation of the new Fellows will take place at the International Air and Space Symposium and Exposition in Dayton, Ohio, from July 14-17, 2003. The AIAA is a leading professional society in aeronautics and astronautics.

BY ANN HUTCHISON ▲

McDonald recognized

Ames sailing club director Paul Birch recently presented former Ames Center Director Harry McDonald with a crystal sail boat statuette in honor of his retirement from Ames. McDonald has been an honorary member of the Sailing Club since its inception in 1998. He participated in one of the club's first activities--an all-day sail on the San Francisco Bay--with other Ames sailing enthusiasts.

McDonald was reminded of the clear skies, summer sun, cool breezes and spectacular views that make San Francisco one of the world's best cruising locations.

Other sailing club members, Stan Phillips, Marta Birch and Annabell Rivera attended the farewell buffet dinner for McDonald, held at the Stanford University Faculty Club in November.

The Ames Sailing Club is sponsored by the NASA Ames Exchange and is open to all NASA employees, contractors, students and their guests. Monthly meetings are held during the lunch hour and include speakers

on local tides and currents, exotic cruising destinations, racing around the world and much more. The club also hosts numerous Bay Area sailing events throughout the year. No



The crystal sail boat above was presented to former Center Director Harry McDonald by the Ames Sailing Club recently.

previous sailing experience is necessary, so come out and enjoy the bay!

For more information or to join the club, contact Paul Birch, ext. 4-0250 or email him at: pbirch@mail.arc.nasa.gov.

NASA commercializes method for health improvement

An innovative technology developed by NASA to help astronauts combat space motion sickness will be available in March for a much wider range of human health and performance uses.

Dr. Mae C. Jemison, the nation's first African-American female astronaut, and BioSentient Corporation, Houston, obtained the license to commercialize the space-age technology known as Autogenic Feedback Training Exercise (AFTE) that originally was developed by Dr. Patricia Cowings of Ames. The technique is a patented combination of biofeedback and autogenic therapy that allows individuals to eliminate or minimize their unwanted physical responses to outside stimuli by controlling their autonomic nervous system (ANS). The ANS regulates involuntary bodily functions, such as breathing, heartbeat, sweating, blood vessel dilation and glandular secretions.

"What were previously considered involuntary, or autonomic, responses are in fact under voluntary control if you are taught properly," said Cowings. "I have never met anyone who could not control their bodily responses to some degree the first time they tried," she said. "It's a function of knowing what to do."

AFTE consists of a system of com-

pact, ambulatory equipment to measure, record and display real-time ANS functions, combined with a unique six to 12-hour training that teaches individuals how to control their physiology using the feedback from the equipment. Advancing the original design, BioSentient created a seamless system that includes a garment a person wears to measure and wirelessly transfer physiologic data in real time; a small wrist display; and a computer station that a trainer can use to capture the data, monitor and teach a person the regulation techniques.

In various controlled studies conducted at NASA, Cowings found that AFTE is 85 percent effective in reducing motion side effects in both men and women, and is retained by individuals for up to three years after initial training. Since the mid-1980s, AFTE has been used successfully with U.S. astronauts, payload specialists and Russian cosmonauts, and to return U.S. Navy pilots suffering severe airsickness to active duty in high-performance aircraft.

"BioSentient is examining AFTE as a treatment for anxiety, nausea, migraine and tension headaches, chronic pain, hypertension and hypotension and stress-related disorders," said Jemison, who underwent the training and successfully used it during her space flight,

STS-47, in 1992. "Over 13 percent of adult Americans suffer from anxiety disorders alone, like the public speaker who panics and the pro football player who 'chokes' on the field. With AFTE, these individuals can learn to control that anxiety without it controlling them."

"Other potential beneficiaries of AFTE include business executives, homeland security and law enforcement officers, air traffic controllers, nuclear power plant operators and others working in hazardous materials occupations where optimal personal performance and situational awareness are essential," added Jemison, who also is a physician and chemical engineer.

