

Ames dedicates NASA Lunar Science Institute

BY MICHAEL MEWHINNEY

Thirty-eight years ago, NASA launched the Apollo 13 mission to the moon. On April 11, NASA launched the new Lunar Science Institute to lead the agency's research activities for future missions to the moon related to NASA's exploration goals.

Managed by NASA's Ames, the NASA Lunar Science Institute is modeled after the successful NASA Astrobiology Institute, also managed by Ames, and features teams of scientists across the country collaborating in lunar science and future lunar exploration.

"This is an exciting day for NASA as we unveil our new Lunar Science Institute," said Ames Research Center Director S. Pete Worden. "This dynamic virtual institute is now the center for lunar science, not only for the United States, but also for the world and will bring together some of the best and brightest scientists to help lead NASA's future missions to the moon."

The new institute is supported by the NASA Science Mission Directorate and the Exploration Systems Mission Directorate at NASA Headquarters and will be funded by the Lunar Science Project. Initially, NASA will select four or five research teams for grants of \$1 million to \$2 million each for four year terms. By the end of this year, NASA officials say as many as 50 scientists could be working in collaboration with the new institute.

"In addition to basic lunar science, these new research teams will be conducting investigations in biology, astronomy, solar and Earth science that could be performed on the moon," said David Morrison, interim director of the NASA Lunar Science Institute. "Teams will focus on one or more aspects of lunar science, including investigations of the moon, from the moon and on the moon."

For the investigations of the moon, scientists will study the nature and history of the moon, including research on lunar samples, to learn about the moon and gain insights into the evolution of the solar system.

Research teams focused on science to be conducted on the moon will study the lunar environment of terrestrial life and the equipment needed to support lunar habitats.

Scientists conducting investiga-



NASA's Lunar Science Institute opened at Moffett in Building 17 on April 11. The institute will feature teams of scientists across the U.S. who will be collaborating in lunar science and future lunar exploration.

tions from the moon will learn how to use the moon as a platform for performing scientific investigations. They will also consider how observations of the Earth and other celestial phenomena can be accomplished from the lunar surface.

A national search for a director of the new institute is underway. Since it

will be a virtual institute, most of the research will be conducted elsewhere, including other NASA centers, universities and non-profit research groups, throughout the nation and around the world.

For information about the NASA Lunar Science Institute, visit: <http://lunarscience.arc.nasa.gov/>

Ames, UCSC sign historic agreement

Photo at right: University of California Santa Cruz (UCSC) Chancellor George Blumenthal (left, seated) pens his name to the Letter of Intent among NASA Ames, UCSC and its academic associates to formally initiate joint planning and evaluation efforts toward establishing a world-class, integrated research, education and innovation community in NASA Research Park in support of NASA's missions and to advance higher education and economic development throughout the region and the nation. UCSC-Ames University Affiliated Research Center's Director William Berry (standing) and Steve Zornetzer, Ames' associate director for Institutions and Research (right, seated) look on approvingly.



NASA photos by Eric James

From left to right: Martha Kanter, chancellor, Foothill-De Anza Community College District; Jim Morris, dean, Carnegie Mellon University, West Coast Campus; George Blumenthal, chancellor, University of California, Santa Cruz; Steve Zornetzer, associate director for Institutions and Research, NASA Ames; and Father Paul Locatelli, president, Santa Clara University pose together after signing an agreement on March 24 to collaboratively plan and evaluate opportunities to create a new major research and education center in the Ames-based NASA Research Park.

NASA launches airborne study of Arctic temperature, pollution

BY DEBORAH ROBIN CROFT

This month, NASA began the most extensive field campaign ever to investigate the chemistry of the Arctic's lower atmosphere.

The mission is poised to help scientists identify how air pollution contributes to climate changes in the Arctic.

Managed by Ames' Earth Science Project Office (ESPO), the experiment -- the Arctic Research of the Composition of the Troposphere from Aircraft and Satellites (ARCTAS) campaign --



NASA photo by Eric James

Low-altitude pass over the Bering Sea shows the shadow of the DC-8 during a flight April 12 during the Arctic Research of the Composition of the Troposphere from Aircraft and Satellites ARCTAS mission.

will use aircraft and NASA satellites to probe the arctic atmosphere, sampling gaseous and particulate pollution to understand its origin and influences on climate across the region.

"We haven't looked at pollution transport in a comprehensive fashion," said Hanwant Singh, an ARCTAS project scientist at Ames. "We can see Arctic haze coming in but we don't know its composition or how it got there. One goal of ARCTAS is to provide a comprehensive understanding of the aerosol composition, chemistry and climate effects in the Arctic region."

The recent decline of sea ice is one indication the Arctic is undergoing significant environmental changes related to climate warming. NASA and its partners plan to investigate the atmosphere's role in this climate-sensitive region.

"It's important that we go to the Arctic to understand the atmospheric contribution to warming in a place that's rapidly changing," said Jim Crawford, manager of the Tropospheric Chemistry Program at NASA Headquarters in Washington. "We are in a position to provide the most complete characterization to date for a region that is seldom observed but critical to understanding climate change."

The campaign began this month in Fairbanks, Alaska. NASA's DC-8, P-3 and B-200 aircraft served as airborne laboratories for three weeks, carrying instruments to measure air pollution gases and aerosols and solar radiation. Of particular interest is the formation of the springtime "arctic haze." The return of sunlight to the Arctic in the spring fuels chemical reactions of pollutants that have accumulated over the winter after travelling long distances from lower latitudes.

"The Arctic is a poster child of global change and we don't understand the processes that are driving that rapid change," said Daniel Jacob, an ARCTAS project scientist at Harvard University, Cambridge, Mass. "We need to understand it better and that's why we're going."

ARCTAS is NASA's contribution to an international series of Arctic field experiments that is part of the International Polar Year. The National Oceanic and Atmospheric Administration and the Department of Energy also sponsored research flights from Fairbanks this month in collaboration with NASA.

The wealth of data collected also will improve computer models used to study global atmospheric chemistry and climate. This ultimately will provide scientists with a better idea of how pollutants are transported to and around the Arctic and their impact on the environment and climate.

The new aircraft observations also will help researchers interpret data from NASA satellites orbiting over the Arctic, such as Aura, Terra, and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO).

Interpreting satellite data can be difficult in the Arctic because of extensive cloud cover, bright reflective surfaces from snow and ice, and cold surface temperatures. For example, it's difficult for researchers to look at satellite data and distinguish between light reflected by clouds and light

reflected from white ice cover.

"NASA has invested a lot of resources in satellites that can be of value for diagnosing effects of climate change," Jacob said. "Satellites orbit



over poles with good coverage and good opportunity, but you really need to have aircraft observations supporting those to make good interpretations of what satellites are telling you."

