



# ASTROGRAM

Newsletter of NASA Ames Research Center, Moffett Field, California

April 2007

## Thousands celebrate Yuri's Night at NASA Ames



On April 13, and extending into the early hours of April 14, NASA Ames hosted a major celebration, Yuri's Night in Hanger 211. This event was a celebration of space exploration in a unique convergence of artists, scientists, astronauts, performers and musicians and held in commemoration of humankind's first venture into space by Russian Cosmonaut Yuri Gagarin. Ames Center Director S. Pete Worden welcomed the crowd and also spoke about the Vision for Space Exploration. The evening began with perspectives from pioneering space traveler Anousheh Anasari and Ames' Chris McKay, world renowned expert in astrobiology and terraformation. The hangar and adjoining tarmac were filled with cutting-edge interactive technology and science demonstrations, including innovations from the world of robotics, engineering, chemistry and astronomy, presented by NASA and Bay Area scientists and engineers.

NASA photo by Eric James

## NASA finds evidence for new molecular structure in space

NASA scientists have discovered evidence that a mysterious red glow,

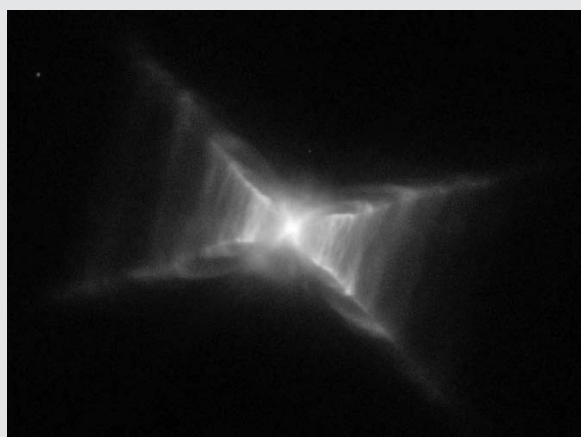
ters that cause the glow by combining molecular forces that oppose each other.

Researchers theorize that the red glow, called the Extended Red Emission (ERE), is due to a very unusual form of charged molecular clusters. Measured in billionths of a meter (billionths of a yard), these tiny clusters are made of carbon-rich molecules called polycyclic aromatic hydrocarbons (PAHs) that are chicken-wire shaped. Astronomers have been unable to explain the red glow for more than 30 years, even though PAHs were implicated. The highly luminescent source material requires very harsh ultraviolet radiation, a radiation field so strong that

molecules would be destroyed. NASA Ames has been a leader in the study of PAHs under the direction of Ames' Astrochemistry Laboratory led by Dr. Louis Allamandola.

"We have been studying polycyclic aromatic hydrocarbon molecules (PAHs) in the laboratory at NASA Ames Research Center for a long time, and although I had results that strongly supported the idea that PAHs had something to do with the ERE, the experimental results made it clear that if PAHs were involved, they were

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NASA photo

Proto-planetary nebula, the 'red rectangle,' taken by the Hubble Telescope. Original color photo shows the red glow, called the Extended Red Emission.

seen throughout the Milky Way and other galaxies but never on Earth, radiates from extremely fine dust clus-

ters that cause the glow by combining molecular forces that oppose each other. Astronomers have been unable to explain the red glow for more than 30 years, even though PAHs were implicated. The highly luminescent source material requires very harsh ultraviolet radiation, a radiation field so strong that most known polyatomic interstellar

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## 'Image Fusion' to aid doctors examine astronauts' hearts in space

Practicing medicine on trips to the moon will be harder than on Earth, because spaceships will be far away, and few doctors will be aboard.



photo courtesy Salinas Valley Memorial Hospital

These preliminary 'image fusion' picture of the human heart were taken from a movie generated at Salinas Valley Memorial Hospital, Salinas, Calif.

NASA Ames scientists are studying ways to improve space medicine to tackle space travel's medical challenges. One effort is to develop

'image fusion.' In this process, clear, sharp x-rays and other high-resolution, scanned images of astronauts taken on Earth will be combined with less sharp sonograms taken onboard spacecraft to enhance those images. These improved images will enable doctors to better see the condition of major organs in astronauts.

Sonogram scanners use non-invasive sound waves to take pictures of organs and features inside the body. Doctors also use sonograms to view and monitor unborn babies. Because sonogram scanners often are lighter and use less power than other kinds of scanners, they are better suited for space travel.

"We want to be able detect any changes (in astronaut) organ structure and function during spaceflight," said Richard Boyle, an Ames scientist and neurology expert. Neurologists study the nervous system and potential neurological medical problems.

"This would allow us to provide early intervention to resolve medical (problems) before they become more serious. There will be very limited diagnostic tools available to the astronauts, and this image fusion may provide a way to help astronauts

maintain their health," Boyle said.