AFTE can be used by psychologists, psychiatrists, psychophysicists, cardiologists, neurologists, physical therapists, athletic trainers, biofeedback practitioners and rehabilitation and behavioral therapists. By training their patients or trainees, these specialists can teach people how to control their physiology with no pharmaceutical help.

"The commercialization of this NASA technology is an outstanding example of applying space research technology to improve the quality of life on Earth," noted Phil Herlth of the Ames Commercial Technology Office.

BY VICTORIA STEINER ▲

From ground to space: at the frontiers of science

continued from page 4

slit, causing the formation of positively charged ions. Because of a sudden pressure drop in vacuum, the molecules cool quickly — through the supersonic expansion of the gas—to a very low temperature of about 100 Kelvin (-170 C), which corresponds to the average interstellar temperature. The spectrum of the molecules and ions formed in the ISC is measured with cavity ringdown spectroscopy (CRDS). "Cavity-ringdown spectroscopy is an ultrasensitive method for absorption measurements of materials present at very, very, low concentrations and is particularly adapted here," said Dr. Ludovic Biennier, the team's expert in the techniques of cavity ringdown spectroscopy. "The technique uses a laser pulse that is reflected back and forth between two highly reflecting mirrors. A detector is placed behind one of the mirrors to detect the small amount of the light that passes through the mirror. With no absorbing materials present, the laser pulse will decrease in intensity after each round trip due to the loss of light through the monitoring mirror and other losses. When an absorbing species is present between the mirrors, the intensity of the laser pulse decreases more rapidly. This

procedure results in a very long path length, to which the measured absorbance is directly proportional," added Biennier.

Scientists can now compare the data generated with Ames' ISC to astronomical data such as DIB spectra and Hubble Space Telescope images to detect the regions of interstellar space where organic carbon matter is concentrated. "These gas-phase experiments provide the ultimate test for comparing laboratory spectra with interstellar spectra," said Salama. "Information derived from the ISC experiments regarding the nature of the DIBs will help trace organic materials beyond Earth and the Milky Way providing an important contribution to astrobiology."

The study of interstellar dust is extremely important as dust constitutes the material out of which our solar system, as well as other planetary systems, were formed. Extraterrestrial dust is largely made up of organic carbon or prebiotic materials and deciphering its composition might provide the keys to decipher the origins of life. For example, the spectral analysis of PAHs and other carbon molecules derived from ISC is important for understanding how

these ubiquitous materials absorb the stellar radiation and how they emit it back and contribute to the global balance of energy in space. Interstellar dust acts as a veil obscuring and distorting our view of the stars and we need to understand its composition and its distribution to correctly interpret the observations of stars from ground and space platforms. The new data collected with ISC will also be applied to the study of planetary atmospheres.

The Astrochemistry Laboratory is part of the Astrophysics Branch in the Space Science Division. Scientists in the Astrophysics Branch perform a wide range of astronomy and astrophysics research focusing on the development of new space, airborne and ground-based laboratory instrumentation such as ISC and SOFIA, as well as laboratory simulation experiments. The Ames' team is led by Farid Salama and includes Ludovic Biennier (NRC), Lou Allamandola and Robert Walker. The LGR team is led by Anthony O'Keefe and includes Jim Scherer and Manish Gupta.

BY VERONIKA SOUKHOVITSKAYA ▲

Event Calendar

Ames Amateur Radio Club, third Thursday of each month, 12 noon, N-T28 (across from N-255). POC: Michael Wright, KG6BFK, at ext. 4-6262.

Ames Ballroom Dance Club. Classes on Tuesdays. Begin classes at 6:15 p.m. Higher-level class meets at 5:15 p.m. Held in Bldg. 944, the Rec. Center. Holiday Ball set for Dec. 14. POC: Helen Hwang, hhwang@dm1.arc.nasa.gov.

Ames Bowling League, Palo Alto Bowl on Tuesday nights. Seeking full-time bowlers and substitutes. Questions to sign up: Mike Liu at ext. 4-1132.