The new airborne view of the Arctic atmosphere combined with satellite data will provide scientists with a better understanding of the atmospheric side of the climate question.

"We're interested in data that will help models better characterize the current state of the atmosphere, to set a benchmark for them so we can gain confidence in their ability to predict future warming in the Arctic," Crawford said.

A second phase of the ARCTAS campaign takes place this summer from Cold Lake in Alberta, Canada, where flights will focus on measurements of emissions from forest fires. Researchers want to know how the impact of naturally occurring fires in the region compares to the pollution associated with human activity at lower latitudes. Understanding the relative influence of each is important to predictions of the Arctic's future climate.

For more information about the ARCTAS field campaign, visit the project Web site: http://www.nasa.gov/mission_pages/arctas You can also visit the ESPO Web site: <http://cloud1.arc.nasa.gov/>

Ombuds Office services available to Ames personnel

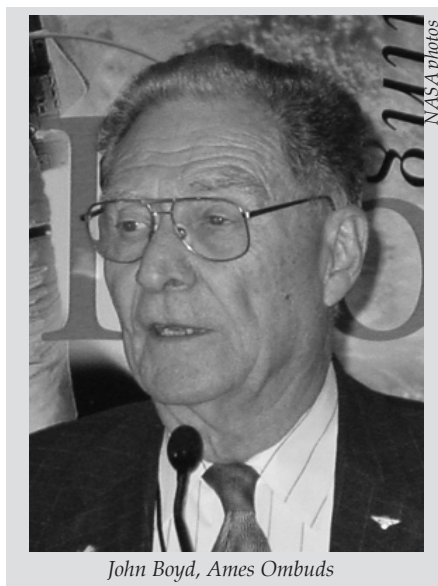
BY JACK BOYD

The Ames Ombuds Office is available to all civil servants, contractors and students at the center. The office provides a supplemental, confidential and informal channel of communication to raise significant issues and concerns that you perceive could impact safety, organizational performance or mission success.

The Ombuds Office is accountable for conducting informal inquiries, raising issues of concern to appropriate officials and redirecting matters not under the Ombuds' office's jurisdiction to the appropriate office or organization with an existing administrative system, such as the Inspector General, the Office of Equal Opportunity and Diversity, Ames Federal Employees Union, Procurement Ombuds, Chief Counsel and Human Resources.

The Ombuds' power rests on its reputation for confidentiality, fairness, objectivity, tact and respectful concern for the welfare of all individuals of the NASA community and for the well-being of the agency.

John Boyd continues to serve as



John Boyd, Ames Ombuds

Ames Ombuds and Geoffrey Briggs continues to serve as the alternate Ames Ombuds.

The Ombuds Office is located in Building 200, Room 216, Mail Stop 200-1A. Boyd can be reached at ext. 4-5222 or John.W.Boyd@nasa.gov, and



Geoffrey Briggs, alternate Ames Ombuds.

Briggs can be reached at ext. 4-0218 or Geoffrey.A.Briggs@nasa.gov.

The Ombuds web site is <http://insideames.arc.nasa.gov/life-ombuds-office.php>

NASA sets sights on lunar dust exploration mission

BY DEBORAH ROBIN CROFT

NASA is preparing to send a small spacecraft to the moon in 2011 to assess the lunar atmosphere and the nature of dust lofted above the surface.

Called the Lunar Atmosphere and Dust Environment Explorer (LADEE), the mission will launch before the agency's moon exploration activities accelerate during the next decade. LADEE will gather detailed information about conditions near the surface and environmental influences on lunar dust. A thorough understanding of these influences will help researchers understand how future exploration may shape the lunar environment and how the environment may affect future explorers.

"LADEE represents a low-cost approach to science missions, enabling faster science return and more frequent missions," said Ames Center Director S. Pete Worden. "These measurements will provide scientific insight into the lunar environment, and give our explorers a clearer understanding of what they'll be up against as they set up the first outpost and

begin the process of settling the solar system."

LADEE is a cooperative effort with NASA's Ames, Goddard Space Flight Center in Greenbelt, Md., and Marshall Space Flight Center in Huntsville, Ala. The total cost of the space-

craft is expected to be approximately \$80 million.

Ames will manage the mission, build the spacecraft and perform mission operations. Goddard will perform environmental testing and launch

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Aeronautics chief visits Ames



Dr. Jaewon Shin held an all-hands meeting April 2 at the center. This was an opportunity to hear directly from the associate administrator about the state of aeronautics within NASA, and to gain perspective on his priorities for the Aeronautics Research Mission Directorate. As associate administrator, Shin is responsible for managing the agency's aeronautics research portfolio and guiding its strategic direction. This portfolio includes research in the fundamental aeronautics of flight, aviation safety and the nation's airspace system.

NASA photo by Eric James

Students, teachers and scientists discover similarities between the Mojave desert and the planet Mars

BY RACHEL PRUCEY

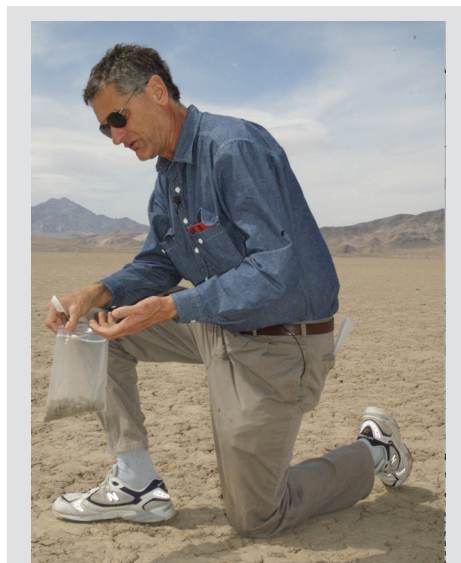
In early April, NASA hosted the Spaceward Bound expedition at the California State University Desert Research Station in Zzyzx, Calif. This year's team trekked into the Mojave Desert and set up camp for a five-day science research expedition aimed at studying how the Mojave is similar to Mars and the moon and search for life in extreme environments.

The expedition offered teachers and students an opportunity to collaborate with scientists, help conduct scientific fieldwork, study the Mojave's unique geologic formations, and learn more about the extremophiles, or supremely adapted microbes, which live there.

Spaceward Bound was developed by the Education Branch at Ames and is funded by the Exploration Systems Mission Directorate at NASA's Headquarters in Washington. The project is tied directly to NASA's goal of engaging Americans in its missions through participatory educational activities. This year's Mojave program was in



Scientists Jay Nadeau (left) and Henry Sun (right) examine the crust characteristics of the Mojave desert during the Spaceward Bound expedition in Zzyzx, Calif.



photos by Rachel Prucey

Ames' Chris McKay gathers crust samples in the dry Silverlake bed during the science expedition in Zzyzx, Calif.

partnership with the California State University Chancellor's Office, San Francisco State University and the California State University Desert Research Station.

