

Astrogram

Communication for the Information Technology Age

NASA unveils its newest, most powerful supercomputer

NASA's newest supercomputer, 'Columbia,' has been named one of the world's most powerful production supercomputers by the TOP500 Project at SC2004, the International Conference



NASA's new supercomputer 'Columbia' was installed at Ames in less than 120 days.

of High Performance Computing, Networking and Storage in Pittsburgh.

Columbia, which achieved a benchmark rating of 51.9 teraflops on 10,240 processors, is ranked second on the TOP500 List, just behind Blue Gene, IBM's supercomputer to be installed at the Department of Energy's Lawrence Livermore National Laboratory.

"Large, integrated simulation environments like those we have at Ames are crucial to NASA's missions, and Columbia has provided a breakthrough increase in our computational power," said Ames Center Director G. Scott Hubbard. "A high rating on the TOP500 list is an impressive achievement, but for NASA, the immediate availability to analyze important issues like 'Return to Flight' for the space shuttle, space science, Earth modeling and aerospace vehicle design for exploration, is the true measure of success."

"Columbia allows NASA to perform numerical simulations at the cutting edge of science and engineering," said Walt Brooks, chief of the NASA Advanced Supercomputing (NAS) Division at Ames. "As the largest example of an important, high-end computing architecture developed in the U.S., part of this system will be available to the nation's best research teams. The swift design and deployment of Columbia has redefined the concept of supercomputer development."

With Columbia at its core, said Brooks, the NAS facility provides an integrated computing, visualization and data storage environment to help NASA

meet its mission goals and the Vision for Space Exploration.

Named to honor the crew of the space shuttle Columbia lost Feb. 1, 2003, the new supercomputer is comprised of an integrated cluster of 20 interconnected SGI® Altix® 512-processor systems, for a total of 10,240 Intel®

code used to achieve this result was conceived and developed in that same time frame, and is much more straightforward than the traditional approach. Our simplified implementation, allowed by shared memory systems like the SGI Altix, translates directly into improved effectiveness for users of our systems."

The almost instant productivity of the Columbia supercomputer architecture and technology has made the system available to a broad spectrum of NASA-sponsored scientists. Feedback from scientists is extremely positive.

"The Columbia system is a tremendous development for NASA and the nation. Simulation of the evolu-



Left to right: Walt Brooks, NAS division chief; Ronnie Kenneth, CEO, Voltaire; Ghassem Asrar, NASA HQ; Ames Center Director G. Scott Hubbard; Richard Dracott, Intel; and Bob Bishop, CEO SGI, display recognition plaques presented to them by Brooks.

tion of the Earth and planetary ecosystems with high fidelity has been beyond the reach of Earth scientists for decades," NASA's Deputy Associate Administrator of the Science Mission Directorate Ghassem Asrar said. "With Columbia, scientists are already seeing dramatic improvements in the fidelity of simulations in such areas as global ocean circulation, prediction of large-scale structures in the universe and the physics of supernova detonations," he said.

"This amazing new supercomputer system dramatically increases NASA's capabilities and revolutionizes our capacity for conducting scientific research and engineering design," Hubbard said. "It will be one of the fastest, largest and most productive supercomputers in the world, providing an estimated 10-fold increase in NASA's supercomputing capacity. It is already having a major impact on NASA's science, aeronautics and exploration programs, in addition to playing a critical role in preparing the space shuttle for return to safe flight next year," Hubbard said.

"With SGI and Intel, we set out to revitalize NASA's computing capabilities, and the Columbia system has done so in a spectacular way," said Brooks.

Within days of completion of the supercomputer's installation, Columbia achieved a Linpack benchmark rating of 42.7 teraflops on just 16 nodes with an 88 percent efficiency rating, exceeding the previously best-reported performance by a significant margin. This was followed almost immediately by the 51.7 teraflop rating reported Nov. 8 for the entire system.

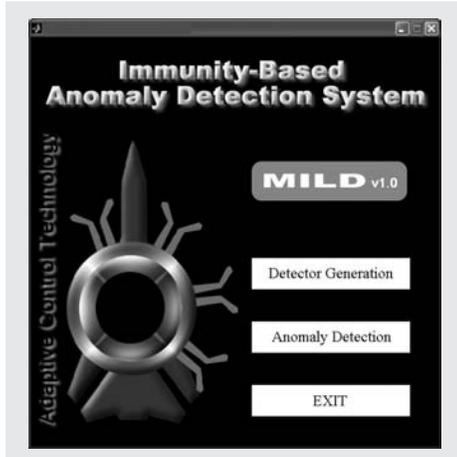
"What is most noteworthy is that we were able to post such a significant and efficient Linpack result in such a short time," said Bob Ciotti, chief systems engineer for the Columbia installation project. "Not only was the system deployed in less than 120 days, but the

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Immune system inspires machine-software fault detector

Using the human immune system as an inspiration, scientists at NASA Ames are developing software to find faults in complex machines.

The software 'tool' - called an algorithm, or mathematical recipe - looks for abnormalities in a machine's hardware and software. The mathematical recipe, which engineers may well someday put



in spacecraft as well as other complex systems, is part of the Multi-level Immune Learning Detection (MILD) software 'tool,' under development at NASA Ames in the Computational Sciences Division, Code TC.

"The human immune system doesn't try to identify what is good, only what is bad," said MILD principle investigator Kalmanje Krishnakumar, a scientist at Ames. "Similarly, MILD software only tries to identify what is bad, and that's one of the main ideas behind MILD, which is similar to biological immune systems," Krishnakumar said. Co-investigator on the MILD project is Dipankar Dasgupta of the University of Memphis, Tenn., who is spending a year as a visiting faculty member at NASA Ames.

"You can have identical MILD software recipes distributed throughout the machine that look at different potential abnormalities," Krishnakumar explained. "Typically, a problem will show up in more than one place in a machine, and comparisons of different parts of the machine help us to more accurately identify problems early," he added.

MILD uses data from sensors in machines to find patterns of system faults and damage to clarify if systems are working properly. In an aircraft, sensors may include gyroscopes and instruments to measure acceleration. Spacecraft and other machines may have temperature sensors, gas sensors and similar devices that report on the condition of the machine or its environment.

"Another advantage of the MILD tool is its ability to associate detectors to known and probable faults. This signa-

ture can then be used to identify future occurrences of similar faults. Similarly, the biological immune system quickly recognizes diseases to which it has been exposed previously or has been 'immunized' to some known diseases," Krishnakumar said.

"Another advantage of using the immune system as an inspiration is that we can program the MILD software tool to recognize known faults that occur in a machine. Similarly, a biological immune system recognizes diseases to which it has been exposed," Krishnakumar said.

So far, scientists have tested the MILD software in a C-17 aircraft flight simulator at NASA Ames to collect normal and simulated airplane failures. "We used the aircraft simulator as a proof-of-concept experiment to test how well the MILD algorithm worked," Krishnakumar explained. The software

is still in the research phase. Later, scientists hope to modify it so it will work as stand-alone software.

In the near future, when engineers use MILD software on another machine, they will need to set up the software so it will monitor data from that machine. "However, we now are enhancing the MILD software 'tool' so it can more easily be used for other machines," Krishnakumar said. "Eventually, engineers could use MILD algorithms in any kind of software and hardware in machine environments -- from machines in a shop to flying airplanes and spacecraft," Krishnakumar ventured.

"We expect future machines to have their own immune systems so that they could be used for long-duration space missions, or any other use where technical support would be limited," Krishnakumar said.

BY JOHN BLUCK

NASA unveils powerful supercomputer

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"Not only were scientists doing real Earth and space analysis during the system build, but within days of the full installation, we achieved a Linpack benchmark rating of 42.7 teraflops on 16 nodes with an 88 percent efficiency rating, exceeding the current best reported num-

ber by a significant margin," he said. "With the completion of the Columbia system, NASA, SGI and Intel have created a powerful national resource, one that will serve scientists who strive to unlock the mysteries of this planet and the universe in which it dwells," said SGI CEO Bob Bishop. "NASA should be commended for the remarkable boldness that made the new Columbia computer happen. Our long-standing partnership with the agency has triggered a

new age in scientific discovery, and based on NASA's initial success, it seems likely that we'll be discussing new scientific breakthroughs in the very near future," he said.

"The launching of the Columbia system shows what's possible when gov-



NASA photo by Tom Trower

Walt Brooks (left) chats with NASA Administrator Sean O'Keefe (second from left) and Chief of Staff John Schumacher (third from left) while Ames Center Director G. Scott Hubbard (third from right) and other guests look on.

ernment and technology leaders work together toward a goal of truly national importance," said Paul Otellini, president and COO of Intel Corporation. "While this Itanium 2 processor-based system will be one of the highest-performing computers ever created in the world, the real value is how this system will accelerate scientific design and research faster than before for years to come."

BY MICHAEL MEWHINNEY

NASA 'Collective Intelligence' sends space messages faster

NASA Ames scientists have shown that future fleets of spacecraft using 'collective intelligence' can send more data

structuring that habitat," Wolpert said. "We don't have to specify details of the environment, or how the individual

computer programs go about achieving their goals. The individual robots can run various artificial intelligence programs to achieve their goals," Wolpert stated. The algorithm that knits the computer programs together to achieve a goal does not depend on details of those programs, according to Wolpert.