Ames Child Care Center Board of Directors Mtg, every other Thursday (check Web site for meeting dates: <http://acc.arc.nasa.gov>), 12 noon to 1:30 p.m., N-215, Rm. 212. POC: Tom Maier, ext 4-3643.

Ames Contractor Council Mtg, first Weds ea. month, 11 a.m., N-200, Comm. Rm. POC: Bob Javinsky, ext. 4-5301.

Ames Diabetics (AAD), 1st & 3rd Weds, 12 noon to 1 p.m., at Ames Mega Bites, Sun rm. Support group discusses news affecting diabetics. POC: Bob Mohlenhoff, ext. 4-2523/email at: bmohlenhoff@mail.arc.nasa.gov.

Ames Federal Employees Union (AFEU) Mtg, third Wednesday of ea. month, 12 p.m. to 1 p.m., Bldg. 19, Rm 1042. Info: <http://www.afeu.org>. POC: Marianne, ext. 4-4055.

Ames Model Aircraft Club, flying radio-controlled aircraft at the north end of Parsons Ave. on weekend mornings. POC: Mark Sumich, ext. 4-6193.

Ames Sailing Club Mtg, 2nd Thurs of month, 11.30 a.m. -1 p.m. POC: Diane Purcell ext.4-3232. Check Web site for calender of events, <http://sail.arc.nasa.gov>

Environmental, Health and Safety Information Forum, first Thursday of each month, 8:30 a.m. to 9:30 a.m., Bldg. 19/Rm 1040. URL: <http://q.arc.nasa.gov/qe/events/EHSeries/> POC: Julie Morsellino at ext. 4-6810.

The Hispanic Advisory Committee for Excellence HACE Mtg, first Thurs of month in N255 room 101C from 11:45 a.m. to 12:45 p.m. POC: Eric Kristich at ext. 4-5137 and Mark Leon at ext. 4-6498.

Jetstream Toastmasters, Mondays, 12 p.m. to 1 p.m., N-269/Rm. 179. POC: Cathy Payne, ext. 4-0003.

Model HO/HOn3 Railroad Train Club, Bldg. 126, across from south end of Hangar One. Work nights: usually Fridays, 7:30 p.m. to 9:30 p.m. Play time: Sundays, 2 p.m. - 4 p.m. John (408) 735-4954 (W) or (408) 281-2899 (H).

Nat'l Association of Retired Federal Employees, (NARFE), 1st Fri. of ea. month. S. J. Chptr #50. Jan. 3, 11 a.m., lunch, \$6.50, Home Town Buffet, 2670 El Camino, Santa Clara. Prog. Video: CA Honor Ceremony: NY Fire and Police Depts. POC: Earl Keener (408) 241-4459 or NARFE 1-800-627-3394.

Native American Advisory Committee Mtg, 4th Tues each month, 12 noon to 1 p.m., Bldg. 19, Rm 1096. POC: Mike Liu at ext. 4-1132.

Computer History Museum presents

Event: "They Dreamed Tomorrow," a new documentary film by John Fuegi on Ada Lovelace and her work with Babbage

Date: Tuesday, Jan. 21

Place: Stanford University, check the Web site for details

Event: "How Databases Changed the World," with Chris Date, Herb Edelstein, Bob Epstein, Ken Jacobs, Pat Selinger, Roger Sippl and Michael Stonebraker, with moderator George Schussel

Date: Monday, Feb. 10, 7 p.m.

Place: Moffett Training and Conference Center Bldg. 3

Advance reservations are required. Both events are free.

For more information, call (650) 810-1027 or visit the Web at: <http://www.computerhistory.org>

Test subjects needed for human powered centrifuge study

Male participants between the ages of 18 and 46 are needed for a human-powered centrifuge study at Ames. The study is scheduled to take place during February and/or March and will last approximately three weeks. Male physiology is more stable than female physiology over the course of a month, especially in regards to blood pressure and heart rate. The goal of this study is to gain a better understanding of human cardiovascular function associated with space flight as well as everyday life. During space flight, cardiovascular changes occur in astronauts that may make their transition back to Earth activities difficult. The human-powered centrifuge is being considered as a tool to improve an astronaut's ability to transition between Earth and space environments.