For information about the NASA Spaceward Bound Project and this year's Mojave participants, visit: <http://quest.nasa.gov/projects/spacewardbound>

New ways of looking at 'Mother Earth' discussed



NASA photo by Dominic Hart

From left to right: Jonathan Trent, GREEN Team, NASA Ames; Bill Collins, head of the Climate Science Department at the Lawrence Berkeley National Laboratory; Steve Hipskind, chief of the Earth Science Division, NASA Ames; James Boyd, visiting professor at Stanford University; and Patrick Hogan, NASA World Wind project manager, NASA Ames.

BY DEBORAH ROBIN CROFT

NASA Ames' fifth Google-sponsored GREEN Seminar took place on Thursday, April 17 and featured four Earth science experts discussing new ways of "Monitoring and Modeling the Life Support Systems of Planet Earth." The presenters' ideas ranged from designing a virtual "Dashboard" -- like the one on our computers--to relay real-time data about our environment and then

be able to predict events like famine, floods, earthquakes, etc., to developing economic tools that can measure intangible aspects of nature, like the value of a beautiful view or a swim in a mountain lake.

Ames Center Director S. Pete Worden gave the opening remarks for the seminar by announcing how important Ames' collaboration with Google is and that this particular colloquium addressed serious ques-

tions about Human stewardship of the environment on Earth and how to apply that knowledge and lessons learned to establishing sustainable human life support systems on other planets as we "settle the solar system." Worden added that, "in an election year, whoever wins, we'll see a lot of attention to climate change and what NASA can do to help."

Discovery night transforms middle school into science playground -- UV radiation, polymers and astronaut food – oh, my!

BY RACHEL PRUCEY

Wednesday, March 12, 2008 began like any other school night, but turned into an evening of adventure, learning and science, when Ed Harris Middle School, Elk Grove, Calif., opened its doors to its students, their tiny kid-brothers and big older sisters, curious parents and even their smiling grandparents.

Nearly 300 participants crowded around tables decorated with signs that boasted, "Playing with Polymers," "Crystal Growing," and "UV Radiation" and squeezed onto benches eager to see what each activity had to offer.

Those seated at "Baggy Chemistry" donned bright green goggles to protect their eyes from plastic sealable lunch bags that would pop as they shook together calcium chloride, sodium bicarbonate (baking soda) and phenol red (a pH indicator). "Playing with

Polymers" gave people a chance to stir white craft glue died green with food coloring in paper cups with wooden craft sticks until it turned into a sticky "goop." "A Glimpse of Distant History" provided future paleontologists an opportunity to walk through the mechanics of fossil records and allowed their curious hands to explore the textures of common minerals. "Jazzy Sounds"



Event volunteers gently coaxed nervous children to taste strawberry-flavored Astronaut ice cream for the first time, as elder brothers circled around for seconds and thirds. Parents' eyes widened when told they were allowed to touch the astronaut suit on display. They flicked the switches, turned the dials on the control pack and wiggled their fingers as they tried on the astronaut's space suit gloves.

A few nearby classrooms featured instructor-led activities, such as "Rockets 101" with NASA's Ames, Calif., education specialist, Tony Leavitt, in which he quickly guided attendees to make a paper rocket out of a piece of white paper, a small circle of pink construction paper and a few strips of adhesive tape. Leavitt ended the class with a boisterous "Baddabingbaddaboom!" then helped launch his young students' rockets nearly 50 yards to the sound of their enthusiastic shouts, "NASA rocks!"

had kids giggling as they built miniature twanging guitars out of rubber bands and wooden sticks. "UV Radiation" featured a demonstration of ultra-violet light using a black light and glowing neon beads that the young students strung around their wrists, necks, and in some cases, their ponytails.



NASA photos by Eric James



Worden marks progress, envisions bright future for Ames

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it easier to "sell ourselves and show ourselves."

Aim for the moon

Worden then turned to his upcoming goals, such as restoring Ames to a spaceflight center. "NASA leadership wants to get Ames centrally involved," he said.

He proudly pointed out the on-budget and on-schedule Lunar CRater Observation and Sensing Satellite (LCROSS), slated to launch this October as part of a NASA Exploration Mission Directorate project in search of water on the moon's south pole, as the first such mission assigned to Ames, noting that "with this mission, Ames is back into spacecraft missions in a big way."

Worden mentioned that Ames and NASA's Jet Propulsion Laboratory (JPL) will co-manage the Lunar Atmosphere and Dust Environment Explorer (LADEE) mission, scheduled to launch in 2010. Worden explained LADEE will "skim a few kilometers over the surface of the moon to measure residual atmosphere" and lunar dust. He noted that Ames' part in this mission is "a direct result of a lot of impressive work."

Worden also highlighted the new NASA Lunar Science Institute (NLSI), which will focus on science "of the moon" - its history and characteristics; "on the moon" - its significance to human exploration; and "from the moon" - as an "observational platform." "Understanding the Earth better, leads to us understanding other planets," Worden said. He predicted the NLSI will "make Ames the focal point for lunar science in the world," and will lead NASA's research activities related to lunar science and exploration.

Shoot for the stars

Worden shifted his focus to a "fantasy" mission concept, which would use a "featherweight" orbiter to rendezvous with a Near Earth Object. "Asteroids are a significant target for our future efforts," Worden said. He noted that Ames has developed concepts for human missions to asteroids utilizing the Ares family of rockets. "This is an area of significant interest and human concern," Worden said, "It's pretty exciting we have the ability to send people and hardware."

Worden lauded GeneSat-1, part of the "cube" satellite family, for successfully completing its biology experiment and for "continuing to perform flawlessly." "GeneSat demonstrates that Ames can do biological science... We are planning to launch quite a few nano-satellites, so stay tuned," he intimated.

Worden explained how the Ames-developed "modular bus architecture" plays a part in making Ames a spaceflight center by allowing quick missions with flexible, multi-use components. As an example, he mentioned CheaptSat, that permits low-cost, expedited prototyping and the use of 'off-the-shelf' parts. "Why pay JPL prices when you can get them at Costco?" Worden joked. He then emphasized that "off-the-shelf parts will revolutionize space access, if we can make it work."

Worden said Ames was awarded responsibility for the Mars Science Lab (MSL) cache box, slated for launch in 2009, which will gather and store samples until a future mission, in approximately 2020, can bring them to Earth for analysis.

Think bigger

"Ames is the IT center; we're damn good at operational software," Worden said, glowing over Ames' part in the Solar Array Constraint Engine, which will determine the safety of International Space Station (ISS) solar panel configurations and the Orbital Communications Adapter Mirroring System, which can automate some ISS work.

