



ASTROGRAM

Newsletter of NASA Ames Research Center, Moffett Field, California

November 2006

NASA Administrator urges innovation with commercial space industry partners, praises Ames

NASA Administrator Mike Griffin has called for the agency to change the way it does business when working with the commercial space industry to implement the Vision for Space Exploration.

"A little over a year ago, I unveiled to the Congress and the public NASA's architecture for returning to the moon," Griffin remarked during an Oct. 19 address to the X Prize Cup Summit held in Las Cruces, N. M. "It is a conservative plan, designed to accomplish the stated mission with minimum cost, maximum cost confidence, and as much use of existing systems as we could reasonably achieve," Griffin added.

"But having combed through the design trades, associated costs and projected budget for the agency, it is apparent that NASA will need to leverage commercial and interna-



More than 20 teams recently competed in the X Prize games, consisting of a lunar lander challenge, a vertical rocket challenge and space elevator games, for approximately \$2.5 million in prize money. Seen here are the X Prize judges and a launch vehicle at the October X Prize Cup Summit held in Las Cruces, N.M.

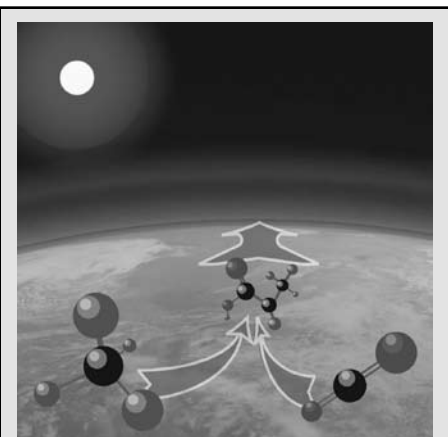
tional partners to the maximum if we are to sustain this long journey, with footholds first on the International Space Station, then on the moon and from there onward to Mars. It is out

of necessity for, not charity toward, commercial space endeavors that we at NASA must change our way of doing business."

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Study shows Titan and early Earth atmospheres are similar

Organic haze in the atmosphere of Saturn's moon, Titan, is similar to



The photochemistry of CH_4 and CO_2 may have produced an organic haze layer on the early Earth. This image is an illustrative composite prepared by Melissa G. Trainer using images of Titan and Earth; courtesy of NASA/JPL-Caltech.

haze in early Earth's air -- haze that may have helped nourish life on our planet-- according to a NASA Astrobiology Institute study released in November.

Study scientists simulated both the atmospheric conditions of early Earth and those of present-day Titan. Their study, 'Organic Haze on Titan and the Early Earth,' describing the scientists' work, appears in Proceedings of the National Academy of Sciences. The principal author is Melissa Trainer, a NASA Astrobiology Institute post-doctoral fellow at the University of Colorado, Boulder.

"It's exciting to see that the early Earth experiments produced so much organic matter," said Carl Pilcher, director of the NASA Astrobiology Institute, at NASA Ames. "An organic haze produced this way on early Earth

could have contributed to the formation and sustenance of life."

According to the study's researchers, their experiments help scientists interpret observations of Titan's atmosphere from NASA's Cassini mission, while also showing how a major source of organics could have been

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Cowings receives National Women of Color Technology Award

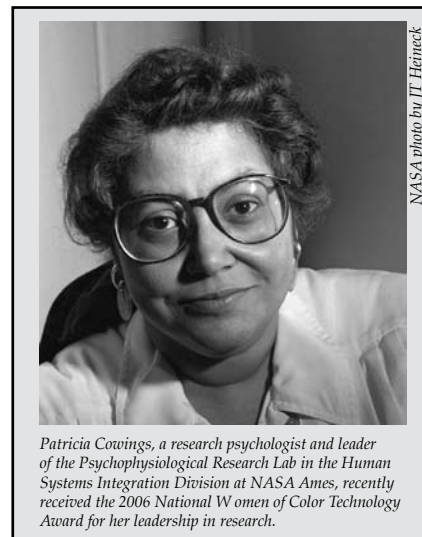
Ames' Dr. Patricia Cowings has earned the 2006 National Women of Color Technology Award for Research Leadership. She received the award in Atlanta, Ga. in October.