Participation will require one-hour training sessions, five days a week for three weeks. There also will be two-hour assessment periods on two days prior to and following the training sessions. During this time, subjects will complete several tests, including an MRI. The daily training sessions may require bicycle exercise. The majority of tests and training will be conducted in building 221A on the human-powered centrifuge and in the adjoining exercise laboratory. All testing will be conducted by qualified test equipment operators and certified medical personnel.

Selected subjects may be hired as part-time, temporary employees. Candidates must be nonsmokers in good health and not participating in an unusually competitive or rigorous exercise program. They should have no his-

tory of cardiovascular or musculoskeletal disease or hernia. Participants will be required to refrain from alcohol and caffeine consumption for a portion of the study. Blood samples will be collected.

For more information, contact Fritz Moore at ext. 4-3256 or Abigail Bautista at ext. 4-0531.

Ames Retirements

Name	Code	Date
Jean F. Brian	ASF	11-01-02
Lawrence P. Giver	SGP	12-03-02
William Cleveland	AFJ	01-03-03
Felton Smith	FOO	01-03-03
Katie Garcia	J	01-03-03
Leon Shameson	SGE	01-03-03
Donald L. DeVincenzi	SS	01-03-03

Wanted: used books

Please consider donating your used books, CDs or DVDs to the NASA Ames Child Care Center. As a non-profit organization, they can issue a donations receipt for them.

Donations can be dropped off across from Gate 17 at the Ames Child Care Center or pickup can be arranged by contacting Maja at e-mail: maja@sbcglobal.net or call her at: (650) 988-6993. You may also contact Sally at (650) 224-9268.

Ames Classifieds

Ads for the next issue should be sent to astrogram@mail.arc.nasa.gov by the first Friday following publication of the present issue and must be resubmitted for each issue. Ads must involve personal needs or items; (no commercial/third-party ads) and will run on a space-available basis only. First-time ads are given priority. Ads must include home phone numbers; Ames extensions and email addresses will be accepted for carpool and lost and found ads only. Due to the volume of material received, we are unable to verify the accuracy of the statements made in the ads. Caveat emptor!

Housing

For rent, 3bd/2ba upper level condo located on Fernald Common in Warm Springs/Fremont. Near Hwy 880 and 680. Small pet ok. Available 1/15/2003. \$1,700/mo plus utilities. Call (510) 780-8519 for appointment.

Room for rent, \$520. Share 2bd/2ba condo w/quiet and clean prof'l male. Central air/heating, W/D, covered parking, extra storage, priv. front porch. In Fremont/Warm Springs area, 20 mins to Ames. N/S, no drugs, no pets. Bob (510) 659-0804.

Large (300 sq. ft.), furnished master bdrm in new house; very clean, quiet, and prof'l housemates; utensils included, N/S, no pets; San José area, close to hwy 85, 87, 101, and 280. \$725/mo. Gabriel (408) 229-9874 or romgabe_2000@yahoo.com.

Room in 4bd/2ba home, 11 miles from Ames. \$450/mo (or \$350/mo for weekdays only). Includes utils (except priv. phone). W/D, large yard, extra storage space. Female preferred, NS/NP. Call (408) 230-4212.

Room for rent w/balcony in quiet 3bd/2.5ba townhs, W/D, D/W. Safe neighborhood. 5 min to Ames. Close to downtown Mtn. Vw. \$700/month (w/first month rent and \$350 dep). Utils split (cable/gas & electric/water). Lease preferred but month to month ok. N/S, neat, clean and easy-going. No pets. Email: StorminN22@aol.com

Furnished room in 3bd/2ba Mtn. Vw townhs, close to downtown. 1.5 mls. to Ames. \$600/mo. rent. Share w/ prof'l female (and cat). Priv. bathrm. Complex has tennis courts, pool and hot tub. Female preferred. N/S. Call (650) 254-1121.

