

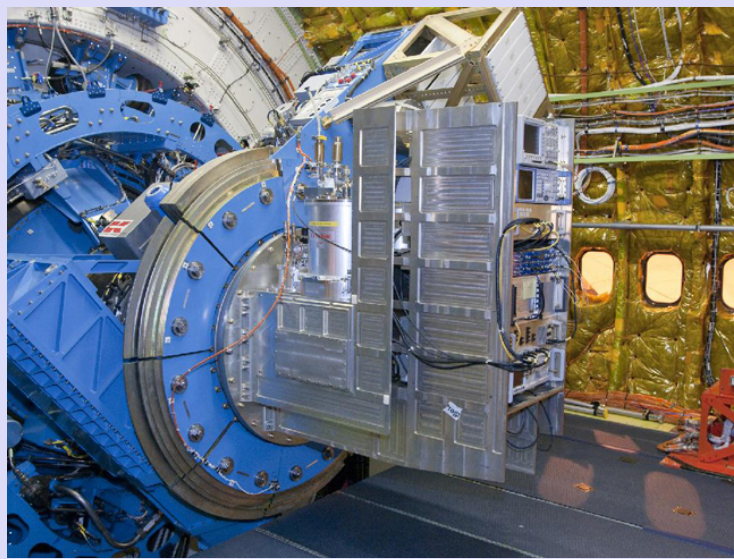
Spring 2011 - A Quarterly Publication

## SOFIA soars on first flight with German science instrument

The Stratospheric Observatory for Infrared Astronomy, SOFIA, achieved a major milestone when it conducted its first science flight using the German Receiver for Astronomy at Terahertz Frequencies (GREAT) instrument on April 6, 2011.

GREAT is a high-resolution, far-infrared spectrometer that finely divides and sorts light into component colors for detailed analysis. GREAT Principal Investigator Rolf Guesten of the Max Planck Institute for Radio Astronomy in Bonn, Germany, and his team conducted observations high above the central and western United States beginning the night of April 5.

Among their targets



*The German Receiver for Astronomy at Terahertz Frequencies spectrometer, GREAT, is mounted on the Stratospheric Observatory for Infrared Astronomy's telescope in its normal position. NASA photo by Tom Tschida*

were IC 342, a spiral galaxy located 11 million light-years from Earth in the constellation Camelopardalis ("The Giraffe"), and the Omega Nebula (known as M17), 5,000 light-years away in Sagittarius. The team captured and analyzed radiation from ionized carbon atoms and carbon monoxide molecules to probe the chemical reactions, motions of matter and flows of energy occurring in interstellar clouds. Astronomers have evidence such clouds in both IC 342 and M17 are forming numerous massive stars.

"These first spectra are the reward for the many years of work creating this

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## NASA, students celebrate 50 years of human space flight

BY RUTH DASSO MARLAIRE

Today, space exploration still inspires wonder in a new generation -- sparking passions and pursuit of the unknown. To show their support for spaceflight, more than 6,500 students recently celebrated the 50th anniversary of cosmonaut Yuri Gagarin's first human journey into space at NASA Ames.

Students attended the April 8 event from all over the San Francisco/ San Jose Bay Area. They represented 62 schools, the majority Title I schools, and ranged from elementary to high school. Numerous hands-on learning activities were available, including interactive exhibits, workshops and presentations by leading scientists, engineers and technology experts. Games included space trivia and a scavenger hunt.

Additional activities in-

cluded building and launching rockets, controlling a Mars rover replica, learning how an infrared camera works and making music in an immersive environment.

Students were given tours of real aircraft, including a high-performance, supersonic F-104 Starfighter; a medium-lift, utility H-60 Black Hawk helicopter; and a California Air National Guard C-130 Hercules four-engine turboprop.

Guest speakers included NASA Education's Deputy Administrator Jim Stofan and former astronaut Daniel Barry, who talked about his experience on the STS-105 Space Shuttle Discovery that flew to the International Space Station (ISS) in August 2001.

"It's a kick in the pants," Barry told a student audience. "We were four months late bringing supplies and equipment to the station. So they were really glad to see us."