The National Women of Color Technology Awards recognize the significant accomplishments of minority women in the digital world.

Cowings is a research psychologist and is the lead of the Psychophysiological Research Lab in the Human Systems Integration Division. For more than 20 years, she has been responsible for planning and conducting research into space-induced physiological changes and developing

non-medical countermeasures.

Cowings is perhaps best known for her Autogenic Feedback Training Exercise that is used to train people to monitor and voluntarily control a range of their own physiological responses to reduce symptoms of motion sickness and to improve orthostatic tolerance. The training has facilitated adaptation to space and re-adaptation to Earth for astronauts and cosmonauts, and has improved Coast Guard pilot performance in C-130 aircraft and multi-crew helicopters during search-and-rescue missions.



Patricia Cowings, a research psychologist and leader of the Psychophysiological Research Lab in the Human Systems Integration Division at NASA Ames, recently received the 2006 National Women of Color Technology Award for her leadership in research.

NASA Administrator urges innovation, praises Ames

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One example of the way NASA is changing the way it works with the commercial space industry cited by Griffin is Ames Research Center and its director, S. Pete Worden, whom Griffin praised for his leadership.

"I want to congratulate Pete Worden and his team at Ames for working with Bigelow Aerospace to secure a piggyback ride for their GeneBox experiment on Bigelow's Genesis inflatable space habitat demonstration," Griffin said. "I believe that this is one of many innovative, short-turnaround ideas that we'll be seeing from Pete over the next several years," Griffin ventured.

"He is turning Ames Research Center in Silicon Valley into a 'Mecca' for space entrepreneurs, where among other things, we are hosting the Red Planet Venture Capital Fund, similar in some ways to the CIA's In-Q-Tel operation, to leverage innovators and investors who have not typically done business with NASA," Griffin said.

An estimated 10,000 people, including representatives from NASA Ames, attended the two-day event held in southern New Mexico Oct. 20 to 21 and featuring competition designed to foster innovation in space technology. More than 20 teams vied for approximately \$2.5 million in prize money, competing in a lunar lander challenge, a vertical rocket challenge and space elevator games.

During his remarks, Griffin noted that NASA's new Commercial Orbital Transportation Services (COTS) demonstrations being conducted under the framework of NASA Space Act Agreements are the agency's most significant investment to date in attempting to spur development of the commercial space industry.

However, Griffin said that NASA can do even better in partnering with the commercial space industry to implement the nation's Vision for Space Exploration.

"While I think that the \$500 million we're investing in the COTS demonstrations is a sizeable first step, there's more gold to be mined in other fields of commercial endeavor as well," Griffin observed.

"It is important for the future that NASA's investments productively leverage the engine of the American economy, a GDP valued at over \$13 trillion per year, to help us carry out our mission of space exploration," Griffin said.

Griffin noted that NASA is actively seeking partners who would like to use the International Space Station to conduct commercial experiments and is open to novel concepts designed to enhance the utility of the facility.

In another new way of doing business concerning microgravity research, Griffin said NASA is considering purchasing seats aboard commercial

aircraft on future suborbital flights to conduct various experiments and possibly even astronaut candidacy proficiency tests. Although NASA has its own microgravity research aircraft based at the Johnson Space Center, Griffin said it might be cheaper to utilize microgravity flight services from the commercial sector.

As the agency pursues these new ways of doing business, Griffin stressed the need for a "healthy, pragmatic dialogue between NASA and the commercial and entrepreneurial space community" when exploring possible joint endeavors, and he said that it's important not to over-promise or over-commit.

"There must be healthy competition of ideas and resources," Griffin said. "Before making commitments, we must carefully consider and ensure that joint endeavors are properly aligned with NASA's mission, are of sufficiently high priority and can be done within the resources provided to NASA," he added.

"It is one thing to begin an endeavor, but it is an even greater accomplishment to complete it," Griffin observed. "Too many exciting endeavors at NASA have failed to meet this standard in recent years. We must re-establish NASA's reputation for finishing what we start."

BY MICHAEL MEWHINNEY

NASA Aviation Safety Reporting System turns 30

NASA's Aviation Safety Reporting System (ASRS), the confidential reporting system widely used by pilots and other airline employees to identify potential safety hazards, recently marked its 30-year anniversary.