Just as economic policy makers can use many different recipes, such as lower interest rates, changing regulations and reducing deficits, to improve the economy, NASA can use different algorithms to solve bigger problems, according to Wolpert.

Concerning the future of collective intelligence, Wolpert predicted that "this is a method that someday could be used to program very powerful artificial brains made of nanoscale (miniature) components." Scientists measure nanoscale objects in nanometers, each of which is one billionth of a meter (one billionth of 3.3 feet).

These procedures also can help carry out other tasks such as programming nano-computers, controlling unpiloted aerial vehicles (UAVs) and running the national airspace where airliners fly, Wolpert ventured.

Scientists think that NASA-developed collective intelligence could even work successfully in business to motivate a company's staff so that employees would achieve corporate goals. An example of a business goal that collective intelligence could attain is maximizing a company's stock value.

"In the last year, we stumbled upon a relationship between physics and economics that greatly advanced our un-

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The Computational Sciences Division Collective Intelligence team members, left to right, Bill Macready, UARC contractor (UC Santa Cruz); David Wolpert, Code TC; and Chris Henze (seated), Code TN.

to Earth faster and more efficiently than ever before.

Using insights from economics and physics, Ames researchers have learned how to mix the separate, 'selfish' goals of distinct computer programs, robots and human beings to achieve larger, common goals - a process known as collective intelligence. Scientists use algorithms -- recipe-like procedures -- especially designed to knit computer programs together so they can achieve global goals.

"We have run computer simulations that verify that our recipes for collective intelligence work," said David Wolpert, a scientist in the Computational Sciences Division, Code TC. He said that his group might well be the first team to write algorithms based on collective intelligence that successfully integrate assorted computer programs.

"The Internet is a huge network of computers relaying messages to one another," Wolpert explained. "We figured out how to change the goals of those computers so messages arrived at their ultimate destinations faster, with improvements of up to five times in certain Internet-based experiments," Wolpert said. The same type of collective intelligence will enable spacecraft to send messages faster to Earth and return more data.

"Just as human beings can self-organize into companies and achieve overall goals, so can these selfish computers, or even robots, self-organize to achieve overall goals," he explained. Scientists envision using collective intelligence to control any large group of robots or people. "If you have a whole bunch of rovers that you want to create a human habitat on Mars, the global goal is con-

Leadership is all about conversations you have with those you lead. Prior to and immediately following the issuing of the CAIB report, Ames has been involved in a variety of initiatives to improve communications, specifically between management and employees. This includes 'TeamTalks,' an open Q&A forum hosted monthly by the deputy center director, a similar program 'Inside the Director's Studio' hosted by the center director and KARC, a Web-radio format.

Ames senior leaders reach out to employees through many forums

These mechanisms have each provided an opportunity for employees to meet management in a personal and informal way, to hear directly about the many changes happening within the agency and specifically at Ames and the progress being made. In addition, these forums have provided an opportunity to direct specific questions to management about the personal concerns of attendees or, in the case of KARC, its 'listeners.'

Participants in both senior leader communication forums 'Inside the Director's Studio' and 'TeamTalks' come together in an informal setting over coffee and refreshments. Attendees are nominated by their directorates in order to ensure a representational cross-section of the entire Center. These forums are designed to encourage communication between Ames senior management

and employees at the Center.

'Inside the Director's Studio' is targeted to all employees, including supervisors, managers, civil servants and contractors. Employees are encouraged to ask questions of both a personal and professional nature. Questions are collected prior to the event, but time is reserved at each session to ask questions in real time, as well.

'Team Talks' is targeted to non-supervisory civil servant employees. Attendees are given time to meet each other, hear timely concerns of the deputy director and engage in conversation with him. Currently, deputy center director Stan Newberry addresses issues raised and answers questions participants have about the current state of the Center.

KARC is the Center's new internal 'radio' station. KARC broadcasts unique interviews and points of view, new developments at Ames and throughout the agency, and 'hall talk' - topics that people are talking about or interested in, but for which they may not otherwise be able to get accurate information.

Employees interested in participating in future 'Team Talks' or 'Inside the Director's Studio' sessions should contact their organizational directors. Sessions will be held approximately every six to eight weeks for the foreseeable future.

BY GAIL JAMES

U.S./Russia cooperate to keep space exploration alive

Although many may think the U.S. human space program has been grounded since the loss of space shuttle Columbia in 2003, Americans continue to explore the cosmos with the assistance of Russia's Federal Space Agency.

When a colleague at JSC's Public Affairs Office (PAO) called in late September to ask if I would travel to Mos-

cow to support the agency's public affairs efforts there during the International Space Station crew exchange, I was only too happy to help out. So at 5 a.m. on a Saturday morning, I left on my fifth trip to Moscow on behalf of NASA, and my first since 1999.



Members of the NASA public affairs team in Moscow recently, from left: Debbie Rahn (NASA HQ), Rob Navias (NASA JSC), Vladimir Samsonov (consultant to Mission Control-Moscow), Carlos Fontanot (NASA JSC) and Ann Sullivan (NASA Ames).

I reached my hotel in Moscow around noon the following day. I was fortunate to be in a 'NASA room,' equipped with a U.S. phone line, a high-speed Internet connection and a laptop computer. Communications support of NASA personnel in Moscow is provided by U.S. and Russian experts under the direction of the Marshall Space Flight Center.

Our base of operations was the Russian Mission Control Center (MCC-M) in the city of Korolev, about a 40-minute drive northeast of the Russian capital. Known as TsUP (often pronounced by Americans as 'soup'), the mission control center is located in a brown building near a small forested area. Within easy walking distance of the MCC-M are several small shops, including a bakery, a small market and an ice cream shop. Korolev (population 161,200) is the cradle of the Russian space program and the center of the Russian aerospace industry. The city was named after renowned scientist Sergey P. Korolev, considered the founder of the Soviet space program.

MCC-M is a sprawling, 5-story building with wide hallways and lots of marble. A large marble bust of Vladimir

Lenin still looms over a first-floor meeting area; on the opposite wall is a large mural of Konstantin Tsiolkovsky, generally considered the father of rocket dynamics; Yuri Gagarin, the first human to orbit the globe; and Korolev.

NASA offices are housed in an updated suite of rooms on the second floor of a 2-story wing of the TsUP, complete with Internet connections, data lines, NASA telephones and fax machines provided by MSFC. In addition to an office that houses NASA public affairs staff during space station crew exchanges, the area also includes offices for interpreters, support staff, and members of the Houston Support Group from Johnson Space Center, who monitor various ISS systems and payloads.

Representatives from Headquarters and Johnson Space Center led the Moscow public affairs efforts for the launch of the space station's Expedition 10 crew (commander Leroy Chiao and flight engineer Shalizhan Sharipov) and the return of the Expedition 9 crew (commander Gennady Padalka and science officer Mike Fincke). In addition, JSC public affairs officer Rob Navias, a U.S./Russian video team and NASA Headquarters photographer Bill Ingalls covered the launch and landing in Kazakhstan.

I was there to provide additional public affairs support, especially during the critical launch, docking and landing activities. On those days, our staff worked long, busy days, coordinating public affairs activities at TsUP, in Kazakhstan and at JSC. On launch day, we headed to work at 3:45 a.m.

NASA Deputy Administrator Fred Gregory, Deputy Associate Administrator for Space Station and Space Shuttle Michael Kostelnik, space station program manager Bill Gerstenmaier, former ISS astronaut Ed Lu and many others were in attendance for the early morning launch of the Soyuz TM-5 spacecraft from Baikonur, Kazakhstan.

While my headquarters colleague, Debbie Rahn, provided VIP and media support upstairs before and during launch, I remained in the PAO room, monitoring the latest information from our interpreter as well as from the IMC,

a Web-based information system. Carlos Fontanot of JSC served as technical liaison and television producer, working closely with the video team at the launch site and with the JSC television operations team in Houston. Navias provided live commentary from the launch site, while Ingalls photographed the activities. Two days later, we left for work at 3:30 a.m. to be in place for the docking of the Soyuz module with the space station. All went according to plan, and a few hours later, the Expedition 9 crew welcomed its first visitors to the station since April.

On Sunday, Oct. 24, the NASA public affairs contingent headed to work at 2:30 a.m. for the landing of the Expedition 9 crew and Russian Space Forces cosmonaut Yuri Shargin in Kazakhstan's pre-dawn darkness. Shargin had launched with Expedition 10, spent eight days on the ISS and returned to Earth with the Expedition 9 crew. Again, Rahn handled the 'upstairs' activities and



Sign on the front of the building identifies it as the Flight Control Center.

VIPS, including NASA Administrator Sean O'Keefe, Assistant Administrator for Public Affairs Glenn Mahone, Assistant Administrator for External Relations Michael O'Brien, Associate Administrator for Space Operations William Readdy and others. I monitored reports about the landing and recovery operations from our first-floor office.

Via videophone, we were able to see Fincke grinning from ear to ear as he sat outside the Soyuz spacecraft on a special couch, sipping hot liquids. His broad smile told it all. Fincke had just completed his first space flight -- 188 days, 186 of them on the ISS. He had led the American scientific research effort, working in the space station's Destiny Laboratory module on continued studies of the effects of weightlessness on the human body. Fincke also conducted multiple experiments in the physical sciences. Fincke's wife watched her husband on videophone from Star City just north of Moscow. With her were their two young children, one of whom was born while Fincke was on the ISS.