Once an astronaut is aboard the ISS, it's all about teamwork. They work

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NASA photo by Dominic Hart



*More than 6,500 students recently participated in Yuri's Education Day at Ames.*

# NASA's Kepler mission finds Earth-size planet candidates

BY MICHAEL MEWHINNEY/RACHEL HOOVER

NASA's Kepler mission has discovered its first Earth-size planet candidates and its first candidates in the habitable zone, a region where liquid water could exist on a planet's surface. Five of the potential planets are near Earth-size and orbit in the habitable zone of smaller, cooler stars than our sun.

Candidates require follow-up observations to verify they are actual planets. Kepler also found six confirmed planets orbiting a sun-like star, Kepler-11. This is the largest group of transiting planets orbiting a single star yet discovered outside our solar system.

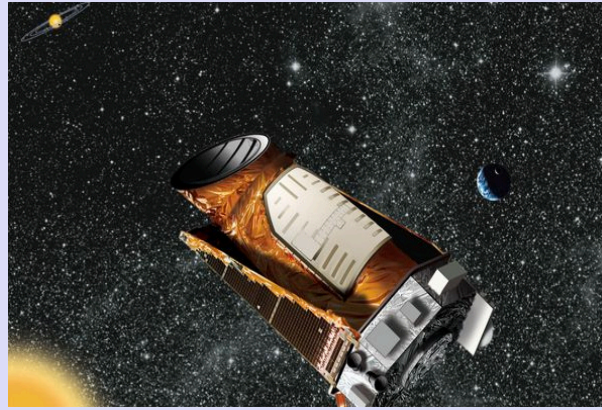
"In one generation we have gone from extraterrestrial planets being a mainstay of science fiction, to the present, where Kepler has helped turn science fiction into today's reality," said NASA Administrator Charles Bolden. "These discoveries underscore the importance of NASA's science missions, which consistently increase understanding of our place in the cosmos."

The discoveries are part of several hundred new planet candidates identified in new Kepler mission science data, released in February. The findings increase the number of planet candidates identified by Kepler to-date to 1,235. Of these, 68 are approximately Earth-size; 288 are super-Earth-size; 662 are Neptune-size; 165 are the size of Jupiter and 19 are larger than Jupiter. Of the 54 new planet candidates found in the habitable zone, five are near Earth-sized. The remaining 49 habitable zone candidates range from super-Earth size -- up to twice the size of Earth -- to larger than Jupiter.

The findings are based on the results of observations conducted May 12 to Sept. 17, 2009, of more than 156,000 stars in Kepler's field of view, which covers approximately 1/400 of the sky.

"The fact that we've found so many planet candidates in such a tiny fraction of the sky suggests there are countless planets orbiting sun-like stars in our galaxy," said William Borucki of NASA's Ames, the mission's science principal investigator. "We went from zero to 68 Earth-sized planet candidates and zero to 54 candidates in the habitable zone, some of which could have moons with liquid water."

Among the stars with planetary candidates, 170 show evidence of



Artist's rendition of the Kepler spacecraft with distant solar system. Credit: NASA/Kepler mission/Wendy Stenzel

multiple planetary candidates. Kepler-11, located approximately 2,000 light years from Earth, is the most tightly packed planetary system yet discovered. All six of its confirmed planets have orbits smaller than Venus, and five of the six have orbits

smaller than Mercury's. The only other star with more than one confirmed transiting planet is Kepler-9, which has three. The Kepler-11 findings will be published in the Feb. 3 issue of the journal Nature.

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## Ames wins awards for inventions

BY CATHY WESELBY

NASA Ames has won two agency awards: the 2010 Government Invention of the Year Award and the 2010 Commercial Invention of the Year Award.

Ames received the Government Invention Award for developing the Future ATM (Air Traffic Management) Concepts Evaluation Tool, FACET, a software that creates simulations for managing air-traffic scenarios.

"As the world's population grows and air travel demand increases, our airspace will become more crowded," said Banavar Sridhar, NASA senior scientist for Air Transportation Systems. "FACET helps air traffic management researchers find ways to increase airspace capacity and establish more efficient routes with the least impact on the environment, thereby saving fuel and minimizing emissions."

Ames won the Commercial Invention Award for developing a powder vibration system used in portable X-ray diffraction (XRD) instruments. Ames research scientist David Blake and former NASA post-doctoral fellow Philippe Sarrazin developed the technology, which was licensed to inXitu Inc. of Campbell, Calif.