When Ames and its partners won a competition in 2007 to host the Army High-Performance Computing Research Center, "Ames' supercomputing resources doubled," Worden said. "Our high-end computing remains among the top dozen in the world and we intend to keep it so," he declared.

In addition, the National Full-Scale Aerodynamics Complex returned to operation earlier this year, allowing Ames "to help the rest of the agency design and build" technologies that focus on entering planetary atmospheres, Worden explained.

Worden said the NanoSail-D will launch this June and demonstrate, for the first time ever, solar sail propellant-less propulsion technology. He said "Ames is working with Marshall

on this project; it is a very positive partnership, I want to keep emphasizing positive partnerships with other NASA centers."

Crossing the finish line

Worden then focused on completing current science projects, such as the Kepler mission, the first to search the universe for habitable, Earth-like planets. Worden emphasized that Ames, JPL and Ball Aerospace worked together to get Kepler back on schedule and on budget.

Another example of positive cooperation with other NASA centers Worden cited is the partnership with Dryden Flight Research Center, Edwards, Calif., which restored "one of the great observatories," the Stratospheric Observatory for Infrared Astronomy (SOFIA). Now that the telescope is installed, the SOFIA team expects to start science operations in 2009. Worden explained SOFIA will enable us "look back in time" and study "star formation processes not accessible on the ground."

New Ventures

Worden described several new upcoming flight mission opportunities, such as the "Small Explorers," 12 of which Ames is a participant. Five would be Ames-led and semi-finalists will be selected later this year.

New Earth science campaigns have been formed, such as the 2007 TC-4 mission to monitor tropical cloud and climate composition, and the 2008 Arctic Research of the Composition of the Troposphere from Aircraft and Satellites mission to study pollution specific to polar regions.

"New thrusts in biological sciences, aligned with the agency's strategic interests in advanced life support, radiation technologies, lunar dust and biofuels," offer increased opportunities for reimbursable uses of Ames' Earth science expertise Worden asserted.

Ames Culture

Worden concluded his presentation by briefly discussing Ames' workplace culture. "We need to expand the workforce skills," he said. Worden said center management will re-examine how Ames operates "to optimize infrastructure," prioritize

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Yuri's Night Bay Area 2008 wows all at huge celebration

More than 20 speakers, including Apollo 11 astronaut Buzz Aldrin, Apple co-founder Steve Wozniak and SimCity game creator Will Wright, addressed participants and demonstrated cutting edge technologies. Musical acts including Telstar, a new trio led by former Grateful Dead basist Phil Lesh and DJ phenomenon Amon Tobin of Montreal performed on four stages. A trio of American and Soviet-era aircraft demonstrated aerobatics over Moffett Field, and San Francisco's interdisciplinary dance company Capacitor displayed human acrobatics.

All 12 hours of the celebration were webcast live on the Ames web site. For more information and images from Yuri's Night Bay Area 2008, visit: <http://www.nasa.gov/YNBA/>

Six NASA Research Park (NRP) partners contributed to the event. The NRP Exploration Lecture at Yuri's Night was delivered by Unimodal, a company currently negotiating with NASA to build a demonstration track to test SKYTRAN, a next-generation, sustainable "people mover."

NRP tenant Photozig hosted an exhibit and Chief Executive Officer (CEO) Bruno Kajiyama's team produced a real-time internet slideshow montage of Yuri's Night images.

Ecliptic Enterprises Corp's CEO Rex Ridenoure presented a video compilation of "RocketCam's Greatest Hits," which showed a sampling of onboard "launch-to-orbit" video footage from 30 space projects (including NASA shuttle launches).

Mars Institute CEO Pascal Lee and three scientists from the Haughton Mars Project team -- Brian Glass, Hans Utz and Darlene Lim, all of Ames -- discussed how to prepare for the future of Mars exploration here on Earth.

Inform Art/Gary Air presented "Share a Ride and Sustain the Earth," whose centerpiece was a Cessna single-engine piston airplane outfitted with state-of-the-art air taxi avionics, allowing ride sharing by air.

NRP tenant Makani Power provided a model of its wind-powered hydrofoil boat, developed by founder Don Montague.



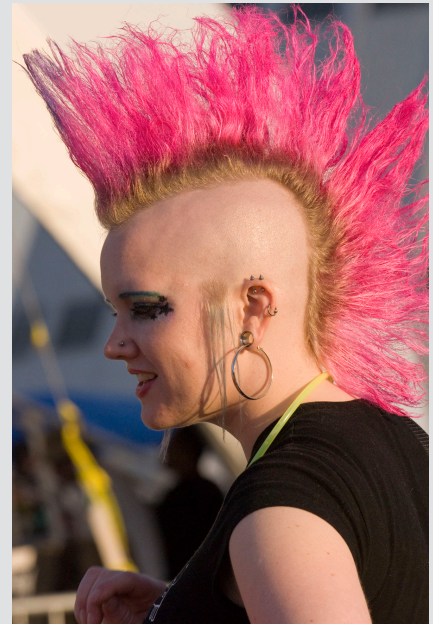
NASA photo by Kyle Cavallaro



NASA photo by Paul Langston



NASA photo by Paul Langston



NASA photo by Paul Langston

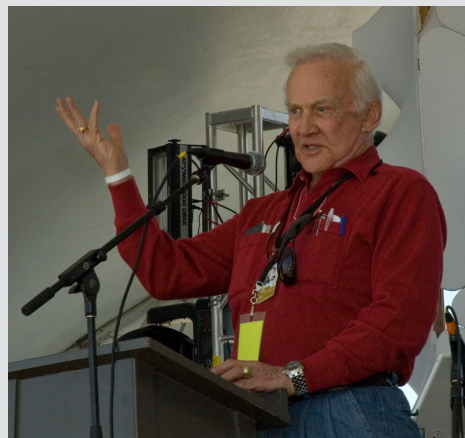


NASA photo by Kyle Cavallaro

Chief Information Officer Chris Kemp (left) with Center Director S. Pete Worden during Yuri's Night Bay Area 2008.



NASA photo by John Schultz



NASA photo by John Schultz
Astronaut Buzz Aldrin shown speaking at Yuri's Night Bay Area 2008.

NASA photo by Paul Langston



NASA photo by John Schultz



NASA photo by Paul Langston



NASA photo by Paul Langston



NASA photo by Kyle Cavallaro



NASA photo by John Schultz

Ames Contractor Council introduces 2008 officers

BY DOREEN COHEN

The Ames Contractor Council (ACC) is a non-profit (501)(c)(4) organization whose membership consists of representatives from the contractor companies performing work at NASA Ames. The council strives to improve the productivity and enhance the quality of contractors' services and products for the overall success of Ames Research Center.