Established under a memorandum of agreement between NASA and the Federal Aviation Administration (FAA), the ASRS began collecting, analyzing and responding to voluntarily submitted aviation safety incident reports in 1976. These confidential reports are used to identify deficiencies and discrepancies in the National Aviation System and provide safety information to government and industry to help improve safety and reduce accidents.

"Since the implementation of the Aviation Safety Reporting System, more than 715,000 reports have been submitted by pilots, mechanics, air traffic controllers, flight attendants and other airline personnel in both commercial and general aviation," said Linda Connell, director of the ASRS, located at NASA Ames Research Center, Moffett Field, Calif. "Many of those reports have had a direct impact on making the nation's airways safer, and we're extremely proud of our continuing contributions to safety."

"ASRS is an excellent tool that has helped us spot rare and infrequent emerging threats and hazards," said FAA Associate Administrator for Aviation Safety Nicholas A. Sabatini. "To continue putting downward pressure on the accident rate, we need this kind of information about trends, about precursors, and about what is going on every day in the aviation system."

Over the past 30 years, the ASRS has issued more than 4,000 safety alerts to the FAA and the commercial and private aviation community. Approximately 42 percent of the ASRS alert recipients have taken action to correct the hazardous condition and improve safety.

Recent ASRS safety alerts address a wide range of safety issues, including air traffic departure procedures, aircraft equipment problems, airport signage and marking issues, similar-sounding navigation fixes, and aeronautical chart deficiencies, which may

involve significant human factor and system performance contributions.

An example of a safety alert issued by ASRS, involved failure of an aircraft's cockpit seat locks. ASRS documented cases in which failure of the seat locking mechanism resulted in the captain's or first officer's seat sliding back during takeoff or other critical flight maneuvers. The FAA responded to the ASRS alert and subsequently issued an Airworthiness Directive.

"The ASRS is the largest repository of aviation human factors incidents in the world," Connell noted, "and has conducted more than 7,100 database searches for government agencies, industry groups, research organizations, aircraft manufacturers, aviation students, and a wide variety of other organizations."

In addition to safety alerts and database searches, ASRS research findings have also been influential. An early ASRS study on cockpit distractions led the FAA to enact the "sterile cockpit rule" which prohibits crewmembers from performing non-essential duties and activities during all flight operations that occur below 10,000 feet. Another ASRS data finding addressed the content and format of aviation checklists and manuals for flight crews that were incorporated into an FAA Advisory Circular.

Other significant ASRS accomplishments include identification of

issues regarding increased separation standards behind Boeing 757 aircraft to reduce wake turbulence, safety guidance governing the use of passenger electronic devices to reduce their impact on aircraft communication and navigation systems and improvements in runway warning lights and markers.

The ASRS has become a model for safety reporting systems worldwide and is a charter member of the International Confidential Aviation Safety Systems, a group of 12 nations, which operate aviation safety reporting systems similar to ASRS. The ASRS also has been recognized for its safety contributions in other industries, including medicine, in which NASA's ASRS is collaborating with the Department of Veteran Affairs to operate the NASA/VA Patient Safety Reporting System (PSRS).

The ASRS provides a wide range of safety products, including safety alerts, publications, database search requests, quick response reports in support of accident investigation or safety topics and research products for government and industry. Significant developments in 2006 include two new automated services: Database Online and Electronic Report Submission that can be accessed directly from the ASRS Website.

BY MICHAEL MEWHINNEY

Lockyer receives NASA's Superior Accomplishment Award



Associate Administrator Program Analysis and Evaluation Scott Pace, presents Lisa Lockyer, acting deputy director, Partnerships Office, with the NASA 'superior accomplishment award' for her leadership in the implementation and management of NASA's venture capital project, Red Planet Capital. Red Planet Capital invests in companies developing technologies with a likelihood of meeting both commercial and NASA mission needs. To learn more, visit: www.redplanet-capital.com

NASA photo by Dominic Hart

NASA, SETI explorers seek planetary evolution clues on Earth

To go where few people have gone before, a team of expert scientists, mountain-climbers, and divers will explore the ecosystems of three high-altitude summit lakes to understand microbial life's adaptation to these challenging environments.