"This invention changes the way people work in the field because it

allows the scientist to take the instrument to the location of the analytical problem, rather than the opposite," Blake said. "Because the technology is portable, it has diverse applications in the field, including for geology, detection of counterfeit pharmaceuticals, or analyzing art objects and antiquities."

The powder vibration system enabled the development of a miniaturized soil and rock analysis instrument Ames provided that has been accepted for flight on the Mars Science Laboratory (MSL), NASA's next mission to Mars. MSL is scheduled to launch in November 2011. The MSL mission is managed for NASA by the Jet Propulsion Laboratory, Pasadena, Calif.

Each NASA field center submits nominations for the awards, which are evaluated by NASA's Inventions and Contributions Board. The board determines which nominations qualify for each category, ranks the nominees, and makes recommendations to the NASA Office of the General Counsel for review and approval. Ames previously won the NASA Government Invention of the Year award in 2008 for a high-speed, 3-D laser scanner with real-time processing.

## The world mourns humanitarian, Nobel Prize winner Baruch Blumberg

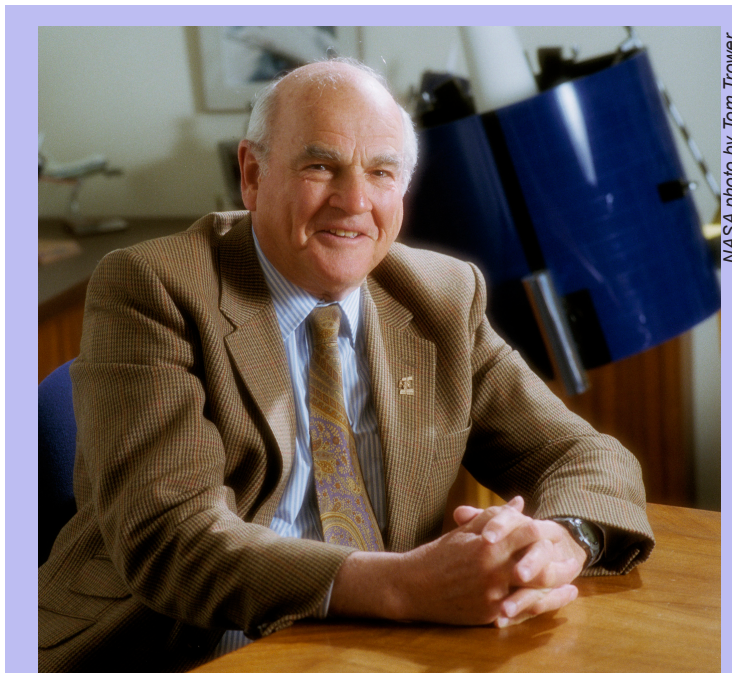
BY MICHAEL MEWHINNEY

Nobel Prize winner Dr. Baruch “Barry” Blumberg, who served as the first director of the NASA Astrobiology Institute at NASA’s Ames Research Center from 1999 to 2002, suffered an apparent heart attack while attending a conference at Ames on Tuesday, April 5. He was 85.

Blumberg is best known as the winner of the 1976 Nobel Prize in Medicine for identifying the Hepatitis B virus. He shared the Nobel Prize with D. Carleton Gajdusek for their work on the origins and spread of infectious viral diseases.

Blumberg was a featured speaker and participant at the International Lunar Research Park Exploratory Workshop being held in the NASA Ames Conference Center when he was stricken.

“Barry Blumberg was a great biochemist and re-



NASA photo by Tom Trower

Baruch Blumberg, Nobel Prize winner

searcher,” said NASA Ames Research Center Director Pete Worden. “He was a leading light in the scientific community and a great humanitarian. He also was a loyal and supportive friend to NASA, Ames Research Center and the nation’s space program.”

A native of New York, N.Y., Blumberg had been a member of the Fox Chase Cancer Center in Philadelphia since 1964 and held the rank of University Professor of Medicine and Anthropology at the University of Pennsylvania since 1977. Since 2005, he had served as president of the American Philosophical Society, the oldest learning society in the United States. He had been a member of the society since 1986.