Any company with an active contract at Ames is invited to send its representative to the monthly ACC meetings, which are held the first Wednesday of the month, 11 a.m. - 12 noon, in Bldg. 200, in the Committee Room.

The deputy center director or his representative is always first on the agenda with an update about center and agency activities. This update is followed by presentations from various guest speakers, including topics such as HSPD-12, security, safety, environmental concerns and NASA procurement.

In addition to leveraging contractor management talent, the ACC also has numerous active committees that



photo by Karol "Bo" Bobko

The new Ames Contractor Council 2008 officers, from left to right: John Reiss, secretary (Perot Systems); Herb Finger, treasurer (Unisys); Kathleen Starmer, president (SAIC); and Mike Weiss, vice president (Jacobs Technology).

benefit the Ames community. For example, through successful fundraising activities (e.g., golf tournament and historic calendar sales) the organization contributes to education outreach and other worthy programs.

To learn more about the ACC and how it actively supports the Ames community, visit its web site at: www.amescontractorcouncil.org.

If you are eligible for membership in the ACC, you are also eligible to be included in the online list of companies under the "About" section of the web site. This list links directly to each company's web site, where company information and job opportunities may be found.

Software Release representatives meet at Ames workshop

BY JULIE RIVERA

Ames co-hosted along with NASA Langley Research Center the Software Release Authority (SRA) workshop held at the NASA Ames Conference Center. This workshop brought together representatives agency-wide as well as others who support software release. The workshop's goal was to share lessons learned and best practices in the current responsibilities of the SRA. This collaboration provided the opportunity to share valuable feedback to each of the SRAs.

Software release begins with an inventor requesting authorization to release software and ends with the center SRA's approval or rejection of the request for the software release. Since NASA technology is a valuable asset to the agency overall, it is the responsibility of the SRA to assess the software and determine its proper release.

The center's SRA manages and directs the software release process. In making the final decision on software release requests, the SRA ensures that the proper steps are taken to maximize



photo by Shirley Faith

Software Release Authority Workshop participants, left to right, front row: Stuart Pendleton, LaRC; Martha Del Alto, Ames; Kathy Kerrigan, GRC; Kaprice Harris, GRC; Robin Orans, Ames; Jane Fox, JSC; Sandra Gerlach, GRC; and Evelyn Hill, MSFC. Left to right, back row: Jason Hanna, GRC; Kathy Acuna, JSC; Mary Dickerson, JSC; Kim Chrestenson, Ames; John Lansaw, SSC; and Laura A. Schoppe, Fuentek/NASA Headquarters.

the benefit both to NASA and to the taxpayer. Especially, since NASA's investment in Software Technology Transfer is meant to achieve greater, "balanced" returns on investment (ROI).

Their vision aims to improve the effectiveness of existing collaborations and leveraging in the government re-

lease process in general. Overall, this workshop was highly successful from an exchange and participatory point of view.

For more information on Software Release, visit <http://software.arc.nasa.gov/release>.

Nominations being accepted for NASA Ames Hall of Fame

In December 2008, NASA Ames will induct a new class of honorees into its Hall of Fame. The induction ceremony will mark the end of NASA's 50th anniversary year, and the start of NASA Ames' 70th anniversary year.

It has been a decade since the first class of 12 was inducted. The Hall will recognize those people whose contributions have had the most sustained and far-reaching influence on the direction and mission of NASA Ames, and/or whose work at NASA Ames has generated fundamental advancements in either a scientific or engineering field.

Nominees may be anyone who has worked at NASA Ames, and is now retired or resigned. Included are former civil servants, contractors and IPAs. Also included are those now working in emeritus or Ames Associate positions. Nominators must be somehow affiliated with NASA Ames, either as a civil servant, contractor or retiree.

Nominations consist of two documents. First, a nomination form available as a Word document will establish the eligibility of nominee and nominator. Second, nominators should write a short narrative (about two pages) that summarizes the nominee's career and why their contributions are

worth honoring. Nominations must be received by July 1, 2008, for consideration by a selection committee.

The nomination form, information on the nomination process, and biographies of the current members of the Hall of Fame can be found at: http://history.arc.nasa.gov/ames_hall_of_fame.htm Nominations or questions should be sent to Glenn Bugos, NASA Ames History Office at MailStop:207-1 or Glenn.E.Bugos@nasa.gov, or contact him at ext. 4-6436.

Scientists, artists and writers gather at CONTACT 2008 conference

NASA photo by Dominic Hart



The 24th annual CONTACT conference and workshop held in April and was an interdisciplinary gathering of scientists, artists and writers.

For more than 20 years, it has explored human futures in fact and fiction. CONTACT's program featured a fascinating line up of speakers and a broad spectrum of symposia and activities.

The keynote speaker at the banquet was scientist and artist Carlo Sequin from University of California at Berkeley. His subject was "Modeling our Universe and Other Things." In addition to Sequin, this year's

presenters also included musician Phillip Aaberg, artist Darrel Anderson, researchers Chris McKay, Carol Stoker, Bill Clancey, Penny Boston, Michael Bolte, Michael Sims and SETI scientist Seth Shostak.

CONTACT is highly interdisciplinary and includes anthropologists, psychologists, sociologists, historians, philosophers, teachers, writers, artists, filmmakers and musicians in the program. For additional background and details about this and past CONTACT conferences, see the web site at: <http://www.contact-conference.org>.

Chris McKay of Ames, shown speaking at the recent 24th annual CONTACT conference at Ames.

Worden marks progress, envisions bright future for Ames

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employee support, make promotions transparent and pursue diversity. He also said he had assembled a "special team" to conduct a NASA employee culture study. He promised to build employees' trust in NASA leadership. "You have my commitment to doing this," Worden emphasized.

In closing, Worden composed a short "poem" describing his management style that underscored his idea for a "new way of doing business" centered around information sharing with a "can do" attitude. "You ain't seen nothin' yet," Worden concluded.

A luncheon/social event provided by the Ames Exchange immediately followed the all-hands meeting.



NASA employees enjoy a free hotdog luncheon provided by the Ames Exchange outside the Mega Bites Cafeteria after the all-hands on April 1, 2008.