Exploring new frontiers on Earth, the 15-member team will climb three giant volcanoes of the Andes and their summit lakes: Licancabur at 19,813 feet (6004 m), Poquentica at 19,192 feet (5850 m), and Aguas Calientes at 19,635 feet (5950 m), in Bolivia and Chile. They will be going where the atmosphere is thin, ultraviolet radiation intense, and the temperatures cold, which make these environmental conditions potential analogs to ancient martian lakes. The High Lakes Project, funded by a grant from the NASA Astrobiology Institute to the SETI Institute, Mountain View, is a collaborative effort to investigate extreme lakes at the summit of high volcanoes and collect new knowledge about the biosphere of our own planet, the evolution of life and its adaptation to climate changes. The expedition started late October and runs through early December.

"What is critical for life is how environmental extremes interact with each other through time, and the time they give life to adapt," said Nathalie Cabrol, the expedition's lead and principal investigator at the SETI Institute who works at Ames. "Time may be just what is needed for life to survive environmental changes. This is true on Earth and could have been true as well on Mars, and beyond."

In the past four years, the team has investigated the geophysical environment of the summit lakes of the Licancabur and Poquentica volcanoes, as well as lower lakes such as Laguna Verde and Laguna Blanca at 14,520 feet (4,400 m), and Laguna Colorada at 14,850 feet (4,500 m). Some of these lakes in the Bolivian Andes are poorly known. They are located in rugged environments and host unique ecosystems.

"Our earlier expeditions have helped us identify the presence of a unique ecosystem at the summit of Licancabur," said Cabrol. "Preliminary results on microbial organisms both in bottom sediments near shore and

from contaminating the lakes.

"The advantage of the rebreathers is that they will allow divers enough time to explore the ecosystem at the bottom of the Licancabur lake in great detail, to capture the complexities of its biology, and to fully photo- and video-document it," said Cabrol. "We are testing new exploration techniques that are pushing the limits of human exploration of high-altitude aquatic environments. While standard scuba was used by archeological teams back in the 80s and 90s at Licancabur, it presented risks that oxygen rebreathers mitigate," Cabrol said.

Previous expeditions to the 4-mile-high volcanic lake in the Andes have led to significant scientific findings about the potential for life on other planets and helped prepare for future planetary missions to Mars and beyond. "This

expedition represents potentially an immense source of knowledge," Cabrol said. "We might learn more about microbial adaptation to extreme environments on Earth that could lead to a better understanding of how microbial organisms might have survived on ancient Mars."

Visit <http://highlakes.seti.org> to view the field logs for daily descriptions of the team's exploration and stunning photographs.

BY RUTH MARLAIRE



Photo by Henry Bortman

The High Lakes Project team in the stromatolite field near Laguna Blanca, in the Bolivian Andes. The team of expert scientists, mountain-climbers, and divers explored the ecosystems of three high-altitude summit lakes to understand microbial life's adaptation to these challenging environments.

zooplankton confirmed that species are adapting to this unique environment. We also know now from these results that the potential to discover new species is very high."

This year, the team will dive to the bottom of these high-altitude lakes for the first time using compact oxygen diving equipment, called rebreathers. These are bags that divers carry on their chests (like a third lung) that capture carbon dioxide and allow the divers to breathe pure oxygen, thereby preventing expelled carbon dioxide

'Mythbusters' conduct test at Ames

In November, a team from the Discovery Channel's TV show *Mythbusters* visited Ames to conduct an experiment in Hangar 2. The myth they attempted to bust is that a piece of paper can be folded in half no more than eight times. They taped together strips from a huge roll of paper to make a piece 170-feet-by-280-feet -- in the same proportions as an ordinary 8.5-inch-by-11-inch sheet but nearly equal in area to a football field. Folding began with the aid of numerous bystanders, eventually requiring a steam roller and a forklift. To compare predictions made ahead of time by an Ames scientist with the actual outcome, and to find out whether the myth was busted, watch for the segment early in 2007 on the Discovery Channel.