Small space crews probably will include only one or two medical doctors. Though potentially thousands of doctors and other specialists on Earth also will be on call to help crewmembers during spaceflight, home-planet medical specialists and their massive equipment will be far from spaceships or astronauts walking on the moon.

"In order to investigate any potential changes that may occur during long-term space travel, we have selected the human heart and kidneys as our initial study subjects," Boyle observed.

According to Xander Twombly, a colleague of Boyle's, "We're working on development of a digital model of the human heart and kidneys. This is a computer model of the heart that can be used to predict changes in heart function under different gravitational conditions," Twombly explained.

"We'll be using computerized tomography, commonly known as CT scans -- which are 3-D x-rays - to take pictures of the beating heart on Earth prior to spaceflight," explained Twombly. "These x-rays provide

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## NASA finds evidence for new molecular structure in space

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present in some as-yet unknown exotic form," said Murthy Gudipati of the University of Maryland and Ames, who recently joined NASA's Jet Propulsion Laboratory after many years of close collaboration with Al-alamandola.

"These types of highly reactive species are simply not readily accessible for laboratory study, but need very special conditions," added Gudipati. Through a combined effort of laboratory and theoretical chemistry calculations, the current advance in knowledge was made.

Using advanced computational methods, scientists found that the red glow is indeed carried by unusual clusters of polycyclic aromatic hydrocarbon molecules. Highly developed tests confirm the presence of opposing properties within each cluster; they are charged and highly reactive, yet simultaneously, they have a stable, closed-shell electron configuration as

does any stable molecule on Earth.

Recent advances in theoretical techniques made it possible to tackle this problem computationally.

"Significant difficulties involved in the modeling of charge transfer within large molecular systems required an entirely new approach," said Dr. Timothy Lee, astrochemist and chief of the Space Science and Astrobiology Division at Ames.

"Once we convinced ourselves that our new approach could handle these strange particles, I was able to simulate the detailed emission process on molecular systems much larger than any that had been done before," said Young Min Rhee, postdoctoral fellow at the University of California, Berkeley, and the lead author of the paper published last month in the Proceedings of the National Academy of Sciences. "Our simulation shows that this type of charged PAH cluster can account for the ERE while satisfying

the physical requirements necessary to survive the harsh interstellar conditions" continued Rhee.

According to scientists, this research has important implications in other areas as well, including combustion processes and exotic nanomaterials. For instance, the formation of soot particles produced by diesel and jet engine combustion is not well understood. Self-forming PAH clusters may be the key step to understanding this process. Evidence suggests there is closed-shell charged PAH ions in flames, and the highly robust yet unusual closed-shell PAH clusters described here may be the soot nucleation sites in flames, a result that has been long anticipated.

For more information, please visit: <http://spacescience.arc.nasa.gov/redglow/>

BY RUTH DASSO MARLAIRE

## Huge crowd turns out for Johnny Green memorial at Ames



NASA photo by Dominic Hart



NASA photo by Dominic Hart



NASA photo by Eric James

A memorial service to honor Ames security guard Johnny Green was held the morning of March 21, 2007 at Ames on the parade grounds inside the Shenandoah Historic District. More than 1,129 Ames personnel and guests and family members, including Johnny Green's daughter Cynthia Green, center photo, attended the event. Bob Dolci, chief, Protective Services, top left, spoke during the memorial service, as well as many others who were inspired by Johnny. As a reminder, the 'Johnny G. Green Memorial Fund' has been set up at the Golden Bay Federal Credit Union. For those who wish, donations can be sent to Golden Bay Federal Credit Union, P.O. Box 1449, Mountain View, CA 94042-1449.

## NASA studies life's limits in China's extreme deserts

Searching for clues to the potential for life on Mars, NASA scientists recently explored microbial communities in some of the world's oldest, driest and most remote deserts, in China's north-west region, and found evidence suggesting that conditions there may be similar to those in certain regions of Mars.

This is the first comprehensive study of microbial ecosystems in the extreme deserts of China. Scientists looked for microbial life and tried to determine climate's effect on the distribution, diversity and abundance of that life in extreme conditions. Results of this study were published recently in the *Journal of Geophysical Research*.

"Our findings showed that numerous sources of water, such as rainfall and snowmelt, characterized how microbial life existed in its environment," said Chris McKay,

the principal investigator at Ames. "Rainfall amounts primarily dictated the type of microbial ecosystems we found across sites, but the effects of



photo by Kimberley Warren-Rhodes

Tian Shan central Asia Environmental sensors monitor climate conditions year-round at the Sorkuli study site in the Qaidam Basin, Qinghai-Tibetan Plateau.

temperature, humidity and light created a gradient of soil water conditions suitable for life as well," added McKay.

In December 2006, NASA published satellite images from the Mars Global Surveyor mission that showed periodically changing gullies on the surface of Mars. Although no one knows for sure how the martian gullies were formed, some scientists hypothesize that they may be the result of surfacing groundwater or melting of ice in the martian subsurface.