NASA photos by Dominic Hart

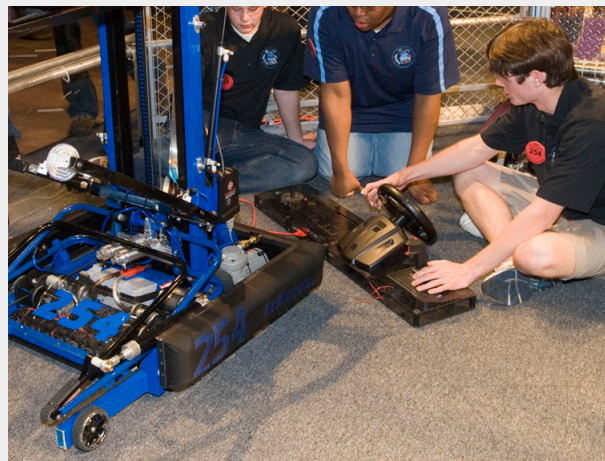
Astronauts experience ups, downs before Hubble mission

STS-125 Commander Scott Altman, Pilot Greg Johnson and Flight Engineer Megan McArthur practice landings in the Vertical Motion Simulator during a training visit to Ames on April 23. Drew Feustel (not pictured) joined the trio of astronauts using the simulator's unique capabilities to get ready for the fourth Hubble Space Telescope servicing mission. Astronauts Michael Good, John Grunsfeld and Michael Massimino round out the Atlantis crew. The mission is targeted for launch Aug. 28, 2008.



NASA photo by Eric James

Ames, students make building robots 'a piece of cake'



NASA photos by John Schultz

The "Space Cookies," a team of Bay Area high school girls scouts and the "Cheesy Poofs," an all-boys team from Bellarmine Preparatory School, San Jose, Calif., competed in this year's 16th annual For Inspiration and Recognition of Science and Technology (FIRST) Robotics Competition, which took place March 13 to 15, 2008, at San Jose State University. The Cheesy Poofs won the "General Motors Industrial Design Award," the Silicon Valley Regional and also walked away Division Finalists at the FIRST Championship, held April 17 - 19, 2008, in Atlanta, Ga.

NASA sets sights on lunar dust exploration mission

continued from page 3

vehicle integration. The mission will be established within Marshall's newly created Lunar Science Program Office. Marshall will draw upon experience gained from managing a larger suite of low-cost, small satellite missions through NASA's Discovery and New Frontiers Program.

LADEE will fly to the moon as a secondary payload on the Discovery mission called Gravity Recovery and Interior Laboratory (GRAIL), which is

designed to take ultra-precise gravity field measurements of the moon. Current plans call for the GRAIL and LADEE spacecraft to launch together on a Delta II rocket and separate after they are on a lunar trajectory. LADEE will take approximately four months to travel to the moon, then undergo a month-long checkout phase and begin 100 days of science operations.

LADEE is one of many activities to support lunar exploration planned by NASA's Science Mission Directorate in Washington. Last year, NASA also

established a lunar science institute at Ames. Research teams will address current topics in basic lunar science and possible astronomical, solar and Earth science investigations that could be performed from the moon. In addition, NASA is preparing for scientific investigations following the planned launch later this year of the Lunar Reconnaissance Orbiter (LRO). After a 30-year hiatus, LRO represents NASA's first step toward returning humans to the moon.

Ames employees learn how to Google like an expert



In celebration of National Library Week, the Ames Library sponsored a talk by Google Search Quality and User Happiness researcher Dr. Daniel M. Russell on April 16 at Ames, seen here speaking during the event. Russell demonstrated advanced features of the Google search engine that facilitates searching for scientific literature. The audience learned tips and techniques to search more effectively to improve their Google search experience. Russell is a research scientist at Google, where he works in the area of search quality, with a focus on understanding what makes Google users happy in their use of web search. He studies how people do their searches, trying to understand the most common traps and pathways to successful Google use.

NASA photo by Dominic Hart

Ames Sailing Club members participate in Caribbean Regatta

BY PAUL ESPINOSA

In March, two NASA Ames Sailing Club members, Stan Phillips and Paul Espinosa, participated in the Heineken Regatta, an international sailing race held on the Caribbean island of Saint Martin. Sailing against top-level competitors in the spinnaker racing class, Phillips and Espinosa sailed on a chartered 40-foot racing yacht named "Malachite." An account of their adventure will be presented at the May meeting of the NASA Ames Sailing Club.

The club provides a forum for all Ames employees interested in the art and sport of sailing. Meetings are held on the second Thursday of the month, from March through November, from 12 noon to 1 p.m., in Bldg N-260, Room 113.

To prepare for the race, Phillips and Espinosa participated in many of the Ames Sailing Club-sponsored races during 2007. They also practiced almost every week with their team for four months prior to the regatta. Through a lucky connection made at an Ames Sailing Club meeting, they were able to get Dawn Riley, an America's Cup skipper and around the world Whitbread race veteran, to coach the team. She organized practice sessions in the Bay Area and in Saint Martin.

Each race day, crew members had work assignments to prepare or



Above photo: Paul Espinosa (left) and Stan Phillips (right) on board the 40-foot racing yacht, the "Malachite" (photo on right), which they raced on in the Heineken Regatta in the Caribbean March 6 - 9, 2008, finishing in fourth place.

improve the boat. At the "anchor up" deadline, the crew was on board, ready to race. On the way to the start line, they discussed boat modifications, crew positions, plan of the day, race course description, plus weather prediction and race strategy. Then they raced.

There were multiple races each day. Each race was an exciting, highly-competitive challenge. Shorter races were only a little over an hour long, while the longest, all the way around the island for a total of 37 nau-

tical miles, took more than four hours to complete. Results demonstrated the benefits of coaching and practice. Their best race was on the last day. They finished the final race in fourth place, even beating last year's class winner. Both Phillips and Espinosa look forward to a return for an exciting challenge in the 2010 Heineken Regatta.

More information about the Ames Sailing Club can be found at <http://sail.arc.nasa.gov/faq/index.html>.

Ames Ongoing Monthly Events Calendar

Ames Amateur Radio Club, third Thurs., of ea. month, 12 noon, N-T28 (across from N-255). POC: Michael Wright, KG6BFBK, 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 Bicycling Club, every third Wednesday of each month, 12 noon - 1 p.m., Bldg. N-245 Auditorium. POC: Julie Nottage at jnottage@mail.arc.nasa.gov, ext. 4-3711.

Ames Bowling League, Homestead Lanes on Thursday nights at 6:20 p.m. Seeking substitute bowlers. Questions to sign up: Mike Liu at ext. 4-1132.

Ames Child Care Center Board of Directors Mtg., every other Monday, 1 - 2:30 p.m., Bldg. N-262/Rm 180. POC: Sally Miller, ext. 4-5411.

Ames Contractor Council Mtg., first Wednesday of ea. month, 11 a.m., Bldg. N-200, Committee Room. POC: Kathleen Starmer, ext. 4-6959

Environmental Forum, first Thursday every other month, 9 a.m. - 10 a.m., T20-G conference Rm. 129. URL: <http://q/qe/events/EHS-series/> POC: Stacy St. Louis, ext. 4-6810.

Ames Federal Employees Union (AFEU) Mtg., First Wednesday of November (7th), noon. First Wednesday of December (5th), noon. Bldg. N-247, Rm. 109. Beginning 2008, third Wednesday each month, same location. Guests welcome. Info at: <http://www.afeu.org>. POC: Paul K. Davis, ext. 4-5916.