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Former wind tunnel mechanic, Richard German, passes on

On Oct. 3, 2004, Richard 'Dick' German was pronounced dead at a Grand Junction, Colo. hospital. He died from a heart attack while riding his mountain bike in Moab, Utah from where he was airlifted. German was 58. He was born on Dec. 16, 1945, at Fort Smith, Ark.

German worked his entire career at NASA Ames. He provided mechanic and supervisory skills to the wind tunnels at Ames. He served in the US Army, completing two tours of duty in Vietnam.

German was preceded in death by his wife Barbara (1999). They were married for 30 years. His father, Leon, died in March of 2004. German is survived by his mother, Margaret German of Hemet, Calif.; his brother Ed German and wife Judy of Santa Ana, Calif., and

his brother Leon German Jr. and wife Janet of Fountain Valley, Calif.; his son David German and wife Michelle of Chandler, Ariz; his daughter Donna Hutcheson and her husband Will of Livermore, Calif. German also had four grandchildren, Michael, Ashlyn, and Kiersten Hutcheson and Andrew German.

No formal services will be conducted. In lieu of flowers, the family ask that you take your best friend to lunch and tell them how much you care for them. That is what German would do. If you would like to write the family a letter about German, you can contact them at Dick German Memories, c/o Will and Donna Hutcheson, 4046 Guilford Ave., Livermore, CA, 94550.



Richard 'Dick' German

U.S./Russia cooperate to keep space exploration alive

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Later, we were driven to Star City, and then to Chkalovsky Airfield, a military airfield just a few minutes' drive from Star City, to await the crew's arrival from Kazakhstan. Waiting to greet the returning space travelers were their families, Russian dignitaries and NASA representatives who had viewed the landing at MCC-M just a few hours earlier.

The Tupolev aircraft landed around 12:30 p.m. under cool, cloudy, blustery skies, but the rain had stopped. Dignitaries and visitors rushed toward the plane as soon as the steps were in place. First to appear was Padalka, followed by Fincke and Shargin. They were immediately surrounded by the crowd at the foot of the stairs. Fincke had a brief opportunity to visit with his newborn daughter, and then the crew members were whisked away to the 'Prophy' or prophylactorium, for several weeks of debriefings and medical activities.

Our group, as well as the team that had been in Kazakhstan for the landing, returned to Star City for another shashlyk (kebab) feast. Everyone was happy and relieved to have the space travelers safely back on Earth. Another mission was complete, with one crew safely back on Earth and another safely aboard the ISS.

In my free time, I enjoyed again exploring Red Square, the Kremlin, Lenin's Tomb and St. Basil's Cathedral. Just off Red Square is a short street that is home to numerous old and very colorful churches, and around the corner toward the Moscow River is part of the original wall that surrounded the ancient city. At the end of the block to the right is the Kremlin wall, with the gorgeous gold 'onion domes' of the Kremlin cathedrals peeking over the wall. Ahead and to the left, across the river, is the new Cathedral of Christ the Saviour.

Shopping along the fashionable Arbat Street and at the large outdoor crafts market (Izmailovo) was enjoyable as well.

Because I can communicate fairly well in Russian, I always enjoy trying the cuisine in Russian cafes and chatting with local residents. On the day the Soyuz spacecraft docked with the ISS, we joined a large group of astronauts, cosmonauts and space agency officials at a shashlyk party at Star City, where the ISS crews undergo their pre-flight training and post-flight physical rehabilitation. As I walked around the lake near the astronauts' cottages, I encountered an elderly man with his son, grandson and spaniel. Soon the old man and I were talking about our dogs, and he told me that during the Apollo-Soyuz mission he was the medical director of the facility where crews do their post-flight physical rehabilitation.

One of the highlights of my trip was getting to see Linda, an old black-and-white dog I had befriended in 1999. When Linda became very sick that summer, I was able to arrange surgery to treat a life-threatening infection. On the way from work one day, we stopped at the Volga apartment building where I had lived. Linda wasn't at the Volga, but Marat, one of the employees, remembered me as the person who had "saved"

Linda. He shook my hands very warmly and explained that Linda usually arrived at the Volga around 10 p.m. Then, he led me down the street a few yards to



View of the flight control room in the Russian mission control center.

a pawn shop where Linda spends her days.

And there was Linda, asleep on the linoleum in a back room. Linda didn't remember me, but just seeing her alive and well, and well-cared for, was enough. Marat guessed that Linda is at least 15 years old. She is very stiff, and her front joints are swollen with arthritis. Marat told me that several people feed her and take care of her. The chances of a stray dog in Moscow living to be 15 years old are practically nil, so I was thrilled to see her.

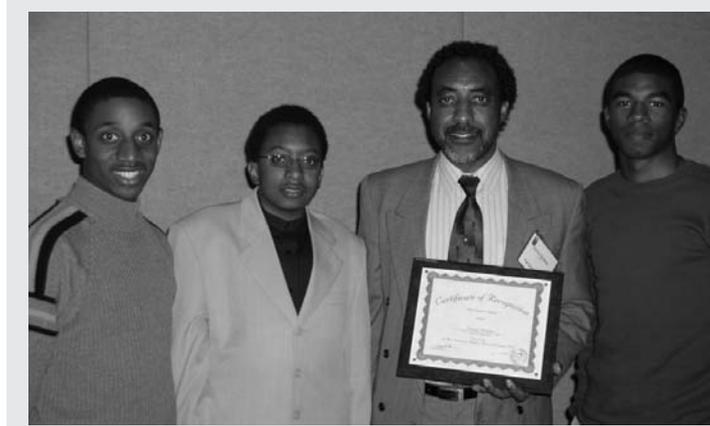
As usual, I enjoyed my visit to Moscow, but it's always great to get home again and be reunited with my own dogs.

BY ANN SULLIVAN

Ames' Battiste honored with national recognition

The editors of Science Spectrum magazine and US Black Engineer and Information Technology magazine have selected Vernol Battiste of Ames as one of the '50 Most Important Blacks in Re-

search Science' for 2004. Battiste is a principle investigator for advanced cockpit display research at Ames as well as the education outreach manager for the Human Factors Research and Technology Division.



Left to right: Ajayi Lawrence, Henri Battiste, Vernol Battiste and Kevin Jones after the '50 Most Important Blacks in Research Science' awards luncheon in Nashville, Tenn.

search Science' for 2004. Battiste is a principle investigator for advanced cockpit display research at Ames as well as the education outreach manager for the Human Factors Research and Technology Division.

The award was presented at the Emerald Honors Conference in Nashville in September. The annual event honors excellence among minority and female workers in hard sciences; space and astrophysics; health science, pharmaceutical and human genome research; agricultural research, food science, textile sciences; and climate and weather research.

"This came as a real surprise to me," said Battiste. "To be recognized by historically black colleges means a lot. It's very important to me." He hopes that this honor will afford him an opportunity to make more significant links between colleges and NASA. "This will open doors that will enable me to foster and expand the quality of people to meet NASA's vision."

Battiste served in the US Air Force where he was a jet engine mechanic and later an air traffic controller. Following his enlistment, he joined the Federal Aviation Administration as an air traffic controller. As a research psychology undergraduate student at California State University, Hayward, Battiste came to Ames under a grant to conduct research for input control devices. He joined Ames full time in 1984. He later

earned an MA in psychology from San Jose State University.

He is co-lead of the flight-advanced situation display research group that has primary responsibilities for flight deck human factors research and development in support of the Advanced Air Transportation Technologies (AATT) program. The group's focus is on the development of ad-

vanced display principles, concepts and requirements for free flight.

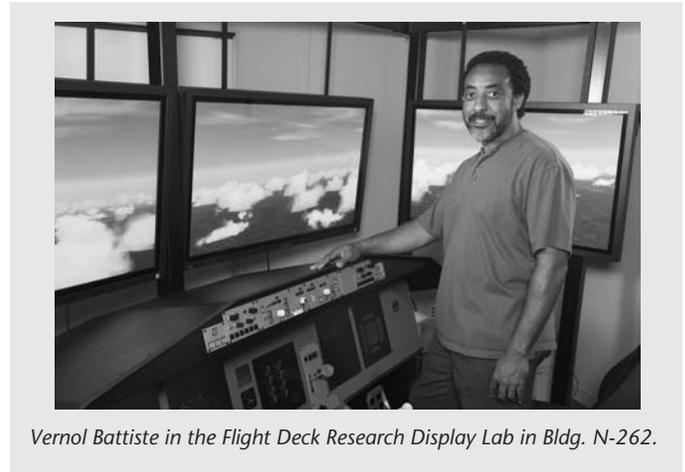
Battiste is very excited by the work he does and he sees the contribution in human factors research in aviation as a necessity. "Air traffic volume is going to increase and this research is vital to bring about significant changes for pilots and air traffic controllers," he said. He further commented that "future space vehicles will transition to aviation vehicles."

Ames Center Director G. Scott Hubbard congratulated Battiste on his selection. "This truly is an honor for you and a wonderful reflection on NASA Ames Research Center's diversity efforts to embrace the best of the best."