NASA photo by Dominic Hart

Local students engage in Sally Ride Workshop at Ames

Astronaut Janice Voss gave an inspiring talk at the recent Sally Ride Science Festival held at Ames. Science workshops were given by local veteri-



Astronaut Janice Voss speaks to girls attending the recent Sally Ride Science Festival held at Ames in late October. The festival is held to help keep girls interested in the subjects of math and science and to inspire them to think about their futures, so that they are better prepared to pursue a wide range of exciting opportunities in high school, college and beyond.

narians, astronomers, microbiologists and more. Workshops for parents and teachers were also held as a means to



Girls attending the Sally Ride Science Festival at Ames participate in a hands-on science experiment.

support girls' interests in science.

In 4th grade, the number of girls and boys who like math and science is about the same. But by 8th grade, twice as many boys as girls show an interest in these subjects. Sally Ride

Science would like to change that, helping to keep girls interested in these subjects. For more information about the festivals, visit: www.SallyRideScience.com

Combined Federal Campaign - helping us help others

Fall is upon us and a new calendar year is just around the corner. There is change in the air, but one thing that never changes is the institution of the Combined Federal Campaign. As long as there is a need, Ames has traditionally been at the forefront of the campaign and this year is no different.

The 2007 Combined Federal Campaign officially runs from Oct. 26 to Nov. 30. Ames had its campaign kick-off in late October, and an ice cream social recently.

As a reminder, if you have not made a donation there is still time. For civil servants, your donation site is WebTads, and for contractors it is the paper donation forms. The list of charities is downloadable



The 2006 Ames Combined Federal Campaign (CFC) kick-off meeting was held Oct. 26 in the main auditorium. The theme for this year's campaign is 'The Needs of the Many Met Through Your Kindness and Generosity.' The 2006 CFC film was shown, and speakers from local charities discussed how they use CFC donations for the benefit of those around us in need. From left to right: CFC loaned executive Jeff Cross; CFC chair Betty Christensen; deputy chair Ronald Fong and board member Don Durston.

NASA photo by Dominic Hart

from WebTads and there are booklets available from your key workers or visit the CFC Web site at: www.cfc.arc.nasa.gov. You can also contact this year's CFC chair, Betty Christensen, at bchristensen@mail.arc.

nasa.gov for more information.

As always, your generosity is greatly appreciated, and thank you all for caring.

BY RONALD FONG, CFC DEPUTY CHAIR

AIAA observes Veterans' Day with SR-71 pilot Graham

Members and guests of the San Francisco Section of the American Institute of Aeronautics and Astronautics (AIAA), including many employ-

U-2 wing at Beale Air Force Base, and also a decorated veteran of the war in Vietnam. Graham's talk focused on the many technical and engineering innovations embodied in the SR-71, still the world's fastest airplane.

"Gary Powers' U-2 was shot down over the Soviet Union in May 1960. The very next month, the U.S. Congress funded Kelly Johnson and Lockheed to begin development of the SR-71. That team produced the first SR-71 aircraft in just 22 months. When you consider that the aircraft required an all-new design, all new materials, all new tooling... it was an astonishing accomplishment," said Graham.

Almost 100 people packed the banquet hall, including 11 veterans of the U.S. armed forces.

In a special segment of the program, the veterans were asked to stand and were recognized with extended applause for their service and sacrifice in the name of preserving the freedoms we enjoy today.

Graham stayed after the program to speak with guests and sign copies

of his two books: SR-71 Revealed: The Inside Story and SR-71 Blackbird: Stories, Tales, and Legends. All royalties were donated to the AIAA-SF Scholarship Fund and to the Smithsonian National Air and Space Museum's J.T. Vida Memorial Fund that maintains and supports the SR-71 exhibit at the Udvar-Hazy Center adjacent to Dulles International Airport.

The AIAA's local San Francisco Section sponsors banquets and events several times a year to promote interaction and community among aerospace professionals in an informal setting. Recent speakers have included U.S. Congressman Mike Honda; structural engineer and analyst of the World Trade Center impact Robert Bocchieri; and Ames' own Astrobiology Institute senior scientist David Morrison.