For rent, 1 bedroom unit in Triplex. Hamilton Ave, San José. Garage, free laundry room, private yard. Call (650) 369-0578.

For rent: Large 1bedroom/1 bath apt. in 4-plex, Sunnyvale, no pets, nonsmoking, \$950/mo. Call (408) 739-3303.

Avail. to rent: Palo Alto 3 bd/3 ba exec. twnhm, near 101. Start 2/15 for 1 yr.; 2 car garage, pool and hot tub. Quiet area, furnished, \$2,500/mo. Email: charfleevirgilio.it

Miscellaneous

16MB PC100/133 SDRAM memory for PCs, victim of home computer upgrade. \$10. Call (408) 295-2160.

Computer desk and separate bookcase, birch veneer, like-new from IKEA, built-in keyboard tray and CD rack. \$40. Call (408) 295-2160.

TV Armoire and matching end table w/drawers, perfect for bedroom, stained finish, like-new \$80. Call (408) 295-2160.

Computer hutch w/printer drawer, oak colored finish. \$50. Herb (408) 246-3616.

Credenza, 20in x 30in x 46in, beautiful honey-laquer finish, excellent condition, \$350. Call (650) 473-0604.

Almost new, extra-large capacity Whirlpool electric washer (6 cycles) and dryer (3 cycles). Gently used by one owner for 2 years only! \$450 for both or B/O. In Mountain View. Call (650) 988-8657.

Refrigerator, Magic Chef 21CF, white. \$395 or B/O. Washer/Dryer, Kenmore 80 series large capacity. \$695 or B/O. All 3yrs old - like new - Call (925) 447-2937.

Bar for sale. All black w/buttons on the front. Excellent condition. \$500. For more information, contact Dolores at (510) 783-2713 (cell).

Pairs of San José Sharks tickets in section 209 available for games on Jan. 30, Feb. 24, and four tickets for Feb. 5. Call (408) 735-0524.

Transportation

'86 Ford F-150 truck, 4.9 liter straight 6 engine, 4 speed, rebuilt engine, new carb, good body, good paint. Great for work truck or commute. \$2,500 or B/O. Call (510)429-8885.

'88 BMW 325 sedan, 2 door, blue, fair/good condition, rebuilt engine only 50k miles. Shirley B. (408) 777-0277.

'90 BMW 535i, new tires, Alpine/MB Quart CD, heated seats, great condition. 135 K mls. Asking \$6,000 or B/O. Call (408) 557-0501.

'91 Saturn SC coupe. Original year Saturn, original owner. 86k mls, gd condition, exc. commute or student car. \$2,500 or B/O. Transferred to HQ, must sell. Call (408) 973-1110.

'91 Ford Tempo GL, 4 door, only 90,000 mls, well maintained, no A/C but runs great. Moving, must let go at only \$1,500. Pari (408)-497-1239.

'92 Ford Ranger Teal XLT, V6 3.0L, 5spd ABS custom wheels CD sliding rear window, tow hitch Flowmaster, runs great. 151,000 mls, \$2,500 or B/O. Hollister (831) 630-0716.

'94 Toyota Camry LE, 120K mls, exc. condition, well maintained, lovingly driven. \$5,400 Herb Finger (408) 246-3616.

'95 Acura Integra GS-R sports coupe, manual all power alloy wheels, 66K mls, good condition, 12 disc changer. \$8,500 or B/O. Email: sailesh@umich.edu.

'96 BMW 318i, 54K mls, mint condition, well maintained, 5-speed, \$13,250. Herb Finger (408) 246-3616.

'96 Chevy Blazer, lifted, leather, loaded, 4WD, AT, black, 4 door, 105,000 miles, good condition. Suspension needs work; engine excellent. \$7,599. Call (650) 906-0186.