While Battiste enjoys his research, he is also very proud of his other role as education outreach manager for the Human Factors Research and Technology Division. He is the principle person responsible for division educational outreach activities, and has formed a partnership between NASA Ames, the Foundation for a College Education (FCE) and San Jose State University. The focus of this partnership is to mentor high school and college students and provide them with positive work experiences in the research laboratory.

Currently, the partnership has supported and mentored six high school students: one is a high school senior, three are entering their college freshman year and two students who began the program as high school seniors are beginning their sophomore year at Amherst and North Carolina A&T. Battiste is also an advisor to the board of directors for FCE, a non-profit organization whose mission is to promote college access for students traditionally underrepresented in higher education.

Battiste's face lights up as he talks about his students. The two sophomores, Ajayi Lawrence and Kevin Jones, were able to participate in the student



Vernol Battiste in the Flight Deck Research Display Lab in Bldg. N-262.

track program during the conference. Battiste, accompanied by his wife, Antoinette Renee, a board member of FCE, and their son Henri, co-sponsored both students. The students talked with researchers and gained more insight into the power of education.

Unlike some programs that offer short exposures to various aspects of research, this program is designed to challenge students for the long haul, and to inspire them to be creative, rather than be influenced by brief experiences. Battiste keeps track of his students weekly and encourages them to communicate with each other throughout their academic years. His long-term goals for the program are to expand it with sponsorships and develop an on-site campus to link to remote campuses.

Battiste's contributions to NASA and the community exemplify the spirit of NASA's vision as an investment in America's future.

BY OLA MARRA COOK

Symposium demonstrates NASA's human factors expertise

NASA's 40-plus years of expertise in human factors research and technology was featured in the first annual Aeronautics Research Mission Directorate NASA Human Factors Symposium hosted at NASA Ames on Oct. 18 to 21. The symposium was sponsored by the



NASA photo by Tom Trower

Chris Wickens offers his insight into the past, present and future of aviation human factors research in the symposium keynote address.

Human Measures and Performance (HMP) Project and chaired by Dr. Richard Mogford, HMP project manager. The event was organized with the assistance of the Human Factors Research and Technology Division and the Aeronautics Directorate. Over 150 participants from NASA, other government agencies, academia and industry attended.

"The main purpose of the symposium was to foster better collaboration between aeronautics human factors researchers within the agency," said Patricia Jones, acting chief of the Human Factors Research and Technology Division. "But we also had colleagues from the FAA and Boeing here who were quite excited to take a fresh look at what we are doing."

Human factors is a cross-cutting discipline that focuses on the study of human performance issues in complex systems, user interface design, human-centered automation, safety, training and fundamental research covering topics such as human perception, attention and cognition. NASA's human factors researchers have addressed human performance challenges in the air, in space, and on the ground for over 40 years.

The recent symposium offered attendees a rare opportunity to discover how this expertise is currently being used to support NASA's aeronautics and space missions today and in the future. Attendees were welcomed by Ames Center Director G. Scott Hubbard, and Patricia M. Jones, acting division chief of the Human Factors Research and Technology Division.

Chris Wickens, a nationally recognized human factors expert from the University of Illinois Aviation Research Laboratory, gave the keynote address. Wickens offered his insight into the past,

present and future of aviation human factors research, identifying the need for further work in the areas of automation, advanced displays, modeling, training, workload and attention management and other issues that affect human performance.

Wickens also recognized the value of the long-term contributions of many NASA human factors projects such as the Aviation Safety Reporting System (ASRS), which was established with the FAA in 1976 as an independent, confidential and voluntary aviation reporting system. After 28 years, the ASRS receives an average of 2,900 reports a month and the archive is considered a U.S. aviation safety data national asset. Wickens reinforced the value of the excellent work done by NASA in the areas of subjective workload assessment, strategic behavior, concurrent task management, training and flight deck air traffic control displays and automation concepts.

Wickens also reinforced the value of the excellent work of the Fatigue Countermeasures Group, established in 1980, whose most recent work includes fatigue countermeasures training for the MER mission surface operations team and measuring their activity and sleep/wake cycles. These research results will be used in shift schedule development to help minimize fatigue and maximize human performance and alertness for future Mars-related operations.

Three parallel tracks of presentations, encompassing more than 40 presentations, were given on areas of interest in the field of aeronautics and space human factors, including: human performance issues in complex systems, user interface design and fundamental research.

Conference attendees were introduced to a new flight deck, user-interface design in Vernal Battiste's (et al.) talk 'Human-centered decision support tools for arrival merging and spacing,' which discussed the use of an advanced 3-D cockpit display of traffic information (CDTI) display to improve the safety of flight by increasing situational and traffic awareness. Battiste offered "The new 3-D CDTI was tested in the recent Distributed Air/Ground Traffic Management (DAG-TM) simulation of the Dallas, Fort Worth airspace and was found to provide the flight crews with

accurate, timely and integrated information on the traffic situation."

In the area of human performance issues in complex systems, attendee Dino Piccione of the Federal Aviation Administration (FAA) found the talk by Paul Lee (et al.) on the 'Effect of in-



NASA photo by Gaye Graves

Joel Miller (left) of the Spatial Auditory Displays Lab demonstrates SLAB (sound lab) software for one of the NASA Human Factors Symposium tours.

creased traffic on controller workload' to be quite significant. "I found Lee's talk on controller workload to be quite valuable. It made this symposium well worth the trip from Washington," Piccione stated.

Sandra Hart offered an example of the crosscutting nature of human performance issues in complex systems with her talk on the 'Man-machine Integration Design and Analysis System (MIDAS),' which has been used for both aeronautics and space applications. MIDAS is a comprehensive suite of computational tools for designing and analyzing human-machine systems. The tools include 3-D rapid prototyping, models of perception, cognition, response, real- and fast-time simulation, performance analysis and visualization. It has data collection mechanisms for generating runtime data that is graphically displayed while the simulation runs and is saved for post-run analyses.

Recently, MIDAS was used to create a virtual rendition of the current space shuttle cockpit. It was used for a simulation of the first eight minutes of nominal ascent in the shuttle and provided quantitative measures of astronaut workload, situation awareness, and timing. MIDAS was recently ported from the Silicon Graphs to the PC platform.

The symposium also included poster sessions, demos and two 'OneNASA' human factors booths. Tours were provided of 10 human factors labs and facilities at Ames.

For more information about human factors research, visit <http://humanfactors.arc.nasa.gov>.

BY GAYE GRAVES

Housing for living organisms in space

In collaboration with Boeing, Chicago, and NASA's Marshall Space Flight Center, Huntsville, Ala., scientists at NASA Ames have designed and manufactured two advanced habitat-holding racks. The racks are about the size of a soda vending machine. They will hold different habitats, or payloads, housing plants, rodents, microorganisms and other biological specimens to be studied in the microgravity environment onboard the International Space Station.

"Holding racks are essentially microgravity platforms in the life science research facility," said George Sarver, project manager of the Space Station Biological Research Project at Ames. "They will provide support to the payloads to ensure the right conditions for experiments."

Scheduled to fly to the space station in the Multi Purpose Logistics Module in 2006, both racks have been delivered to the Kennedy Space Center in Cape Canveral, Fla., for design testing to ensure that they are functioning properly and that they fit into the module. As

NASA Ames develops and delivers science payloads, a team of engineers at KSC will integrate them into the racks in preparation for their flight to the ISS.

Future Space Station Biological Research Project modules will contain various additional elements, including a centrifuge, glove box and other laboratory equipment. These elements are essential to the fundamental space biology research being conducted by scientists at NASA Ames and their collaborators in the scientific community. The floating space laboratory will enable unique, long-term experiments addressing critical questions related to the health, safety and performance of astronauts at Earth, moon and Mars gravity levels.

"Studying microgravity's impact on human health and performance is crucial for NASA's successful implementation of the Vision for Space Exploration," said Bonnie Dalton, NASA Ames deputy director of science. "In order for us to return to the moon and send human missions to Mars, we must ensure astronauts' health, well being and safety.

That will be accomplished through use of various biological models and equipment housed in these racks, which can lend to our knowledge of future astronaut health."

The capabilities provided by the habitat holding racks will help astronauts conduct experiments by providing data, video and command and control functions. Researchers on the ground will also benefit by having the ability and flexibility to monitor and control the environment and experimental parameters of their research projects.

"Habitat holding racks provide the functional support to the payloads to ensure the right conditions for experiments, which leads to better science," said Sarver.

BY VICTORIA STEINER

Hispanic Heritage golf tournament held

NASA Ames celebrated Hispanic Heritage Month by hosting the 3rd annual Hispanic Heritage Golf Tournament. The event was held on Oct.



15 at the Moffett golf course. Many attended and had an excellent time.

The tournament was hosted by the Center's Hispanic Advisory Committee for Employees (HACE). HACE is focused on supporting Hispanic youth in education and community.

The winners of the tournament were Eric Kristich, David Lagman, Ricardo Lagman and Lucio De Anda.



Code C's realignment

Have you been hearing about the Code C realignment? Many people across the Center have been hearing lots of things and now have questions about the impacts of this realignment effort. Ames is in the process of realigning financial resources in the field under the CFO's organization. The effort is aimed at creating better working relationships across all programs, projects and functions and ensuring CFO visibility to all financial data such that the financial health of the Center is assured.