The events are organized and produced entirely by volunteers from the local section. AIAA members in the Ames community who would like to assist the small-but-energetic group of volunteers who are planning the next banquet should contact Todd Farley at chair@aiaa-sf.org.

At the conclusion of the banquet, the AIAA presented Graham with an American flag. The flag had flown over the U.S. capitol earlier this year and was provided by local Congresswoman Anna Eshoo.

BY MEMBERS OF THE
SAN FRANCISCO AIAA SECTION



The American Institute of Aeronautics and Astronautics (AIAA) San Francisco chairman Todd Farley (far left) recognized U.S. veterans in attendance at the Nov. 9 banquet held at Michael's in Mountain View. Featured speaker Col. Richard Graham is fifth from left. The group, along with many Ames employees, met to observe Veteran's Day and also to recognize some of the attending veteran's for their dedicated service to their country.

ees from Ames, marked Veterans' Day with a special dinner banquet on Nov. 9 at the Shoreline Golf Club in Mountain View.

The banquet featured Colonel Richard Graham (ret.), a former SR-71 pilot and commander of the SR-71 and

Cosmological events depicted in colloquium/NRP talk



NASA photo by Tom Trovner

Cosmologist Joel Primack and writer/philosopher Nancy Abrams, together with Seth Shostak of the SETI Institute, spoke to a capacity crowd at the popular NASA Research Park Exploration Lecture Series in a talk entitled 'The View From the Center of the Universe.' Primack and Abrams are co-authors of a best seller book by the same title, which they both signed after the talk. They discussed recent advances in astronomy, showed spectacular new videos and framed a compelling theory for understanding the universe and our role in it. The event was held, in conjunction with an afternoon director's colloquium in B245, in Bldg. 943 in late October. The colloquium presented several spectacular simulations of cosmological events such as colliding galaxies based on computations and simulations done on Project Columbia.

Roeser discusses German SOFIA Institute research

Professor Hans-Peter Roeser recently presented a director's colloquium entitled 'SOFIA and the Small Satellite Program at the University of Stuttgart.' Since 2002, Roeser has been a professor at the University of Stuttgart and managing director of the Institute of Space Systems. His main interest is the development and application of remote sensing instruments in the visible and infrared wavelength range for airborne and space-borne programs.

During the colloquium, Roeser discussed the activities and research in the German SOFIA Institute, which include the management of the German engineering and scientific contributions to the SOFIA operations phase. Then, he outlined the University of Stuttgart's small satellite program which consists of a series of four satellites, starting with the 'Flying Laptop,' to be launched in early 2008 into low Earth orbit.



NASA photo by Dominic Hart

Professor Hans-Peter Roeser at the recent colloquium at Ames where he discussed the latest research and activities of the German SOFIA Institute and the University of Stuttgart's small satellite program.

NASA announces new systems engineering award competition

NASA recently announced an opportunity for university students to work with NASA engineers to conceive, design, fabricate and test a radio-controlled aircraft capable of taking off and landing while carrying a maximum load of cargo.

Students will develop their aircraft and compete for the new NASA Systems Engineering Award as part of the Aero Design competition, made possible through a partnership between NASA's Aeronautics Research Mission Directorate and SAE International. Students competing for the award will receive e-mail feedback from NASA engineers who will review the students' work at two critical points during the design and development of their aircraft.

"The purpose of this new award is to engage students in the systems engineering process," explained Deborah Bazar, a project manager in the Education Division at NASA Ames. "NASA wants to expose more of today's engineering students to systems engineering concepts and practice, which are integral to industry and research in today's world," she added.

Each year, hundreds of engineering students compete for cash awards during SAE International's two North American Aero Design competitions - one on the East Coast and one on the West Coast. The next Aero Design East will be held May 4-6, 2007 in Fort Worth, Texas. The next Aero Design West will be held March 23-25, 2007 in San Fernando, Calif.

Systems engineering is a logical set of grouped processes performed by multidisciplinary teams to engineer and integrate systems to ensure products meet customer needs. A systems engineering plan implements a core set of common technical processes and requirements needed to define, develop and integrate products created for an organization.

Systems engineering processes build upon and apply best practices and lessons learned from NASA, as well as other government agencies, academia, trade associations and industry, to clearly delineate a successful model to complete comprehensive technical work, reduce program and technical risk and improve mission success.