According to McKay, single-celled organisms can exist only if there is enough water, which determines life's limits. To study the possibilities of microbial life on Mars, scientists went to the most arid, Mars-like environments they could find on Earth, the dry valleys of Antarctica, the Atacama Desert of Chile, and now northwestern China.

Scientists who are interested in Mars and its environmental conditions have been studying microbial

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## NASA/SETI scientist featured in new book about robots

Nathalie Cabrol, a NASA Ames/SETI Carl Sagan Center scientist who specializes in planetary geology, is one of the key figures in a new book by Lee Gutkind entitled 'Almost Human, Making Robots Think.'

Gutkind spent the past six years watching and recording various research and experiments at places like NASA and the Robotics Institute

almost Making Robots Think  
human



Lee Gutkind

at Carnegie Mellon that are striving to produce an autonomous robot some day in the future.

Cabrol, who has a whole chapter named after her in the book, is a petite French woman with short, tousled hair and a comfortable demeanor. She shares an office at Ames with her husband, Edmond Grin, who is a geologist and hydrologist. When asked to share her personal interests and current projects in the robotics field, Cabrol happily obliged with the following interview.

"There is never a typical day," Cabrol said. "These are the kinds of words we never use, 'typical day' and 'work.' Because this is not what it's about, it's about passion and it's about imagination and vision."

Cabrol, who has traversed some

of the most desolate places on Earth in the name of research, puts in long hours to make her dreams a reality. Exploring how robots can explore Mars or other inhospitable areas for humans is just a facet of her talents.

But even when in the office, she doesn't consider her 12 hours or more a day "work."

"I have my husband here with me, so I don't have to call home and say, 'Hey, I'm going to be late.' And, we share the same passion so it's easy," she says in an upbeat tone.

Cabrol's schedule is extremely busy, as she is currently a science team member on the Mars Exploration Team and the principle investigator of the High Lakes Project among other assignments and travel obligations. The High Lakes Project involves exploring high-altitude lakes in the Andes because of the similarities these areas might have to ancient Martian lakes.

Additionally, Cabrol will be continuing her work in the Atacama desert in Chile, this time studying the formation of spherules, because this type of research is analogous to the rover Opportunity exploring the Meridian site on Mars.

Both the High Lakes Project and the Atacama assignment demand strenuous activity, and the fact that Cabrol currently enjoys both hiking and diving isn't a coincidence.

"I was not a mountaineer but my husband was the one teaching me that, on the other hand I am a diver... These are skills that I developed over time and am putting them to use here," she said. For practice, she and her hus-

band take training trips to the Sierra's and also spend time at Lassen National Park, as well as hiking Mt. Shasta and Mt. Whitney.

In the future, Cabrol hopes to



photo by 2006 High-Lakes Project, NAI/SETI CSC/NASA Ames

Nathalie Cabrol is seen here diving in the Catalina Islands, Calif. She was there with her team in August 2006 to train and test the pure oxygen CODE rebreather (the black breathing apparatus that she is wearing in the photo.) This is the system that she took three months later to the Licancabur volcano to dive in the summit lake.

characterize new and extreme environments that will support life. "One thing I really like to look at is both sides of the coin. Some ecosystems are disappearing because of climate change but others are being created..." she said. She would also like to stay involved in the robotic exploration of Mars, and is especially excited about the Mars Science Lab taking place in 2009.

BY KAREN HAGSTROM

## FutureFlight Central simulates new airport . . . before it is built

In a first-of-its kind, Ames' FutureFlight Central conducted human-in-the-loop simulations in March 2007 of a future airport. The airport will be called the Ivanpah Valley Airport located near Las Vegas, Nev.



Dusk at future Ivanpah Valley Airport as envisioned in FutureFlight Central.



NASA photos

Images captured from Ivanpah graphical database in FutureFlight Central.

by 2015. The proposed airport, located on a 6000-acre dry lakebed in the Ivanpah Valley, will help alleviate congestion at LAS which can no longer expand because of

housing and commercial development that surrounds it. The new airport is scheduled to open 2017, servicing 6 million passengers per year.

BY NANCY DORIGHI

The Ivanpah Valley Airfield Alternative Analysis (IVAAAN) Project goal was to evaluate two airport layout alternatives. FutureFlight Central measured airport efficiency, flexibility, and safety of surface operations under various flow directions, traffic levels, and visibility conditions.

The simulations enabled planners to look well beyond the normal time frame for such studies to see where the human-operated design reaches its limit as an integrated system. To do this, they "stressed" the airport surface operation above currently anticipated peak traffic. "The simulation helped Clark County planners determine which airfield configuration can more efficiently accommodate a continuous and demanding flow of traffic," said Betty Silva, IVAAAN Project manager. The results of the simulation will provide input to the Environmental Impact Statement.

The simulation project was the first to benefit from the recent visual system enhancements which upgraded the image generation computers and display projectors.