This realignment will require a tremendous effort and Code C is engaging experts from the field to lend their insight, ideas and assist in the work. For approximately 90 days, there will be no significant changes to the jobs those in the field perform or the function they are supporting. This means that the employee reassignment that was effective Oct. 17 will have no direct impact on people for about three months. This 90-day period will allow the Code C management team and field 'experts' to re-engineer the Center's budget and financial management processes.

The re-engineering effort will help to 'ready' the Code C environment for the reassigned employees. The intent is to take ideas and input from people across the Center to streamline processes and establish clear and concise

standards for conducting business. The avenue for this input is a process re-engineering team. The process re-engineering teams are made up of expert financial people from the field, from the RMO and the Financial Management Division. Currently, there are five process re-engineering teams either underway or being formulated; G&A and ASPs, workforce, DSPs, programs and projects and reimbursables. Membership for all of these groups has not been finalized, so it remains a good opportunity to get involved! If you're interested in 'out-of-the-box thinking' and want to influence the financial environment, consider joining a process re-engineering team.

The approach to this realignment activity is a little different than most. Yes, we want the business processes of the Center to be more efficient and effective and easier to perform, but the main goal during this change is to involve those who are directly affected. With this model, anyone interested in participating has an opportunity to help craft his or her new work environment!

So, interested in participating? Are you an out of the box thinker? Have more questions? Call Deb Feng at ext. 4-0256 to schedule a briefing for your organization or any member of the Code C management team to help you find a way to participate.

NASA Ames inspires students to reach for their dreams

The NASA Explorer Schools (NES) program is working. This is a bold statement with few quantifiable metrics, but if you saw the faces of the hundreds of students in the NES schools Ames is



Astronaut Steven Swanson 'high fives' students after a rocket launch at Kenneth Intermediate school in Idaho.

responsible for, the 'bang for the buck' question would become a moot point.

Each year, the NASA Explorer Schools program establishes a three-year partnership between NASA and 50 school teams, consisting of teachers and education administrators from diverse communities across the country. NASA Ames is responsible for 11 school teams located in Alaska, Hawaii, Idaho, Montana, Washington, Nevada, Oregon, Utah and Northern California.

In the months of September and October, NASA Ames coordinated five NES kick-off events. At each event, a NASA official and an astronaut spoke to the students about NASA and the future. The NASA officials were responsible for presenting the Vision for Space Exploration and how the students and adults can participate in making the vision a reality. The astronauts presented their experiences as part of the astronaut corps.

"It's awesome," said a student at Key Peninsula Middle School in Lakebay, Wash. "It gives us more opportunities to learn more things."

"I thought it was so cool that we got to meet an astronaut," said a second grade student at Whittier Community School in Whittier, Alaska.

"I never thought about working for NASA until today," said a fifth grade student at Kenneth Carberry Intermediate School. "They made me feel that I can do anything I want to."

"The lesson plan in the afternoon was shot," said a teacher at Barnard White Middle School in Union City, 22 miles east of NASA Ames across the Dumbarton Bridge. "The students couldn't stop, all they wanted to talk about was the event."

These types of comments and reactions are what the NASA Explorer Schools program is looking for. Many NASA employees can trace back to a

NASA experience that helped sway their decision to eventually work for NASA.

"Every man and woman who works at NASA started like you," started Stan Newberry, NASA Ames deputy center director, during his presentation at Key Peninsula Middle School.

To build additional excitement, each of the Ames NES schools held school-wide contests to determine which students would ask questions during the program and have lunch with the astronaut. Students submitted short essays, drawing or designed aliens to be considered. The contest winners were treated to 45 to 60 minutes of face-to-face interaction with the astronaut and the NASA official.

NASA Explorer Schools, education and public affairs personnel and aerospace education specialists at Ames will

work with the schools to continue the excitement generated at the kick-off



Astronaut Rex Williams (left) and Chief Financial Officer for NASA Gwen Sykes (center) answer questions from the students in Whittier, Alaska.

events. The three-year partnerships will include additional school events, teacher in-service training and technology support.

Next school year, NASA Ames will get an additional five or six schools. For more information about the NASA Explorer Schools Program, visit <http://explorerschools.nasa.gov/>

BY JONAS DINO

Reda, Remington named Ames Fellows

Ames' Daniel Reda and Roger Remington were selected by the Ames Science and Technology Council as Ames Associate Fellows for this year.



Daniel Reda

This is one of the most prestigious awards given by the Center. The award carries a personal honorarium as well as a research and travel stipend. The criteria for selection are (1) sustained innovative and creative contributions to progress in the nominee's field of activity; (2) recognition by a nominee's peers of the quality and significance of his/her work; and (3) actual and potential impact on NASA's science and mission goals.

Reda was selected for his pioneering research in the field of hypersonic boundary layer transition and for formulating a new methodology for the aerothermodynamic testing of reentry

vehicle nosetips in ballistic ranges. He developed a roughness-induced transition model that was instrumental in selecting the correct heat shield thickness for the Galileo probe used to probe the atmosphere of Jupiter. His work has had a major impact on both



Roger Remington

hypersonics and planetary entry.

Remington was selected for his significant research contributions to the control of attention, neurophysiology and decision science. He has contributed to a number of applied projects including rotorcraft display design, decision-support and intelligent control systems for the space station, innovative concepts for launch operations, modeling of human error in aviation systems and information flow and display concepts for advanced air traffic control.

Ames scientists receive Exceptional Service Medal

The Mars Exploration Rover (MER) Collaborative Information Portal (CIP) leads -- Joan Walton and John Schreiner -- and the Mixed-initiative Activity Plan Generator (MAPGEN) lead, Kanna Rajan, all from Code TC, recently received the NASA Exceptional Service Medal for their work.

The MER mission project manager nominated the three Ames researchers for the medals, which were awarded during a ceremony at the Jet Propulsion Laboratory (JPL), Pasadena, Calif.

"Code IC (now TC) is very proud of the work of these leaders and their teams," said TC division chief Dave Kormsmeier. "They have made a major impact on the MER mission. According

to mission managers, they have contributed to an increase in science productivity of over 20 percent."

MAPGEN is a ground-based, automated planning and scheduling tool that MER scientists use to build and edit science activity plans for the rovers based on the scientists' 'wish list' of observations and the rovers' available resources.

"MAPGEN's unique 'mixed-initiative' planning capability permits tactical activity planners to tune their plans for the rover," Kormsmeier said.

CIP is the primary time-management tool for operations and science for the MER missions. It is the latest in a series of applications to support data retrieval, analysis and understanding

for various NASA missions. For MER, CIP helped scientists and engineers perform time-critical tasks.

Both the CIP and MAPGEN systems are still in use in support of extended operations of the MER mission.

The CIP and MAPGEN teams also won other accolades including NASA Ames Group Achievement Honor Awards and the NASA Headquarters Code R 'Turning Goals into Reality' (TIGR) award. In addition, JPL presented the NASA Group Achievement Award for Contributions to the MER Ground Data System Team' to the combined Ames team.

BY JOHN BLUCK

Sustainability Award call for 2004

Do you know someone who....

- Is a champion 'green purchaser'?
- Recycles like crazy?
- Goes out of the way to save energy?
- Helps others understand environmental issues?

The Environmental Services Office (Code QE) wants nominations for the 2004 Ames Sustainability Award (for-



'Moia' Easter Island statues.

merly called the Pollution Prevention Award). Code QE sponsors an annual award to recognize employees who attempt to improve the environment through their day-to-day activities, and is looking for specific accomplishments, preferably in the last year or so, but can be at any time.

Nominations are due by Dec. 31. The award winner(s) will be selected and awards issued by March 1, 2005. Nomination forms and rules are on the Ames pollution prevention web site at <http://q/qe/p2>.

What is sustainability? If the Polynesians who inhabited Easter Island understood sustainability, their society might be here today. Scientists have discovered that Easter was a paradise with an abundance of natural resources, a subtropical forest of trees and woody bushes that towered over a ground layer of shrubs, herbs, ferns and grasses. In the forest grew an abundant

species of palm that would have been ideal for making structures to transport and erect the massive stone statues (called moai) found around the island and for constructing large canoes to fish deep off the coast.

When Dutch explorer Jacob Roggeveen discovered the island on Easter, April 5, 1722, he described the land as "wasted" and "a singular poverty and barrenness." The inhabitants had depleted the abundant palms and wildlife after years of unsustainable harvesting. This transformation from paradise to wasteland occurred over 12 centuries between 400 A.D. and 1600 A.D. The process was so gradual, the inhabitants may not have even noticed the generational differences in their land and way of life.

Like in the Easter society, sustaining our resources and communities is a

reality of our society today on a larger scale, yet is not really understood. A sustainable society balances material resources, the economy and the standard of living. Each is dependent on the other. Recycling more, conserving more, and preventing more pollution without changing how we operate is not necessarily sustainable. Changing how we manufacture, design buildings, purchase products, travel, and grow crops, to name a few examples, to make more effective use of resources is an integral part of becoming sustainable.

Easter Island should be our lesson, not our destination, unless you are planning a vacation.

Questions about the sustainability award? Contact Christel VanArsdale at ext. 4-1175, or the author at ext. 4-1406.