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## Ames holds first open source software development summit

NASA hosted its first Open Source Summit at Ames March 29 and 30, 2011. The successful event brought together engineers and policy makers across NASA as well as respected members of the open source community to discuss the challenges with the existing open source policy framework.

Participants proposed modifications that would make it easier for NASA to develop, release, and use open source software. Guest speakers included Pascal Finette, director of Mozilla Labs; Dr. Robert Sutor, vice president of Open Systems at IBM; Chris Wanstrath, CEO and co-founder of Github; Brian Stevens, CTO and vice president of Worldwide Engineering at Red Hat; David Wheeler with the DoD; Linda Cureton, CIO for NASA and Terry Fong, director of NASA Ames’ Intelligent Robotics Group.

The event brought together more than 700 registered participants, with 545 of them participating online.



NASA photo by Dominic Hart

NASA’s first Open Source Summit held March 29 and 30 brought together engineers and policy makers across the agency as well as respected members of the open source community.

## NASA honors 13 Ames employees with Silver Snoopy Awards

Thirteen Ames employees, including eight from the Space Biosciences Division, recently received the prestigious 2010 Silver Snoopy award for their outstanding work and professional dedication.

Award recipients included Paula M. Dumars, David Heathcote, Louie Luzod, Karin Perkins, Nicole Rayl, Kevin Sato, Marianne Steele and Kenny Vassigh of the Space Biosciences Division; Jeremy Frank of the Intelligent Systems Division; Joseph Lavelle of the Engineering Systems Division; Donovan Mathias of the NASA Advanced Supercomputing Division; David Saunders of the Aerothermodynamics Branch; and Niki Werkheiser, also of the NASA Advanced Supercomputing Division. Astronauts Megan McArthur and Stephen Robinson presented the awards during a ceremony on April 4.

The Ames Space Biosciences Division has been studying biology in space for more than four decades, and the eight award recipients from the division have been critical to a series of successful flight experiments on the International Space Station, space shuttle and the Russian Bion/Foton spacecraft.

Luzod, an aerospace engineer, Rayl, science project manager, and Vassigh, mission operations integration manager, were honored for their outstanding work and dedication to the Human Spaceflight Program science experiments.

"We have an exceptional team at Ames, who are the world's best at conducting biological research in space. I'm very proud, but not surprised, that so many from our group are being honored," said Sid Sun, chief of the Space Biosciences Division.

Lockheed Martin contractors Paula Dumars, project scientist; David Heathcote, project operations lead; Karin Perkins, science payload logistics lead; Kevin Sato, project scientist; and Marianne Steele, project scientist were honored for their exceptional contributions to the Human Spaceflight Program. Their "can do" attitude, dedication to performing the best science possible, and flawless logistics planning and execution has ensured successful space life science experiments.

"We are proud to have so many Lockheed Martin personnel recognized for this prestigious award. It reflects the dedication and expertise these individuals bring every day to ensure mission success for Ames and

the STS and ISS programs, and we appreciate the customer's recognition of these achievements," said Sharad Bhaskaran, program manager.

Lavelle, project manager and lead engineer of the Ames Ames 3D Vision Lab, was honored for outstanding technical direction and leadership in developing the Mold Impression Laser Tool (MILT) which has significantly advanced safety inspection methodology for the space shuttle and increased human safety in space. Lavelle and his co-workers developed a set of 3D imaging instruments and systems that detect and measure flaws on the space shuttle thermal protection system.

Saunders, a contractor with ELORET Corp. and ERC, Inc., was honored for writing numerous codes to streamline the often tedious and time consuming task of running and analyzing high fidelity Computational Fluid Dynamics (CFD) simulations, thus greatly reducing the turnaround time, stress, and human errors associated with running CFD simulations. His software tools are now frequently used by the mission support team to create grids that model damages on the space shuttle; to extract surface and boundary layer properties from CFD solutions; and to automate the steps

involved in running missing heat tiles or protruding gap filler simulations.

Frank was honored in recognition of his substantial contributions to the advancement of technologies supporting human and robotic space exploration. His efforts have not only identified key technology needs, but also made great strides in developing and demonstrating those technologies in relevant operational environments.