The Hispanic Advisory Committee for Excellence (HACE) Mtg., first Thursday of each month, 11:45 a.m. - 12:45 p.m., Bldg. N-255, Rm. 101C. POC: Eric Kristich, ext. 4-5137 and Mark Leon, ext. 4-6498.

Jetstream Toastmasters, Mondays, 12 p.m. - 1 p.m., Bldg. N-269/Rm.179. POC: Miwa Hayashi, ext. 4-1397, mhayashi@mail.arc.nasa.gov. Web: <http://jetstream.freetoasthost.com>

Ames Mac Support Group Mtg., third Tuesday of each month, 11:30 a.m. to 1 p.m., Bldg. N-262, Rm 180. POC: 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.

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

Ames Nimble Knitters Club, every Tuesday at 11:30 a.m., Bldg. N-241/Rm 237. POC: Rosalyn Jung, knifan2@yahoo.com or Diane Alexander at ext. 4-3140. URL: <http://knit.arc.nasa.gov>

Ames Safety Committee, third Thursday of each month, 10 a.m. - 11 a.m., Bldg. N-237, Rm. 201. POC: John Livacich, jlivacich@mail.arc.nasa.gov, ext. 4-3243 or Terry Reichert, treichert@mail.arc.nasa.gov, ext.-4-0375.

Ames Sailing Club Mtg., second Thursday of each month (March through November), from 12 p.m. - 1 p.m., Bldg. N-260, Rm. 113. URL: <http://sail.arc.nasa.gov/>. POC: Clif Horne, ext. 4-4571.

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.

Safety Data

NASA-Ames Occupational Illness-Injury Data for Calendar Year-to-Date 2008 Jan. 1, 2008 - March 31, 2008

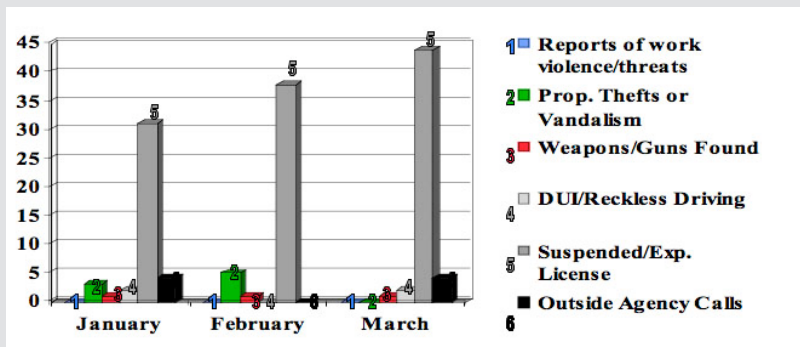
	Civil Servants	Contractors
First aid cases	6	2
Lost Workday cases	1	0
Recordable cases	0	3
Restricted duty days	0	2

Above data are as of March 31, 2008. May be subject to slight adjustment in the event of a new case or new information regarding an existing case.

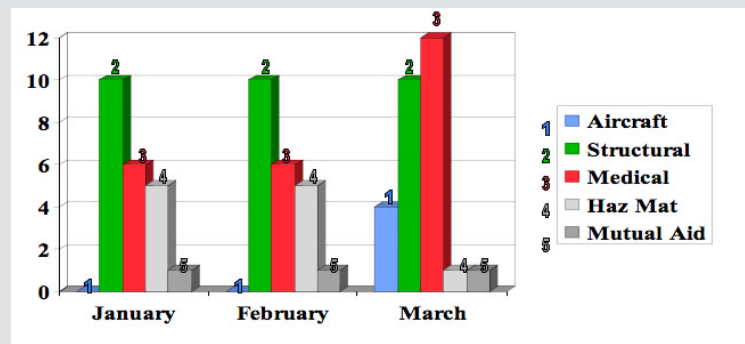
Protective Services monthly activity

A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire Protection Services units for the month of March 2008 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

Researcher with family of three looking for housing for six months near NASA Ames. Contact Ram ram@prl.res.in

2bd/1 ba downstairs apartment in Sunnyvale (duplex), remodeled. Includes new: cabinets, tile counter tops, stove, refrigerator, microwv, storage area and back yard. Located a few blocks from downtown. No pets, N/S. \$1,650. Available June 1, 2008. Mike (408) 736-5900.

Miscellaneous

Free Saab 900 cover. E-mail john_h_luu@yahoo.com

Chihuahua/Terrier mix puppies for sale. Call (408) 772-4142; (408) 578-2291.

Transportation

'86 Porsche 944, maroon red exterior, 4 door, 5-speed manual transmission. 155,000 miles, good cond., well-maintained, fun to drive, gives 22mpg. Has recent smog certificate and maintenance records since 1998 when we bought it from the original owner. Asking \$1,550. Anupa (650) 862-2869.

'06 Lincoln Towncar, light French silk clear coat, 4 dr, back-up sensors, 6 cd changer, 5,900 miles. Orig. \$45,000. Like new. Asking \$31,000. John (408) 245-6926.

Car Pool

Looking for car pool from Newman (or Los Banos) 2 - 3 days a week. Call (408) 394-5606 (cell) or ext. 4-4773 (work).

Looking for car pool possibilities from Half Moon Bay area. Trying to save some fuel! Contact Jeff (910) 297-3651 (cell), ext. 4-1608 (work) or jeffrey.p.berlin@nasa.gov

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 Gift Shop N-235 in the cafeteria, 8 a.m. to 2 p.m., ext. 4-6873

Don't forget to purchase your baby shower, birthday, holiday gifts at Ames' two gift shops!

Visitor Center Gift Shop N-943 M-F, 10 a.m. to 4 p.m., ext. 4-5412

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

Tickets, etc... N-943 outside the main gate, 10 a.m. to 3:30 p.m., ext. 4-5412 and Beyond Galileo, 8 a.m. to 1:30 p.m. ext. 4-6873

Mega Bites Cafeteria N-235, 6 a.m. to 2 p.m., ext. 4-5969/Catering ext. 4-2161

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

Moffett Field Golf Club with 'Tee minus 1' Grill and Sports Bar. Call (650) 603-8026.

RV Lots Available Call to reserve a space at (650) 603-7100/01.

Civilian/Contractors, \$50/mo; military \$25/mo

NASA Lodge (N-19) 603-7100

Where to stay when you're too tired to drive home? What about the lodge?! Two types of rooms: Bldg. 19 (43 rooms), rate: \$55/night (\$5 ea add'l adult); Bldg. 583 (150 rooms), rate: \$45/night (\$5 ea. add'l adult)

Ames Swim Center (N-109) 603-8025

The pool is heated year round! The pool is currently available for lap swim, pool parties and special events. POC -Chana Langley, Pool Manager (650) 603-8025. Memberships: single memberships: \$40/yr. Family memberships: \$60/yr. After purchasing a membership, there is an entrance fee: daily entrance fee - \$3/day or lap pass fee - \$40 for 20 uses. Platinum membership - \$360/yr. (no daily fee). Special events: include military training, swim team events, kayak rolr practice, etc. The cost for special events is \$50/hr.