BY MARK LACY

CMU project leads to new NASA career

Hosted by the NASA Ames Human-Computer Interaction (HCI) group, the Carnegie Mellon Masters of HCI student team reached completion on a nine-month long capstone project this summer. The project culminated in the development and testing of a prototype representing a next-generation version of the Science Activity Planner (SAP) application used on the MER mission.

The final deliverable was a running Visual Basic prototype and design specification the JPL SAP group can use to code. At the end of the summer, the team gave a final presentation to SAP developers from JPL, Ames stakeholders and the students' faculty advisors.

After completing her capstone masters project and receiving her degree, one of the students, Jenica Rangos, was hired by the HCI Group, and started work in September. During the sum-



NASA photo by Tom Trower

CMU Masters students discuss the next generation version of the Science Activity Planner (SAP) application used on the MER mission. Left to right: Alesha Jordan, Darin Wonn, Ben Glenn and Jenica Rangos.

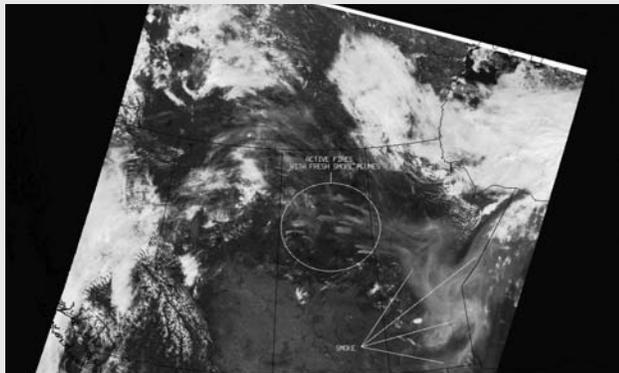
mer, Rangos also completed an independent study on anomaly resolution in the context of the Gravity Probe B mission.

Cloud study finds fire pollutants travel higher and farther

A NASA mission to study the properties of cirrus clouds found that forest fire smoke, containing pollution-level concentrations of trace gases, travels

harmful ultraviolet rays. The effect of injecting smog pollutants into the ozone layer is unknown. "The key question is how the chemistry of these two systems will combine," said Drdla.

NASA's Jet Propulsion Laboratory (JPL), the National Oceanic and Atmospheric Administration (NOAA) and several universities were collaborating with Ames. The findings were published in the American Geophysical Union (AGU) Geophysical Research Letters last month. "This looked like



Satellite image (from Terra MODIS) showing the large cloud of smoke produced by the forest fires that were examined in this study.

several thousand miles away at higher-than-expected altitudes.

The CRYSTAL-FACE (Cirrus Regional Study of Tropical Anvils and Cirrus Layers - Florida Area Cirrus Experiment) Mission, conducted during the summer of 2002, used six aircraft, including two NASA research airplanes, to sample clouds in the Florida Keys and subsequently collected concentrations of carbon monoxide five times higher than expected. The cause was traced back to multiple fires across Canada. The mission explored an area between approximately 47,000 feet and 58,000 feet, an area known as the tropopause region.

To discover the cause of the unexpected result, co-investigators Katja Drdla, Max Loewenstein and Paul Bui, scientists from NASA Ames, backtracked the origins of the pollutant particles. Satellite images and data from the Canadian Forest Service indicated that heavy smoke plumes from forest fires in Saskatchewan, Canada, were the cause.

"The plume went straight up and then traveled," said Drdla. Most existing circulation models assume that the lower-level air enters into the stratosphere, 12 to 16 miles high, only in the tropics. This is the first time in-situ observations of a carbon monoxide- and particle-enriched plume can be traced to emissions from a forest fire thousands of miles away." Drdla said "If the plume was two to three kilometers lower it would mix with other gases. At this higher altitude, it is anticipated to stay there for an average of five to six years." At low levels, the forest fire smoke would mix to create ozone, which is a dangerous pollutant and the main ingredient of smog. At higher altitudes, however, ozone is naturally present and beneficial, because it protects the Earth from

polluted air," said Dr. Hans-Jurg Jost, lead author and principal investigator with the Bay Area Environmental Research Institute, working in collaboration with NASA. "At these altitudes we usually find pristine air."

The key support that forest fires are the combustion source of the carbon monoxide was the comparison with data from that of a previously measured, known fire plume two hours old. The similarity in the particle data implies that the plume observed over Florida originated from biomass burning.

"We tracked the area of the plume that the aircraft encountered back in time for the 10 days prior to the measurements," said Jost. It was discovered that the air had come from Canada, extending from Hudson Bay down to south of Lake Huron. A research satellite observed enhanced aerosol extinction more

than one mile above the tropopause over James Bay.

CRYSTAL-FACE is one of the unique experiments that unites seven NASA centers, NOAA, National Science Foundation, Department of Energy, Office of Naval Research, U.S. Weather Research Program, universities and other government weather researchers to study how cirrus clouds in our atmosphere will be affected by greenhouse warming, caused by human emissions of carbon dioxide. This mission was primarily funded by NASA's Radiation Sciences Program.

"These results show that there could be an impact to ozone in the stratosphere from particles originally thought to be only in the troposphere," said Jost. The smoke was injected to high altitudes by a strong convective cloud system that formed over the forest fires. Satellite pictures of the clouds confirmed that the cloud tops were very cold, -65°C (-85°F), indicating that the system had the potential to penetrate into the stratosphere. Such convective systems have previously been observed to form over forest fires, but were believed to only inject air into the upper troposphere or lowest levels of the stratosphere. This system was able to inject air several kilometers higher.

According to Drdla, further research is necessary to determine the dynamics responsible for injecting forest fire smoke to such high altitudes and to determine how common these events are. "This is a wide open field for research," she said.

For more information visit <http://geo.arc.nasa.gov/sgp/aerosol/aerocloud6.html>, <http://www.agu.org/pubs/crossref/2004/2003GL019253.shtml> or <http://www.espo.nasa.gov/crystallface>

BY OLA COOK

Navigator speaks at Ames



NASA photo by Tom Trower

Famed world-class navigator Stan Honey speaks about his transoceanic exploits at the Ames Sailing Club meeting in October.

Ask the 'export expert'

Question: When is a person considered a 'foreign national'?

Answer: A foreign national is a citizen of a country other than the United States. The International Traffic in Arms Regulations (ITAR) specifies that a citizen of the United States is (amazingly) called a U.S. person. However, the ITAR also considers lawful permanent residents (i.e. 'green card holders') to be U.S. persons. So for export purposes, a green card holder is not a foreign national.

Do you have a question for the export expert? Send it care of kwall@mail.arc.nasa.gov. And, visit the Web at <http://jp.arc.nasa.gov/EC/EC.html>.

Challenger victim honored with school dedication

With the more than 18 years that separates us from the Challenger accident, it is easier to see all the good that has come from the disaster. Despite the loss of the seven heroic astronauts, they



Christa McAuliffe's mother and brother during the recent dedication of the Christa McAuliffe Middle School in Stockton.

The Christa McAuliffe Middle School uniquely incorporates space into its curriculum. Besides holding space mission simulations and offering a class specifically on all aspects of space sciences each year as an extra incentive for good attendance, several students are sent to Huntsville, Ala., to participate in Space Camp.

BY ARIANE CORNELL



The Christa McAuliffe Middle School official dedication was held in September. Attending from left to right: Darla Briggs, Christa McAuliffe Middle School principal; Nick Nguyen, student body president; Grace Corrigan, McAuliffe's mother; Steven Corrigan, McAuliffe's brother and his wife.

continue to inspire people. Most recently, Christa McAuliffe, the teacher from New Hampshire, was honored as the namesake of a new school in Stockton, Calif.

The Christa McAuliffe Middle School was officially dedicated in September at a ceremony held at the freshly finished campus. Along with approximately 800 students, in attendance were several school administrators, local government officials, a representative from Governor Schwarzenegger's office and McAuliffe's mother, Grace Corrigan.

"This is a beautiful, beautiful, beautiful school," said Corrigan. In reference to the dedication day sharing McAuliffe's birthday date, Corrigan called the event a "fabulous birthday present." Corrigan, who concluded the dedication ceremony by unveiling a large portrait of McAuliffe to be hung in the foyer of the school, delivered an inspiring presentation that urged the students to "take every single advantage you have, enjoy [the] school, and do the best you can."

NASA also showed its support during the dedication. Robert Smith, once a teacher himself, has worked with NASA for more than 15 years to promote positive outcomes of the Challenger accident, such as the Challenger learning centers. At the ceremony, Smith gave a speech and presented the school's principal, Darla Briggs, with a framed photo of Challenger lifting off and with an STS-51L patch.

ASAP II 3rd trimester awards presented

Under the Ames Safety Awards Program (ASAP) II, Ames recognized 12 employees for their outstanding accomplishments in improving health and safety. ASAP II was established to recognize employee actions, behavior and/or job performance that result in improved health and safety conditions at the Center.

There are four levels of awards, with tier four being the highest level of achievement. The ASAP II board evaluates each nomination and selects the tier level that best represents the actions and accomplishments of that nomination.

A group of two individuals from PAI Corporation received this trimester's highest team award. They were recognized for their outreach efforts by hosting the hazardous waste collection presentations in a location convenient for their research audience.