With this competition, NASA continues its tradition of investing in the nation's education programs. The competition directly ties into the agency's major education goal of strengthening NASA and the nation's future workforce. Through this and the agency's other college and university programs, NASA will identify and develop the critical skills and capabilities needed to support its long-term aeronautics requirements.

SAE International has more than 90,000 members who share information and exchange ideas for advancing the engineering of mobility systems used in designing, building, maintaining, and operating self-propelled vehicles for use on land or sea, in air or space.

For more information about the new NASA Systems Engineering Award, visit: <http://students.sae.org/competitions/aerodesign/nasaaward.htm> For more information about SAE International's education programs, visit: <http://students.sae.org/>

BY MICHAEL MEWHINNEY

Ames Ongoing Monthly Events Calendar

Ames Amateur Radio Club, third Thursday of each month, 12 noon, N-T28 (across from N-255). POC: Michael Wright, KG6BFB, 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 3rd Wednesday of the month. The meeting location is Building 19, Conference Room 1083 and the meeting time is 12 noon - 1 p.m. Contact Julie Nottage at jnottage@mail.arc.nasa.gov, ext. 4-3711. By-laws of Ames Bicycling Club can be found at <http://zen.arc.nasa.gov>; the link is right under the picture.

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 Tuesday in N-229/Rm 117

from 12 - 1:30 p.m. POC: Julie Schonfeld, ext. 4-6504.

Ames Contractor Council Mtg, first Wednesday each month, 11 a.m., N-200, Comm. Rm. POC: Doreen Cohen, ext. 4-5203.

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: 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 12:00 p.m. -1:00 p.m. in Bldg. N-262, Rm 100. URL: <http://sail.arc.nasa.gov/>. POC: Becky Hooley, ext. 4-2399.

Environmental Forum, first Thursday every other month, 9:00 a.m. to 10:00 a.m., Bldg. 218/2nd floor training room. URL: <http://qqe/events/EHSseries/> 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: Miwa Hayashi at ext. 4-1397, mhayashi@mail.arc.nasa.gov, Web: <http://jetstream.freetoasthost.com>

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.

Study shows Titan and early Earth atmospheres are similar

continued from front page

produced on Earth billions of years ago.

The researchers reported that the aerosols produced in the laboratory could serve as analogs for the observed haze in Titan's atmosphere. The scientists also estimated that aerosol production on early Earth could have served as a primary source of organic material to the surface.

"This paper shows one of the ways in which the study of other worlds can help us understand Earth," said Chris McKay, a scientist at NASA Ames and one of the study's co-authors. "Titan has a thick organic haze layer, and this work started out to understand the chemistry of that alien organic haze. Then we realized that we could apply the same approach to the organic haze on early Earth."

"We hope to determine how the organics were made and their chemical nature," McKay observed. The scientists reported that when sunlight hits an atmosphere of methane and nitrogen, like the atmosphere of Titan today, aerosol particles form. When an atmosphere also contains carbon dioxide, as in the atmosphere of ancient Earth, different kinds of aerosols form.

The scientists used a special ultraviolet-light lamp to produce particles in the simulated atmospheres, and

measured the chemical composition, size and shape of the resulting particles.

"It's somewhat similar to the smog in Los Angeles," Trainer explained. "Today's haze on Earth is also created photochemically, which means sunlight powers chemical reactions in

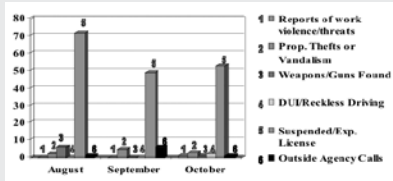
the atmosphere. However, the early atmosphere of Earth had different gases present, so chemical composition of the early haze is very different than the haze we have today. There also would have been a lot more of it."

BY JOHN BLUCK

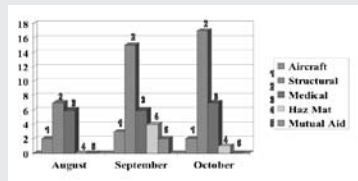
Protective Services monthly activity

A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire Protection Services units for the month of July 2006 is shown below.