'00 Volkswagen new Beetle 2DR GLS/GLX, Blue, 30,900 mls, AM/FM cass, fully loaded with letter interior, excellent condition, extended warranty, \$15,900 or B/O. Call (408)480-0599.

Wanted: '00 black Jeep Wrangler, ~ \$10K or trade for lifted '96 Chevy Blazer plus cash. Call (650) 906-0186.

Car Pool

Car pool from Pleasanton. Contact Natalio Mingo, mingo@nas.nasa.gov, ext. 4-1776, or Deepak Kulkarni, kulkarni@ptolemy.arc.nasa.gov, ext. 4-4869.

Lost and Found

A pair of Gianni, tortoise-color glasses in their case from Sunrise eyecare were found near N233. Sent over to Ames Lost and Found office at ext. 4-1359.

Safety Data

	Civil Servants	Contractors
Not recordable first aid cases	1	2
Recordable no lost time cases	0	0
Restricted workday cases	0	0
Lost workday cases	0	0
Data above is for December 2002.		

Exchange Information

Information about products, services and opportunities provided to the employee and contractor community by the Ames Exchange Council. Visit the web site at: <http://exchange.arc.nasa.gov>

Beyond Galileo N-235 (8 a.m. to 2 p.m.)
ext. 4-6873

Ask about NASA customized gifts for special occasions. Make your reservations for Chase Park

Mega Bites N-235 (6 a.m. to 2 p.m.)
ext. 4-5969

See daily menu at: <http://exchange.arc.nasa.gov>

Visitor Center Gift Shop N-223
(10 a.m. to 4:00 p.m.) ext. 4-5412

NASA logo merchandise, souvenirs, toys, gifts and educational items.

Tickets, etc...(N-235, 8 a.m. to 2 p.m.)
ext. 4-6873

Check web site for discounts to local attractions, <http://exchange.arc.nasa.gov> and click on tickets.

NASA Lodge (N-19) 603-7100

Open 7 days a week, 7:00 a.m. to 10 p.m. Rates from \$40 - \$50.

Vacation Opportunities

Lake Tahoe-Squaw Valley Townhse, 3bd/2ba, Balcony view, horseback riding, hiking, biking, golf, river rafting, tennis, ice skating, and more. Equipped. Summer rates. Call (650) 968-4155, DBMcKellar@aol.com

South Lake Tahoe Cottage w/wood fireplace and hot tub. Rates from \$50 to \$130 per night. Call (650) 967-7659 or (650) 704-7732.

Vacation rental, Bass Lake CA 14 mls south of Yosemite. 3bd/1.5 ba, TV, VCR, MW, frplc, BBQ, priv. boat dock. Sleeps 8. \$1,050/wk. Call (559) 642-3600 or (650) 390-9668.

Big Sur vacation rental, secluded 4bd/2ba house in lovely canyon setting. Fully eqpd kitchen. Access to priv. beach. Tub in patio gdn. Halfway between Carmel & Big Sur. \$175/night for 2; \$225 for 4 and \$250 for more, plus \$150 cleaning dep. Call (650) 328-4427.

Incline Village: Forest Pines, Lake Tahoe condo, 3 bd/2 ba, sleeps 8. Fireplc, TV/VCR, MW, W/D, jacuzzi, sauna, pool. \$120/night low season; \$155/night high season. \$90 cleaning fee and 12% Nevada room tax. Charlie (650) 366-1873.

Tahoe Donner vacation home, 2 bd/2ba. trees, deck, sun, fun. Access to pools, spa, golf, horseback riding, \$280 wkend, \$650 week. Call (408) 739-9134.

Ames Public Radio & Phone

1700 KHz AM radio -- information announcements and emergency instructions, when appropriate, for Ames employees. The emergency information phone number for Ames is (650) 604-9999.