Tier Level 3 – Individual awards

Bernadette Luna
Kevin Kalinowski

Tier Level 2 – Individual awards

Valerie Stone-Reeve
Jay Nuez

Mathew Linton
Gail James
Robert Shipley
Cheryl Orth

Tier Level 1 – Team awards Outreach Presentations for the Researchers

Erik Rockwell
Stacy St. Louis

Tier Level 1 – Individual awards

Mathew Linton
Doreen Cohen

Each of these employees and teams was nominated by their colleagues for their outstanding actions and accomplishments in improving health and safety conditions at Ames.

If you know of an individual or a team that deserves recognition, nominate them for an ASAP II award.

The nomination form can be retrieved in Microsoft Word by clicking on the ASAP II link at <http://q.arc.nasa.gov>. The nomination form can be completed and submitted to Shelleen Lomas at Mail Stop 221-10 or e-mail slomas@mail.arc.nasa.gov.

Senior research scientist, Louisa Beck, passes on

Louisa R. Beck, a senior research scientist with Ames' Ecosystem Science and Technology Branch (Code SGE), passed away on Oct. 16. She was 52. In



Louisa Beck

2001, Beck was diagnosed with ovarian cancer. Her courage and resolve in battling this disease was an inspiration for all who knew her.

Beck began her career in remote sensing while she was a graduate student at U.C. Berkeley's Department of Geography. She came to NASA Ames in the late 1970s to work on the AgRISTARS program, which used satellite data in identifying crops and field estimates.

From 1986 to 1989, Beck was a research associate at the Arizona Remote Sensing Center at the University of Arizona at Tucson. Here, Beck's affinity with the desert landscape was fulfilled. For her, the sun, sand and open spaces represented all that was unassailable in nature and in life.

Beck returned to NASA Ames in 1990 as a contractor with Technicolor Government Services (later Johnson Controls World Services) to work on the Global Monitoring and Human Health (GMHH) program. This interagency collaborative program used NASA science and technologies to model mosquito habitat distribution for use in models of malaria transmission risk. With Byron Wood, Beck transferred the knowledge gained from the GMHH program into the formation of the Center for Health Applications of Aerospace Related Technologies (CHAART) at Ames in 1995. CHAART's purpose was to expand disease modeling to other vector-borne maladies such as Lyme disease, leishmaniasis, filariasis and schistosomiasis. In the course of her work with CHAART, Beck traveled extensively throughout the world.

Beck was a pioneer in the area of public health and landscape epidemiol-

ogy. For nearly 20 years, she collaborated with many international partners and organizations in the field of public health research. As a co-founder of CHAART, she had much influence on NASA Headquarters programs in both Code U (biological and physical research) and Code Y (Earth science). Her publications were well respected and often cited. In recent years, her work was acknowledged in journals such as *Emerging Infectious Diseases*, *Journal of the American Mosquito Control Association*, and *Journal of Medical Entomology* to support the application of her ideas in Asia, Africa and South America. She was especially proud of and committed to inspiring the next generation of public health researchers through student collaboration and mentorship. Visiting researchers and students who trained at the CHAART facility received her attention both in and out of the lab. Beck often served as a tour guide to local points of interest or to favorite restaurants. Most visitors were transported in her battered but beloved yellow VW Bug to and from Ames, to San Francisco or a nearby art festival, or simply to run errands. For Beck, these tasks were not just part of the job: by assisting the facility's students and visitors, Beck assured their inclusion into the extended CHAART family.

In the past year, Beck received two well-deserved awards in recognition of her work: the Presidential Rank and NASA Honor Award for Exceptional Achievement and an Ames Honor Award for Excellence in the category of scientist/researcher.

Beck was an avid gardener. Completing the master gardener's program out of U.C. Extension, she identified most plants by their botanical names. Pedestrian terms like 'daisy' or 'mari-gold' were not part of her vocabulary, nor were such plants a part of her garden. She was particularly fond of salvias and her backyard was a display of the many varieties of this hardy plant. She appreciated their durability and adaptability in the local landscape, as well as their beneficence to hummingbirds. For bees and butterflies there was a fair representation of native plants and, as a reminder of the desert, there was a vast array of cacti and succulents. She was an avid bird watcher, both in her backyard as well as at Ames. A pair of binoculars sat on her desk, ready to identify a possible red tail hawk or even a golden eagle as it flew outside her office window. Her love of wildlife included her championing several causes for the protection and well being of animals. At home, she loved and cared for her succession of cats, beginning with Mr. Spot and Sonia, and later Rajah and Moses.

Beck is survived by her brother, Stephan Beck and his family and a sister. The memorial service for Beck will be held on Saturday, Dec. 4 at 2:00 p.m. at the Fernwood Cemetery in Mill Valley. In lieu of flowers, donations may be made to The Nature Conservancy, Attn: Treasury, 4245 N. Fairfax Drive, Suite 100, Arlington, VA 22203, (800) 628-6820. Beck will be deeply missed by her many friends and colleagues here and around the world.

BY GAILLYNE BOUTET

Safety Corner

Are you using two or more monitors and keyboards at your desk? If so, beware. Extra wires, cables and power cords dangling from the desk cause additional floor clutter that may become entangled around feet or chair wheels and cause a fall. Additionally, if you are using more than one system at your desk, you probably cannot sit straight in front of both systems. This may result in eye, back, wrist or other bodily strains resulting in ergonomic injuries.

An inexpensive \$25 hardware device called a 'Keyboard, Video Monitor, Mouse' (KVM) switch enables the computer user to select one keyboard, video monitor and mouse

that can control one or more computers at one time. This allows the computer user to work with the monitor, keyboard and mouse at the optimum ergonomic position, reducing repetitive stress injuries, cumulative trauma disorders and eye strain. Furthermore, using only one monitor also will save money and energy costs.

There are several different models of KVMs including a wireless model as well as models that can control more than two computers. Employees interested in learning more about KVMs may contact Paul Grams at e-mail Paul.R.Grams@nasa.gov for further information.

BY PAUL GRAMS

Events Calendar

Ames Amateur Radio Club, third Thursday of each month, 12 noon, N-2T8 (across from N-255). POC: Michael Wright, KG6BFK, at ext. 4-6262.

Ames Ballroom Dance Club. Classes on Tuesdays. Beginning classes meet at 5:15 p.m. Higher-level class meets at 5:50 p.m. Held in Bldg. 944, the Rec. Center. POC: Helen Hwang at helen.hwang@nasa.gov, ext. 4-1368.

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-210, Rm. 205. POC: Cheryl Quinn, ext 4-5793.

Ames Contractor Council Mtg, first Wednesday each month, 11 a.m., N-200, Comm. Rm. POC: Anita Fogtman, ext. 4-4432.

Ames Diabetics (AAD), 1st & 3rd Weds, 12 noon to 1 p.m., at Ames Mega Bites, Sun room. Support group discusses news affecting diabetics. POC: Bob

Mohlenhoff, ext. 4-2523/e-mail 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. 221, Rm 104. Guests welcome. Info at: <http://www.afeu.org>. POC: Marianne Mosher, ext. 4-4055.

Ames Mac Support Group Mtg, third Tuesday of ea. month, 11:30 a.m. to 1 p.m., Bldg. N262, Rm 180. POC: Julie ext. 4-4694 or Tony ext. 4-0340.

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, second Thursday of ea. month (Feb through Nov), from 11.30 a.m. -1 p.m. in the special events room in the Ames Visitor Center in N-223. All are welcome. POC: Jeff Smith, ext. 4-2586.

Environmental, Health and Safety Information Forum, first Thursday of each month, 8:30 a.m. to 9:30 a.m., Bldg. 221/Rm 155. URL: <http://q.arc.nasa.gov/qe/events/EHSeries/> POC: Stacy St. Louis 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: Becky Brondos at ext. 4-1959, bbrondos@mail.arc.nasa.gov or Bob Hilton at ext. 4-1500, bhilton@mail.arc.nasa.gov.

Nat'l Association of Retired Federal Employees (NARFE). Former and current federal employees. Your only contact with Congress. Join to protect your federal retirement. In December, the meeting is at Harry's Hofbrau, Santa Clara, for the Annual GALA Christmas lunch and program. Chptr #50 will then meet on the first Fri. of each month at HomeTown Buffet, 2670 El Camino (at Kiely), S. Clara, 11 a.m. lunch. POC Earl Keener (408) 241-4459 or NARFE 1-800-627-3394.

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

Spooky folks haunt Ames

The annual Halloween costume contest occurred at Ames on Oct. 29, held in the Mega Bites cafeteria. Many employees participated, wearing all sorts of interesting, unique and fancy costumes. The Ames Exchange sponsored the events, also providing free refreshments. The Ames Childcare Center also held a Halloween parade (see photos



NASA photo by Dominic Hart



NASA photos by Tom Trower

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The Ames Childcare Center also held a Halloween parade (see photos



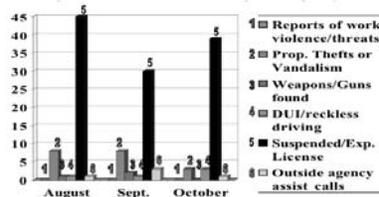
NASA photo by Dominic Hart

Protective Services monthly activity

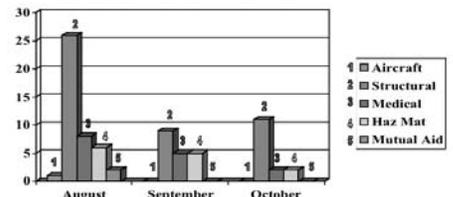
A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire

Protection Services units for the month of October 2004 is shown below.