Mathias was honored for advancing the safety, reliability, and mission success of the Human Spaceflight Program by pioneering the development and implementation of Engineering Risk Assessment (ERA). This innovative approach extends traditional risk assessment techniques to explicitly include physics of failure and simulation methods, identify key risk drivers, and provide analysis-based guidance for risk-informed design decisions. Through his exemplary dedication and leadership, he has effectively implemented these capabilities to enhance the impact of NASA's core safety efforts, and expanded NASA's recognition of the benefits of utilizing ERA to improve crew safety for future space flight programs.

Werkheiser has made a number of significant contributions to ensure the

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## Ames hosts successful Tweetup event

NASA recently hosted about 100 registered people to go "behind-the-scenes" and learn about planetary discoveries announced recently by the Kepler Mission and science flights conducted by NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) aircraft.

The event kicked off at the NASA Ames Exploration Center at 10 a.m. on Feb. 11. The Tweetup featured several speakers, including Kepler Deputy Science Team Lead Natalie Batalha, SOFIA Project Scientist Pamela Marcum and David Morrison,

director of the Carl Sagan Center for the Study of Life in the Universe.

Tweetup participants came from 19 states and six countries. More than 400 people signed up online for a Tweetup slot.



*NASA photo by Kyle Cavallaro*

## SOFIA soars on first flight with German science instrument

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technology, and underline the scientific potential of airborne far-infrared spectroscopy," Guesten said.

GREAT focused on strong far-infrared emissions from interstellar clouds that cool the clouds' interiors. The balance between heating and cooling processes regulates the temperature of the interstellar material and controls initial conditions for the formation of new stars.

"SOFIA's onboard crew seamlessly combined scientists, engineers and technicians from the U.S. and Germany, working together on an observatory developed in the U.S., using a telescope and instrument built in Germany, to gather data of great interest to the entire world's scientific community," said Bob Meyer, NASA's SOFIA program manager at the agency's Dryden Flight Research Center in Edwards, Calif.

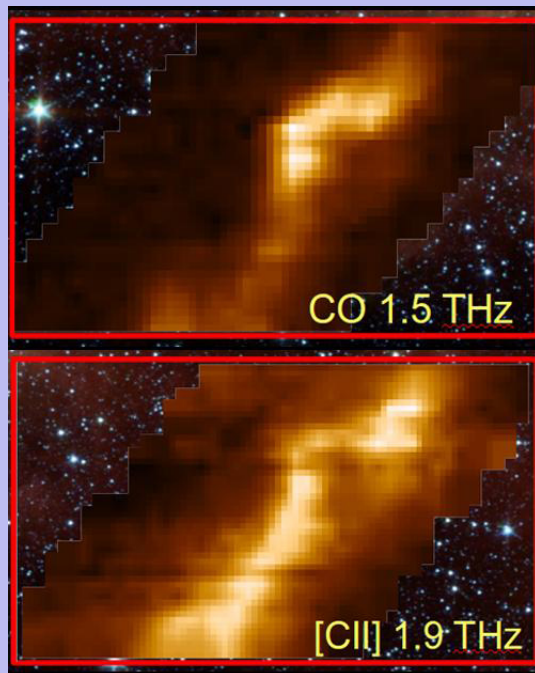
GREAT, one of two German first-generation SOFIA scientific instruments, was developed by the Max Planck Institute for Radio Astronomy and the University of Cologne in collaboration with the Max Planck Institute for Solar System Research and the DLR Institute of Planetary Research.

"This first science flight with a German instrument is a huge milestone for the SOFIA observatory," said John Gagosian, SOFIA program executive at NASA Headquarters in Washington. "GREAT, in combination with SOFIA's

other German and U.S.-developed instruments, demonstrates SOFIA's extraordinary versatility, allowing it to play a unique and essential role alongside the Spitzer and Herschel spacecraft."

SOFIA is the only operational airborne observatory. It is a joint program between NASA and the German Aerospace Center (DLR). The observatory is a heavily modified Boeing 747SP aircraft carrying a reflecting telescope with an effective diameter of 100 inches. Flying at altitudes between 39,000 and 45,000 feet, above most of the water vapor in Earth's lower atmosphere that blocks most infrared radiation from celestial sources, SOFIA conducts astronomy research not possible with ground-based telescopes.