Astrogram deadlines

All Ames employees are invited to submit articles relating to Ames projects and activities for publication in the *Astrogram*. When submitting stories or ads for publication, submit your material, along with any questions, in MS word by e-mail to: astrogram@mail.arc.nasa.gov on or before the deadline.

Deadline:
Jan. 29

Publication:
Feb. 2003

Space Act and patent award recipients

The Ames Commercial Technology Office along with Center Director Scott Hubbard hosted a Space Act award ceremony in December in the ballroom of



photo by Dominic Hart
Space Act award recipients are shown here after the ceremony in December.

the Moffett Training and Conference Center. Hubbard presented the awards, including the prestigious NASA Software of the Year and NASA Commercial Invention of the Year. In addition, four other Space Act awards were presented for outstanding scientific and technological contributions to NASA's commercial, aeronautical and space missions. The final portion of the ceremony highlighted the U.S. patent recipients currently at Ames who have had a patent issued in the past five years.

The Commercial Technology Office accepts nominations for Space Act awards throughout the year and encourages Ames employees to investi-

gate the process. Additional information is available on the NASA HQ Inventions and Contributions Board Web site at: <http://icb.nasa.gov>.

The following individuals were honored for their recent achievements: co-winner 2002 NASA Software of the Year Cart3D \$50,100 (Automated Cartesian Grid Generation for Aerodynamic Design) Michael Aftosmis / Code INR; John Melton / Code APS; and Marsha Berger / Code I

The NASA Commercial Invention of the Year for 2001 was presented to the Rotary Blood Pump -Ventricular Assist Device (heart pump),

Dochan Kwak and Cetin Kiris / Code INA (Additional team members: Bernard Rosenbaum / JSC; Gregory Aber, Richard Bozeman, and James Akkerman / JSC retired; James Bacak / Lockheed-Martin; Robert Benowski / MicroMed Technology Inc.; George Van Damm and Michael DeBakey / Baylor College of Medicine; Paul Svejkovsky / Lockheed retired)

Space Act board awards were presented to:

- Method and System for an Automated Tool for En Route Controllers, Heinz Erzberger / Code AF, David McNally and Philippe Stassart / Code AFC and Danny Chiu / Code AS

- Comprehensive Toolset for Model-Based Health Monitoring and Diagnostics,

Ann Patterson-Hine, Code IC; Rick Alena, Code IC; Jim Cockrell, Code FES; Bill Hindson, Code JO; Dwight

Sanderfer, Code IC and Julie Schonfeld, Code AS.

Additional team members from Qualtech Systems: Kevin Cavanaugh, Deb Somnath, Charles Domagala, Sudipto Ghoshal, Venkata Malepati, Venkatesulu Malepati, Krishna Pattipati, and Roshan Shrestha

- Postdoc (Web-based information sharing system),

Helen Stewart, Code IC; Martha Del Alto, Code IC; Chris Knight, Code IC; Richard Keller, Code IC; Keith Swanson, Code IC and Bob Kanefsky, Code IC. Additional team members no longer at Ames: Paul Lucas, Mike Compton and Vinod Baya

- Surface Movement Advisor,

James Gibson, Code AFJ; Brian Glass, Code IC; David Iverson, Code IC; William McDermott, Code IC; David Signor, Code AT; Chris Leidich, Code IC; Ron Reisman, Code AFD; Liljana Spirkovska, Code IC; James McClenahan, Code IC; Costandi Wahhab, Code IC; Tandy Daras, Code JTC; Oleg Mitine, Code IC; Tony Lisotta, Code INE; William Mortimer, Code SF; Jeff Gale, Code AFD and Yuri Gawdiak. Additional team members from FAA: Dennis Lawson, John Posey, Keith Walker, Peter Baretta, Ricardo Parra, Jimmy Connors Additional team members no longer at Ames: John Day, Edmund Datu, Yuri Shtil, Jose Almeda, Ali Abou-Khalil, Steve Benoist, Richard Damian and Dave Boosalis.



National Aeronautics and Space Administration

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