Security/Law Enforcement Activity



Fire Protection Activity



Ames Classifieds

Ads for the next issue should be sent to astrogram@mail.arc.nasa.gov 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: Mtn. View. Upstairs rental, 2b/1 ba., hardwood floors, garage, patio and priv. laundry room. \$1,375 mo. Call (650) 967-0420 or (650) 302-7550.

For rent: Mtn. View. house, 2bd/1 ba, attached garage, large fenced backyard, hardwood floors, stove, refrig, W/D. Pets OK. \$1,575 mo. Call (650) 967-0420 or (650) 302-7550.

Shared housing room for rent in excellent, Los Altos area near Ames. Share w/prof'l males/females. Large house, yard w/gardener. W/D, partly furnished, N/S, pets, \$540/mo plus dep. and 1/4 utils. Call (650) 964-2913 or (408) 243-7750.

For rent: Mtn. View house. 1,200 sq ft, 3 bd/2 ba. Landscaped bk and frnt yard (gardener incl), patio area. Two-car garage, W/D, D/W, new over-range micro-convection oven. Located 2 mls from Ames near Shoreline and Central Expressway (10 min. bike ride to Ames). \$2,400/mo. Call (650) 283-9060.

Looking for house to rent in Mtn. View in Jan/Feb, 3 bdrm, w/fenced yard (for dog), and garage, in safe area for two children. Also have cats. Can afford \$1,700 per month. I work at Ames. falcon7777_2000@yahoo.com

Miscellaneous

The Ames Cat Network needs help finding homes for cats trapped at Moffett. They range from feral to abandoned/lost pets. Tested, altered and inoculated. Call Iris at ext. 4-5824 if you or someone you know are interested in fostering or adopting a cat.

Ready to fly Xtra Easy 2 (XE2) gas model airplane. Flown twice; never wrecked! Includes airplane and all equipment needed to fly it: 5 channel multi-data computer controller; man'l fuel pump; 1.2v NiCad glow plug battery w/AC adapter; 12v pwr starter; 12v battery and charger; field box for equipmnt/tool storage. \$350 or B/O. Call (408) 422-1572.

Bicycle, 1997 Vision Recumbent, model VR42, 21 speed, rear rack, wheel size 20i front and 26i rear, \$650 or B/O. Call (408) 863-0835.

'Crate & Barrel' pine kitchen table with fold-down sides & four chairs with wicker seats. Call for pics. Great condition. \$200. Call (408) 295-2160.

Ethan Allen maple headboard and footboard and Cal king mattress and springs, exc. condition. Paid \$2,500 for both. Asking \$500 or B/O. Ann (408) 248-1985 or e-mail acullivan@comcast.net

Refrigerator: whirlpool, almond xclnt condition. \$150 or B/O; double futon mattress xclnt cond. \$35 or B/O jimdavidw@comcast.net Call (408) 255-2301.

Computer desk, two file drawers, tower storage, pull out keyboard holder, medium brown, exc. condition, \$100. Call (408) 732-7080.

Artificial Christmas tree, 8', fir, green, very full and lifelike. Stand included. Orig price \$200., asking \$75. Call (925) 427-4146

Michelin Symmetry premium all-season radial tires, size 225/60TR16, load index: 98T. Used only 800 miles, perfect cond. Set of 4, \$260. Call (510) 489-6030.

Peg Perego dual stroller. Top of the line! Excellent condition, no stains or tears. \$175. Call (510) 489-6030.

Transportation

'79 Volvo 242, 2 dr, brick red in color, volvo w/stdndr 4 spd, sun-rf. About 128K mls, in decent shape; very reliable w/some modifications: Boge gas struts and lowering springs, after market 15" mag wheels, Blaupunkt stereo (am/fm, cass.) w/six spkr system. Recent clutch replacement. \$900 or B/O. Kevin (408) 723-2115.

'92 Honda Accord LX Sedan 4D, 109K mls, automatic, air, pwr doors and windows, complete record of scheduled maintenance w/dealer, orig. owner, well maintained, gd cond., Kelley Blue Book price \$3,500 or B/O. Call (650) 996-9851.

'92 Mercedes 190E, 2.6L-6cyl, 4D (white), 144,336 mls, automatic, A/C, pwr steering, pwr locks, seats and windows, AM/FM/cassette, 4-wheel ABS, sunroof, leather, allow wheels. \$3,800. Call (925) 455-4580.

'02 Ford F150 long bed pickup (white), 4,800 miles!, automatic, V8-4.6 liter, 2 wheel drive, A/C, 4-wheel ABS, AM/FM/cassette, running boards. Immaculate condition. \$13,500. Call (925) 455-4580.

Safety Data

	Civil Servants	Contractors
Not recordable first aid cases	0	2
Recordable no lost time cases	0	3
Lost time cases*	0	1
Restricted duty days	0	0
Lost work days	0	2

Data above is as of 10/28/04. May be subject to slight adjustment in the event of a new case or new information regarding an existing case.

Note: Under new OSHA rules, lost time is defined as lost work days, restricted duty or job transfer.

Astrogram deadlines

Deadline:	Publication:
Nov. 30	Dec 2004
Dec. 31	Jan. 2005

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.

Ames emergency announcements

To hear the centerwide status recording, call (650) 604-9999 for information announcements and emergency instructions for Ames employees. You can also listen to 1700 KHz AM radio for the same information.

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-943 (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, View of slopes, close to lifts. Per night: \$250, two night minimum. Includes linens, cleaning, propane fireplace, fully equipped. Call (650) 968-4155, DBMcKellar@aol.com

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

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

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

Pine Mountain Lake vacation home. Access to golf, tennis, lake, swimming, horseback riding, walk to beach. Three bedrooms/sleeps 10. \$100/night. Call (408) 799-4052 or (831) 623-4054.

Incline Village: Forest Pines, Lake Tahoe condo, 3 bd/2ba, sleeps 8. Fireplace, TV/VCR/DVD, MW, W/D, jacuzzi, sauna, pool. Walk to Lake, close to ski areas. Visit Web page for pictures: <http://www.ACruiseStore.com>. \$120/night low season, \$155/night high season (holidays higher) plus \$156 cleaning fee and 12% Nevada room tax. Charlie (650) 355-1873.

Disneyland area vacation rental home, 2 bd/1ba. Nearing completion completely remodeled w/ new furniture. Sleeps 6 (queen bed, bunk beds, sleeper sofa). Air hockey and football tables. Introductory rate \$600/wk, once completed rate will be \$1000/wk. Security deposit and \$100 cleaning fee required. Call (925) 846-2781.

Ski Park City Utah, NASA Ski Week XIV, Feb 5 - 12, 2005. Space limited. E-mail Steve at exnasa@sbcglobal.net or call (408) 432-0135.

New York, 5th Ave. One fully furnished bedroom in 24 hour security bldg. overlooking Washington Square Park, \$1,000/wk or \$3,000/mo. negotiable. Call (650) 349-0238.

Paris/France: Fully furnished studio, 5th Arr, Latin Quarter, Notre Dame and Ile-St. Louis. \$1,400/wk. negotiable Call (650) 349-0238.

Food and Toy Drive Nov 29 thru Dec 10

All non-perishable food items and unwrapped toys may be dropped off at the Ames Cafe during the period of Nov. 29 through Dec. 10.

Your support is greatly appreciated. For additional info contact Angela Ortega at ext. 4-1733

McKay speaks on human exploration



NASA photo by Dominic Hart

Ames' Chris McKay speaks recently at the Center about human exploration, biology and the future of Mars. He also explored the biological issues that concern the new human exploration mission.

Collective Intelligence

continued from page 3

Understanding of collective intelligence," Wolpert said. "In economics, you have many, many individuals with separate goals. In a physics system like a gas you have many, many molecules, which can be viewed as if they all have separate goals. The commonalities of how you control an economy and how you control a gas -- that commonality is the field of collective intelligence," he explained.

The collective intelligence development effort includes NASA Ames, Stanford University, Stanford, Calif., and Oxford University, Oxford, United Kingdom.

NACA Reunion XI

The eleventh reunion for individuals employed by the federal government in the National Advisory Committee for Aeronautics (NACA)



is scheduled to be hosted by NASA Ames in the Fall of 2005 on Sept. 30, Oct. 1 and 2.

If you are a member of this group and have not received the letter of invitation mailed in late September

of this year, then you should contact the NACA Reunion XI organizing committee either by e-mail at nacareunion11@mac.com, by telephone at ext. 4-1032 or by letter to the following address and the information will be provided to you:

NACA Reunion XI
NASA Ames Research Center
Mail Stop 207-1
Moffett Field, CA 94035-1000

The committee looks forward to seeing you at this gathering to celebrate the 47th anniversary of the transition from the NACA to NASA.



National Aeronautics and Space Administration

Ames Research Center
Moffett Field, CA 94035-1000

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