Ongoing Vacation Opportunities

Lake Tahoe-Squaw Valley Townhse, 3bd/2ba, View of slopes, close to lifts. Per night: \$250, plus \$145 cleaning fee. Two night minimum. Includes linens, propane fireplace, fully equipped. Call (650) 968-4155, DBMckellar@aol.com.

Bass Lake vacation rental, 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.

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 bdms/2 ba, sleeps 8, fireplace, TVs/VCR/DVD, stereo w/CD player, microwv, W/D, jacuzzi, sauna, outdoor pool. Walk to lake. Close to ski areas. Visit web site for pictures: <http://www.ACruiseStore.com> \$135/night spring and fall, \$173/night summer and winter (holidays higher) plus \$125 cleaning fee and 12 percent Nevada room tax. Charlie (650) 743-8990.

New York, 5th Ave., one fully furnished bedroom apt. in 24 hour security bldg. overlooking Washington Square Park, \$1,000/week or 3,000/month, negotiable. Call (650) 430-6977.

Paris/France: Fully furnished studio. 5th arr, Latin Quarter, Notre Dame and Lie-St. Louis, \$1,400/week, negotiable. Call (650) 430-6977.

Santa Cruz townhouse, 2 bedrooms plus study, 2 baths, decks, totally furnished, 3 blocks from beach, available July, August, September; \$1,600 per month. Call (831) 423-5777 (H) or (831) 277-8476 (C).

Lake Tahoe cabin rental in Agate Bay, North Shore. 4bd/3ba tri-level, AEK, cable TVs, fireplace, BBQ, deck, sleeps 10. Closest skiing is Northstar, Alpine and Squaw. Rates are \$375 a weekend, \$1,000 a week. Call (408) 867-4656.

Florida west coast vacation in St. Petersburg, beautiful 2bd/2ba condo, fully equipped kitchen and furnished, sunset views, 1/4 mile from St. Pete Beach, monthly or 2 week minimum rentals only. Call (703) 299-8889 or e-mail: jdgoehler@aol.com

Monterey Bay vacation rental at Pajaro Dunes, 20 miles south of Santa Cruz, 3bd/2ba beach house with distinctive architecture. Beautiful ocean and valley views, only 150 ft from the beach, first-class tennis courts. \$700/wkend, \$2,100/wk including cleaning by the maid service when you depart. Call (408) 252-7260.

South Lake Tahoe large cabin surrounded by protected forest, 8 miles from Stateline Sleeps 12 comfortably, 4 bd/3ba. Hot tub/pool table/65" TV Matt (408) 482-5286

South Lake Tahoe cozy home backs up to large open meadow, 1 mile from Heavenly Valley. Sleeps 11, 3 bd/2.5 ba. Large deck with hot tub. Matt (408) 482-5286.

Ames Cat Network

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.

The NASA Lodge

Rooms starting at \$45 a night.



Having a B-I-G family reunion and just run out of bedrooms and inflatable beds? Reserve rooms at the NASA Lodge

Ames employees and contractors can host their friends or relatives at the Lodge, and it doesn't have to be government or NASA related.

Let Us Welcome You!

Call (650) 603-7101



<http://nacenter.arc.nasa.gov/ldging.html>

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Ames implements California building code

Effective on June 1, 2008, the new 2007 California Building Code, CCR Title 24 building codes will be enforced for all permitted construction at Ames. Projects started prior to June 1, 2008 and are not issued an approved building permit by that date, may be allowed to follow the previously enforced code.

Each case will be evaluated to determine if, by following the new 2007 CBC codes, the project's completion will be delayed beyond the required date or that a budget increase may jeopardize the project. Effective immediately, there will be an additional stipulation added to the building permit form as follows:

"Permit is valid for the duration of this project, provided construction begins within 180 calendar days from the date the permit is issued and, upon

commencement, is diligently and continuously prosecuted in a safe and code-compliant manner to completion. If the construction of this project does not commence within that 180 day period after permit issuance, then this permit shall automatically terminate. Before any construction on this project

can begin, again, project plans must go through the Ames, permit review process and new permits must be issued." Contact the Ames Chief Building Officer Peter Chan for any questions or clarifications of these directives. Chan can be reached at ext. 4-6180 or at <mailto:Peter.H.Chan@nasa.gov>.

There's a new meatball in town!



photo by Shirley Burek

When a high bay door in the Building N-243 Rotunda broke and crashed last year in front of Shirley Burek, it took nearly a year to fabricate a new roll-up door. Finally complete, the new door needed a paint job. So with a little negotiation between the people involved, it was decided a NASA meatball would be painted on the outside of the 16-foot high door. Painted by contractor Tom Rodrigues in three days, its addition will stimulate group photos and greet flights on the nearby tarmac. Come view the completed and newest meatball on campus in years!

Airspace Concept Evaluation System discussed at Ames



NASA photo by Eric James

On March 27, the Aeronautics Technical Seminar, "Analyzing Future Concepts for Managing Air Traffic with the Airspace Concept Evaluation System," was presented at Ames by Robert Windhorst (shown above). The Airspace Concept Evaluation System (ACES) is a computer program designed to perform fast-time, gate-to-gate simulations of the United States air transportation system. ACES is used for developing new concepts and technologies and analyzing their contributions toward the goals of accommodating future growth of operations, reducing flight transit times, increasing predictability of arrival times and minimizing the impact of weather and other disruptions. Windhorst presented the program design, validation study and concept analyses for ACES.

What's on InsideNASA . . .

NASA Deputy Administrator Shana Dale's corner on InsideNASA this month features an article entitled, "Climate Science."

This feature describes NASA's Earth sciences activities. NASA drives innovation, creating real benefits for a modest investment of less than six-tenths of one percent of the overall federal budget. NASA's Earth Science Program, with \$1.37

billion requested for FY 2009, is the world's largest, interdisciplinary Earth science research program advancing scientific understanding of the causes and effects of climate change.

To learn more about what NASA's wide-ranging and balanced Earth science activities include, visit: http://insidenasa.nasa.gov/nasa_stories/April_Climate_Science.html

Astrogram deadlines

Please submit articles, calendar and classified advertisements to astrogram@mail.arc.nasa.gov no later than the 10th of each month. If this falls on a weekend or holiday, then the following business day becomes the deadline. For Astrogram questions, contact Astrid Olson at the aforementioned e-mail address or ext. 4-3347.



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