McCarran International Airport (LAS) in Las Vegas, Nev. is the sixth busiest airport in the nation. LAS is expected to reach its capacity of about 55 million passengers a year in

## NASA study in China's extreme deserts

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ecosystems in the deserts of Earth for years, focusing on blue-green algae, or cyanobacteria. The bacteria's green color indicates they are capable of photosynthesis, the principal process by which organisms produce organic matter from inorganic matter.

According to scientists, microbial photosynthesis can occur within and under rocks in the desert. If the rock is porous, like sandstone, then cyanobacteria can live within its pores or crevices, where water can be held. More commonly, cyanobacteria are found under translucent rocks, such as quartzite, where light can penetrate, allowing photosynthesis to occur.

To broaden understanding of the dynamic physical environments that allow for microbial survival, McKay's research team traveled to China's extreme northwest region in the spring of 2006 for data collecting and analyses. Field locations -- including Tokesun, Ruoqiang and Sorkuli -- were selected based on contrasting temperatures and amounts of regional rainfall.

Tokesun contains the lowest point in China, approximately 500 feet (152

m.) below sea level. It was selected because it is hot and dry. Ruoqiang runs parallel to the southern edge of the Taklimakan Desert and is hot and wet.

Sorkuli is a high-altitude desert, ranging between 8,200 feet and 9,840 feet (2500 m. to 3000 m.) that is situated along the Qinghai-Tibetan plateau. Climate conditions there vary due to changes in altitude and landscape. It has two types of environments: cold and dry, and cold and wet.

"Through a comparison of similar available climate data for other deserts, we conclude that from a microbial physiological standpoint, although the Atacama Desert represents the driest environment recorded, and the Dry Valleys in Antarctica represent the coldest desert conditions, the high-altitude deserts in the Qinghai-Tibetan Plateau represent the coldest and driest conditions recorded on Earth," said McKay.

This research was funded under the NASA Astrobiology Science and Technology for Exploring Planets program and a joint NASA - National Science Foundation program, called Life in Extreme Environments.

BY RUTH DASSO MARLAIRE

## 'Image Fusion' to aid doctors examine astronauts' hearts in space

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much higher-resolution pictures of the heart than an ultrasound scanner can provide. We'll take ultrasounds (of the heart) on the Earth as well, before spaceflight, and then we'll combine the ultrasound and the CT images to make an enhanced picture of the heart," Twombly explained.

According to researchers, they are using the power of computers to tie x-ray details to lower-resolution ultrasound scans, so that when ultrasounds are taken during space travel, they will be sharper and show more detail.

"We're also practicing nuclear medicine to view muscles at work in the heart," said Boyle. Scientists use nuclear medicine to view processes in living organisms by injecting radioactive substances that muscles use during movement. The radioactivity is detected by charged coupled device (CCD) sensors to produce 3-D images. Consumer digital cameras also use CCDs to capture images.

NASA has teamed up with doctors to develop image fusion for sonograms. Collaborations also aid in the spin-off of new technologies, like image fusion.

"Our collaboration is with Salinas Valley Memorial Healthcare System (SVMHS), down the road from us in Salinas, Calif.," Boyle noted. "We have a Space Act Agreement with them. They provide all the imaging and medical expertise, and NASA provides the computer science know-how and systems to develop image fusion technology.

Our group has had close interactions with SVMHS Sam Downing, President/CEO, the doctors and staff at Salinas for at least eight years to develop a wide variety of medical imaging technologies," Boyle added. Dr. Richard Villalobos is the principal investigator at Salinas Valley Memorial Hospital working with Boyle and Twombly. Talking about spin-offs, Boyle said, "This could also be used for remote medical diagnostic imaging. This means scientists working in an Antarctic station could provide continuous ultrasound images of their vital organs to medical doctors to monitor future medical problems," he continued.

"In Third World telemedicine, you can bring a patient to a clinic, and a technician can use ultrasound to record a patient's organ and how it changes over time," Boyle explained. Doctors at a distant hospital could

then evaluate these enhanced ultrasound images remotely to track patient progress, according to Boyle.

"The key thing here is that right now, doctors can use ultrasound and



NASA photo

Richard Boyle, director, Bio-Visualization, Imaging and Simulation Technology Center (BioVIS) at Ames, is currently working on 'Image Fusion' technology.

telemedicine to evaluate patients, but the ability to enhance the ultrasound image with the previously recorded CT scan of the patient is not available, and that's the whole purpose of our development work," Twombly explained.

"A lot of our research is to validate if this technique can accurately represent organs' conditions with these CT-like images," Twombly observed. During the validation process, scientists use ultrasound to take images of human organs during centrifuge rides, and during microgravity flights on airplanes that fly big loops to create short periods of weightlessness - and various gravity conditions.