Security/Law Enforcement Activity



Fire Protection Activity



Safety Data

NASA-Ames Occupational Illness-Injury Data for Calendar Year-to-Date 2006 Jan. 1, 2006 – Oct. 31, 2006

	Civil Servants	Contractors
First aid cases	12	19
Lost Workday cases	0	5
Recordable cases	3	9
Restricted duty days	0	0

Above data are as of 10/31/06. May be subject to slight adjustment in the event of a new case or new information regarding an existing case.

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

Unfurnished room in house in San Jose, close to light rail and Caltrain. \$525 incl utils and WiFi. Available to quiet, mature, non-smoking female student or professional. E-mail: mbualat@stanfordalumni.org or call (408) 578-9580.

Temporary housing needed for relocating NASA employee beginning mid-December or January through May. Non-smoker. Contact Ann Clarke at (202) 285-2150.

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.

Automotive

'03 Honda CRV EX sports utility, 42K miles leather, new brakes, 80K Goodyear tires, cargo equipment, just had 40K service, dealer maintained, all records, two sets mats dark tan paint, unused cloth interior \$17.6K. Under Blue Book private party \$18.65K. Jim (408) 257-3930.

'04 Toyota Corolla, silver, automatic, 40K miles, e-mail: winnie.ling@gmail.com or call (650) 580 0708.

'05 Honda Civic, silver, automatic, 17K miles, \$13,990, e-mail: winnie.ling@gmail.com, or call (650) 580 0708.

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/lodging.html>

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 4:00 p.m. and Sat 12 p.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, 8 a.m. to 2 p.m.) ext. 4-5412 and Beyond Galileo (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/Contrators, \$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 role practice, etc. The cost for special events is \$50/hr.

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

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.

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 bdrms/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 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 Lie-St. Louis., \$1,400/wk. negotiable. Call (650) 349-0238.

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

Maui luxury oceanfront resort one-bedroom condo available one week. Rents for \$345/night now, \$495/night in the summer. We will rent to an Ames family for \$1,750 for the week. See the condo at <http://www.starwoodvo.com/resorts/villafeatures.jsp?resortID=12> Call (650) 572-8877 for availability and questions.

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.

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 the 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.

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.

University students are helping NASA with GeneSat

Dozens of university students are helping NASA to prepare, monitor and analyze the science from a 'nano' satellite scheduled to launch in December.

News media were recently invited to view the small satellite facility at Ames. They also saw the GeneSat satellite being tested, and were able to interview stu-

udent man missile and modified to launch payloads into orbit. The main purpose of the launch from the NASA Wallops Flight Facility in Virginia is to loft an Air Force TacSat 2 satellite into orbit. NASA's separate GeneSat-1 will carry bacteria inside a miniature laboratory to study how the microbes may change genetically during spaceflight. The micro-laboratory includes sensors and optical systems that can detect proteins and specific genetic activity. The student-operated GeneSat communications system, located in the Stanford foothills, will receive data via radio from the satellite's onboard micro-laboratory after it has completed its observations and tests of the bacteria carried on the spacecraft. This data will be relayed through the Internet to the GeneSat mission operations center at Ames.



Ames GeneSat project manager John Hines, right, describes the GeneSat mission to a reporter during a recent media day, which showcased the small satellite facility at Ames. The GeneSat-1 satellite, to be launched Dec. 11, will carry bacteria that researchers will analyze to determine the effects of space flight on microscopic living things.

NASA photo by Tom Trower

NASA's GeneSat-1 satellite is scheduled to ride aboard an Air Force rocket being launched into Earth orbit on Dec. 11, 2006. The small satellite will carry bacteria that researchers will analyze to determine the effects of space flight on microscopic living things.

dents from Santa Clara University, Ames' John Hines, GeneSat project manager, and Bruce Yost, GeneSat mission manager.

The 10-pound (4.5-kilogram) satellite will be a 'secondary payload' on an Air Force Minotaur rocket, derived from a Min-

Santa Clara University students will control the spacecraft from the mission operations center at Ames. The students developed software that will send commands to the satellite, analyze spacecraft health and calibrate biological data.

BY JOHN BLUCK



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