"This will test our ability to predict what happens to organs during different gravity conditions from microgravity to several gravities (Gs)," Boyle said. "If we were to pursue the telemedicine question . . . following a person with ultrasound after only a single CT scan at the outset, then we would need to take CT scans on a medical schedule and compare our ability to predict future CT scans (using just ultrasound). But we have no plan at this time to do that," Boyle said.

Scientists also want to learn how the space environment affects the human body during spaceflight, and when astronauts are exploring the moon. "The imaging data then would be combined with a computerized model of the human body," Boyle said. The two scientists say these models commonly show blood flow within the heart, muscle movements and kidney function. The new data from the enhanced ultrasound will add more detail to these models.

According to Boyle, if the image fusion techniques were validated with ground-based studies, the next step would be to conduct tests in space. Subjects would be scanned with many kinds of imaging technologies, such as magnetic resonance imaging (MRI), positron emission tomography (PET) and single photon-emission computer tomography (SPECT) to construct a 'multi-dimensional model' of individuals before space missions. During flight, new ultrasound images would be taken, transmitted back to Earth and merged with the subjects' computerized models. Researchers would fuse these images with ultrasound images of each astronaut's organs.

"One of the things (we would like to do is) to have some images taken during the launch when the astronauts are subjected to high-g loads, to see whether or not we can capture any short-duration effects on the human body. Another phase of interest is when the human body travels from several gravities to a state of near-weightlessness in orbit," Boyle added. During these flights, the human body needs to adapt to the new, microgravity space environment, according to the scientists.

"This research, that will combine the information obtained from initial CT images with follow-up ultrasound images in an individual, holds great promise for protecting the health of astronauts on exploration missions to other planets. More importantly, this may be a big help to patients and doctors here on Earth for following medical conditions, since the patient would receive lower radiation doses, the ultrasound would be easier to get for the patient, and may cost less," said Dr. Victor Schneider, senior medical advisor in the Office of the Chief Health and Medical Officer, NASA Headquarters, Washington.

BY JOHN BLUCK

## Code C sets up Employee Diversity Board

The Ames Diversity Implementation Plan was rolled out on Nov. 6, 2006. Soon after, as one of the most culturally diverse organizations at the center, Code C management conducted an informal survey of its employees to get a better understanding of the level of support provided to Code C staff in the area of diversity.

The overall results of the survey indicated that Code C was on the right track with regard to promoting cultural diversity. Nevertheless, the leadership team established additional goals to promote diversity and diversity awareness. These goals are:

Demonstrate management commitment to employees by developing strategies and providing resources that will increase the value of diversity within Code C; promote inclusion and ensure that diversity awareness is integrated into Code C activities and decision making; improve employee access to

career opportunities through training and mentoring to create viable candidates for higher-level positions; and support improvements to the working

purpose of the board is to draft an annual Code C diversity action plan and to provide advice to the Code C management team on diversity topics.

Board membership is made up of volunteers from across the organization and includes representation from diverse cultures, backgrounds, genders, experiences, etc., and roles within the organization. Members of the board have an opportunity to establish ongoing, long-range processes for organizational change to ensure continued awareness and promotion of diversity initiatives within Code C.

In March, the Employee Diversity Board completed development of the first Code C diversity action plan. This plan identifies actions to be taken within the directorate to meet diversity goals. The board meets regularly (including the chief financial officer) and continues to provide advice on diversity topics as well as track the accomplishment of the action items identified in the plan.

BY DARLENE GROSS



photo by Pepsi Phounrath

The Ames Code C Employee Diversity Board - From left to right sitting: Paula Harris, Terrence Montgomery, Denise Snow, Nguyen Trang, Shirley Prosper, Earnestine Parker, Rose King and Darlene Gross; From left, standing: Ron Liang and Paul Agnew, not available for photo Behnaz Mohammad Beigi.

environment by ensuring success of diversity initiatives.

To identify methods for meeting these goals, a Code C Employee Diversity Board was established. The

board meets regularly (including the chief financial officer) and continues to provide advice on diversity topics as well as track the accomplishment of the action items identified in the plan.

## Tsuyoshi Goka, senior researcher at Ames, passes away

Dr. Tsuyoshi Goka, who was a major contributor to the NASA Ames Air Traffic Management (ATM) mission area since 1993 and has worked in various capacities at Ames since 1972 died on March 9. He most recently served as a senior researcher on the UCSC/UARC contract.

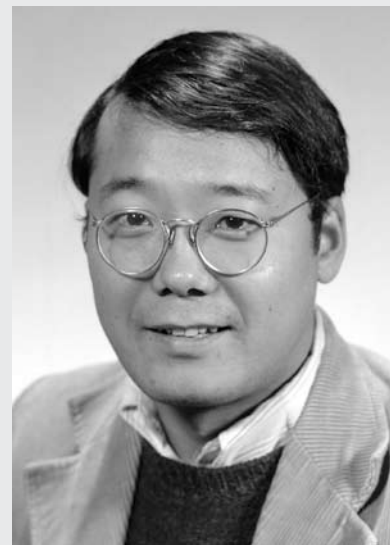
Goka had a long and distinguished career spanning 40 years. During his career, he pursued his love of aerospace research, applying automatic control system theories to aircraft/spacecraft navigation, guidance, flight control, flight testing and Air Traffic Control (ATC) and Air Traffic Management (ATM) areas.

The technical projects that Goka has managed and supported include a

wide spectrum of aeronautical guidance and control systems that form the basis for the modern ATC and ATM infrastructure.

In the early 1980s, he was a co-founder of Seagull Technology, Inc., a high tech company specializing in advanced flight controls and ATM technologies. He ultimately returned to Ames in the mid-1980s to pursue his great love of technical research, working as a contractor, following the work through three employers (Sterling Software, Raytheon and finally UCSC/UARC).

Goka will be greatly missed by his colleagues in the Aeronautics Directorate and many others throughout the Ames community.



NASA photo

Dr. Tsuyoshi Goka

## Upcoming events . . .

### Construction Safety Best Practices Course scheduled

The course consists of a 12-hour presentation followed by a 4-hour work shop and will be held in Bldg. N-943 conference room, on May 1 and

2, 2007, in Bldg. 943 at Ames. Civil servants and contractors engaged in facility construction are encouraged to attend. Point of contact

is Clarence Smith of Facilities Engineering Branch at ext. 4-6895.

### Ninth NASA-ESA Workshop on Product Data Exchange 2007 set

Mentor Graphics Corporation, a technology leader in Electronics Design Automation, will be hosting this year's workshop in Santa Barbara, Calif., May 2 - 4, 2007. Visit this year

workshop Web site at [www.mentor.com/nasa-pde](http://www.mentor.com/nasa-pde) for more information and to register.

Contact co-chairs George Siebes, e-mail [Georg.Siebes@jpl.nasa.gov](mailto:Georg.Siebes@jpl.nasa.gov),

or Farrokh Shoar, e-mail [Farrokh.F.Shoar@jpl.nasa.gov](mailto:Farrokh.F.Shoar@jpl.nasa.gov), if you have questions concerning the workshop.

### NASA Science Technology conference set for June 19

The NASA Science Mission Directorate is pleased to announce the first annual NASA Science Technology Conference (NSTC2007) June 19 - 21, 2007, in College Park, Md.

NSTC2007 will showcase a wide array of technology research and

development related to NASA's science endeavors: remote sensing instruments, platforms, components, power systems, propulsion systems, advanced information systems, sensor web technologies, communications, automation, modeling and high-per-

formance computing. There is no fee for this conference but registration is required.

Log on to: <http://esto.nasa.gov/conferences/nstc2007/> for more information and to register.

### UC Santa Cruz Summer Session classes at Silicon Valley Center

UC Santa Cruz classes will be held in NASA Research Park beginning June 25, 2007.

Special features include: Open enrollment - no formal admission to UC required; obtain UC credit and transcript through UC Santa Cruz; classes are 5-unit UCSC classes; and you can

transfer your credit to other colleges and universities.

This is designed for community college students transferring to UC or other four-year universities; students from any UC campus who are in Silicon Valley this summer; and students from any other college or university;

and community members interested in university-level coursework.

Courses will be offered in economics, engineering, environmental studies, linguistics and psychology.

For more Information, visit: <http://summer.ucsc.edu> click on 'UCSC @ Silicon Valley'

### Remember to please keep garbage dumpster lids closed

Recently, the center has experienced several costly incidents attributed to small wild animals infiltrating electrical substations and infrastructure. These incidents have led to damaged equipment and consequently, to delays in mission. The mishap investigation found that squirrels, in particular, have increased in population due largely to the availability of food found in the dumpsters. By assisting in the simple task of keeping the lids closed, you will help the Center to

reduce the squirrel population around our facilities, and prevent these costly accidents.

Skunks, feral cats, and crows that are also attracted to garbage may prey on threatened and endangered species, placing Ames at risk of violating the Endangered Species Act. Pigeons can pose a threat to aviation safety, and rats to human health and safety.

When wildlife become pests, abatement may be needed which may be controversial and draw unwanted

attention to Ames. For these several reasons, the Environmental Services Division is coordinating with Facilities Maintenance and Logistics to assist Ames in securing dumpsters that are wildlife resistant. In the meantime, please close dumpster lids. Federal, state and local regulations require that Ames keep the lids closed, 40 CFR 243.200, 14 CCR, Section 17312, SCC B11-189(c). Call the Environmental Services Division at ext. 4-5602 for more information.



## Ames Safety Awards Program (ASAP) II 2006

Under the Ames Safety Awards Program (ASAP) II, Ames recognized 90 employees for their outstanding accomplishments in improving health and safety during the 2006 calendar year. If you know of a deserving individual or group, you can help the center recognize their contribution by nominating them.

To have your nomination considered for the next Ames Safety Awards period, it must be submitted by May 15, 2007. The second nomination period will end on Aug. 30, 2007.

### Tier Level 4 - Individual awards

Randal Hobbs

### Tier Level 3 - Team awards

#### **VMS Safety Webbing Implementation Team**

Lloyd Greaves  
Barry Sullivan

#### **Ames Fleet Management Team**

Tony Calvo  
Frank Navarette  
Hugh Dawson  
Sheldon San Augustin

#### **Upwt Blade Change Team**

Jay Montgomery  
Harry Brown  
Joseph Cruz  
Daniel Cruz  
Victor Cruz  
Jimmie Porter  
Jerry Robinson  
Nestor Rostrand  
Richard Townsend  
Dale Tuttle  
Jim Prunty  
Dan Kalcic

### Tier Level 3 - Individual awards

Andy Gonzales  
Terry Lusby

Barbara Jo Navarro  
Jacqueline Nelson

### Tier Level 2 - Team awards

#### **Code C Safety Committee:**

Shirley Prosper  
Brent Bertsch  
Fran Johansson  
Delphina Turner  
Mari Matsueda  
Adrian Smith  
Ernestine Parker  
Gina Fox  
Joseph Shields  
Behnaz Beighi  
Phyllis Reutzell

#### **Arc Jet Fire Investigative Team**

Kent Stednitz  
Hanna Danfoura  
Mark Washington

### Tier Level 2 - Individual awards

Joseph Perez  
Douglas Wardwell  
Rho Christensen  
Leslie Bebout  
Ann Sullivan  
Nicola Windmueller  
Bob Lopez  
Stephen Ord  
Wardell Lovett

### Tier Level 1 - Team awards

#### **Arc Jet Complex Team**

Joe Hartman  
Scott Eddlemon  
Vince Meglio  
Robert Finnie  
Larry Hemstreet  
Bill Peneff  
Bob Wong  
Jim Joyce  
Frank Hui  
Imelda Terrazas-Salinas

Dan Rendon  
Jeanne Dominguez  
Francis McIntosh  
Leo Cruz  
Joey Fogart  
Duy Nguyen  
Rommel Mollorca  
Christine Heindel  
Florentino Dator  
Ben Reduta  
Enrique Carballo  
Jose Santos  
Jeff Mach  
Roy Arakaki  
Van Nguyen  
Thien-Ly Vu  
Peter Race  
Cesar Acosta  
JP Wiens  
Matt Gilbert  
Jonathan Lawton  
Charina Camangon  
Alex Saura  
Eddy Tamez

#### **N203 Office Remodeling Team**

Mahyar Holeman  
Majorie Domen  
Michelle Kolman  
Fay Farrow  
Donna Washington  
Frank Yang  
Earnestine Parker

### Tier Level 1 - Individual awards

Julie Nottage  
Wenhong (Wendy) Fan  
Kevin Richardson

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

# 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, Committee Room. POC: Chris Johnson, ext. (650) 938-8017.

**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 (March 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://q/qe/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.

## 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 2007 Jan. 1, 2007 – March 31, 2007

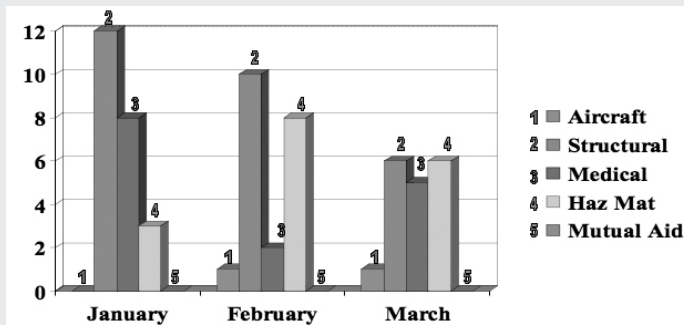
	Civil Servants	Contractors
First aid cases	3	4
Lost Workday cases	0	0
Recordable cases	0	0
Restricted duty days	0	0

Above data are as of 03/31/07. May be subject to slight adjustment in the event of a new case or new information regarding an existing case.

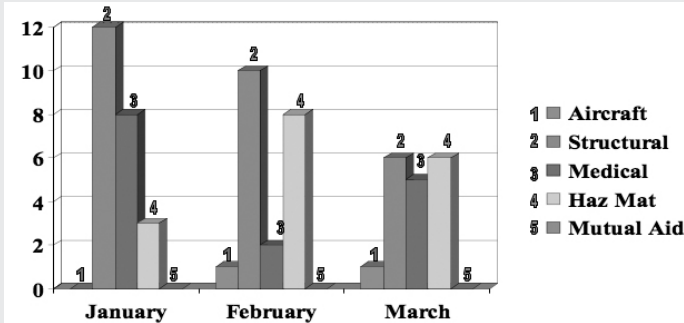
## Protective Services monthly activity

A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire Protection Services units for the month of March 2007 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](mailto: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 student or professional. E-mail [mbualat@stanfordalumni.org](mailto:mbualat@stanfordalumni.org) or call (408)460-7532.

### Carpool

Oakland/Ames Carpool: opening in a carpool that generally leaves 880/Hegenberger at 7:15 a.m./leaves Ames at 5 p.m. Share driving/non-smoking. Sylvia ext. 4-2646, e-mail [smjohnson@mail.arc.nasa.gov](mailto:smjohnson@mail.arc.nasa.gov) or Mike ext. 4-5496, e-mail [mwilson@mail.arc.nasa.gov](mailto:mwilson@mail.arc.nasa.gov)

### 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.

Console piano with bench, \$450. Elegant, plays well, due for tuning. Buyer must pick up (Mountain View). 57" wide, 38" high, 24" deep. Dan (650) 967-8849.

Looking to share days with another child at the NASA Ames Child Care Center. Our child is currently 21 months and is on the waiting list. If interested, please call (408) 394-7114.

**For All Your Supply Needs On Installation**  
 NASA Ames Supply Store • Building N235 • DeFrance Ave. (North Side)

Huge In-Store Selection 50,000 Catalog Items FREE on Installation Delivery	  	<ul style="list-style-type: none"> <li>• Office Products</li> <li>• Paper</li> <li>• Paper Products</li> <li>• Janitorial &amp; Cleaning Supplies</li> <li>• Computer Accessories</li> <li>• Furniture &amp; Tools</li> </ul>
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 Retail Store  
 650-604-6801 • Fax 650-604-6802  
 On-Line [www.aibexpress.com](http://www.aibexpress.com)

**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://naccenter.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 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/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](mailto: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 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, \$2,000/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](mailto: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.

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.

## Astrogram deadlines

Please submit articles, calendar and classified advertisements to [astrogram@mail.arc.nasa.gov](mailto: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.

# Grab your helmet - May is National Bike Month!

On May 17, thousands from all over the Bay Area will put their car keys aside, grab their helmets and hop on their bicycles and ride to work. Join in and experience bicycle commuting as a healthy, cheaper and environmentally friendly way to get

to work. Events hosted by the Ames Bicycle Club in May:  
 • May 10 - The Ames Bicycle Club will host a talk by Silicon Valley Bicycle Coalition about commuting bicycle skills, from noon to 1:30 p.m., in Bldg. N245 auditorium. Learn to ride safely in traffic and on multi-use trails and learn the tips and tricks to getting to work or running errands by bike.  
 • May 17 - Stop by the Ames Bi-

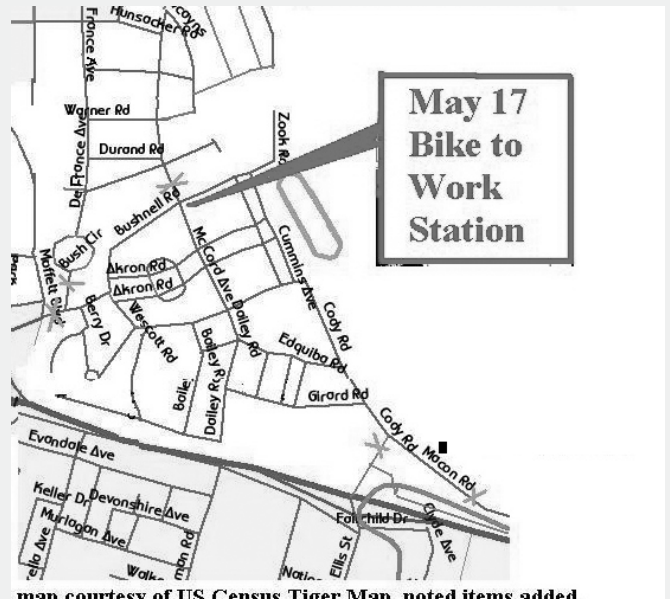


cycle Club 'energizer station,' across from Bldg. N239 guard shack, from 6:30 a.m. to 9:30 a.m. to pick up treats and gifts from local merchants.

Last year, NASA Ames research center had six teams entered in the Team Bike Challenge. The challenge encourages bicycle commuters to join their friends, colleagues and anyone else in commuting by bike during the month of May. Participants in the challenge form teams of two to five individuals who then think of a creative name for themselves, sign up and log the days they bicycle on a personalized calendar at 511.org. Teams do not have to ride together and each individual member earns a point every day he or she uses a bike for transportation purposes.

Teams around the bay compete

with each other for points to win a grand prize of a bike rack to be placed in a public space of choice.



map courtesy of US Census Tiger Map, noted items added

Each individual of the winning team member will also receives a Timbuk2 bag filled with goodies! Reduce the use of a car, hop on your bike and go! For more information, contact Julie Nottage at e-mail [jnottage@mail.arc.nasa.gov](mailto:jnottage@mail.arc.nasa.gov)



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