Ames manages the SOFIA science and mission operations in cooperation with the Universities Space Research Association headquartered in Columbia, Md., and the German SOFIA Institute at the University of Stuttgart, Germany. SOFIA is based and managed at Dryden's Aircraft Operations Facility in Palmdale, Calif.



GREAT collected its first THz photons from the M173W star forming cloud April 6, 2011. Superimposed on a near-infrared false-color image measured by the Spitzer Space Telescope are selected spectra of ionized carbon (CII) and warm carbon monoxide (CO). The high spectral resolution of GREAT is used to study the velocity structure across the cloud. Photo courtesy of NASA/DLR/USRA/DSI

For more information about SOFIA, visit: <http://www.nasa.gov/sofia>

## NASA's Kepler mission finds Earth-size planet candidates

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"Kepler-11 is a remarkable system whose architecture and dynamics provide clues about its formation," said Jack Lissauer, a planetary scientist and Kepler science team member at Ames. "These six planets are mixtures of rock and gases, possibly including water. The rocky material accounts for most of the planets' mass, while the gas takes up most of their volume. By measuring the sizes and masses of the five inner planets, we determined they are among the lowest mass confirmed planets beyond our solar system."

All of the planets orbiting Kepler-11 are larger than Earth, with the largest ones being comparable in size to Uranus and Neptune. The innermost planet, Kepler-11b, is ten times closer to its star than Earth is to the sun. Moving outward, the other

planets are Kepler-11c, Kepler-11d, Kepler-11e, Kepler-11f, and the outermost planet, Kepler-11g, which is half as far from its star as Earth is from the sun.

The planets Kepler-11d, Kepler-11e and Kepler-11f have a significant amount of light gas, which indicates that they formed within a few million years of the system's formation.

"The historic milestones Kepler makes with each new discovery will determine the course of every exoplanet mission to follow," said Douglas Hudgins, Kepler program scientist at NASA Headquarters in Washington.

Kepler, a space telescope, looks for planet signatures by measuring tiny decreases in the brightness of stars caused by planets crossing in front of them. This is known as a transit.

Since transits of planets in the habitable zone of sun-like stars occur

about once a year and require three transits for verification, it is expected to take three years to locate and verify Earth-size planets orbiting sun-like stars.

The Kepler science team uses ground-based telescopes and the Spitzer Space Telescope to review observations on planetary candidates and other objects of interest the spacecraft finds. The star field that Kepler observes in the constellations Cygnus and Lyra can only be seen from ground-based observatories in spring through early fall. The data from these other observations help determine which candidates can be validated as planets.

For more information about the Kepler mission, visit: <http://www.nasa.gov/kepler>

## NASA, students celebrate 50 years of human space flight



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with other crew members and people on the ground. As part of the daily routine, they keep in shape by running on a treadmill, and do some of the most mundane things, like putting up mufflers to minimize noise, or fixing a squeaky door, he explained.

When it is time for a spacewalk, it takes about a day to get everything together. The check list has about 200 items. The food up there is pretty good, too. "When you're eating in space, you fill up quickly. I lost 8 lbs. my first flight. You learn how to live in space," he said.

Students were given the opportunity to ask questions after presentations. For Barry, questions included:

"How hard is it to move around in space?"

"It's like having super powers," said Barry.

"Where do you sleep in space?"

"Some people sleep on the ceiling," he said, pointing upward.

It was a fun-filled day for students. They were treated to ice cream and given free souvenirs of what may be one of the most memorable days of their lives.



NASA photos by Dominic Hart

Students participate in hands-on events during the recent Yuri's "Education Day" held at Ames.

## The world mourns humanitarian, Nobel Prize winner Baruch Blumberg

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Blumberg first entered the graduate program in mathematics at Columbia University, but soon switched to medicine and enrolled in Columbia's College of Physicians and Surgeons, graduating with his M.D. in 1951. He remained at Columbia Presbyterian Medical Center for the next four years, first as an intern and then as a resident. He began his graduate work at

Balliol College, Oxford, earning his Ph.D. in 1957.

"The world has lost a great man," said Daniel Goldin, who served as NASA Administrator from 1992 to 2001. "Barry saved lives through his research on the Hepatitis B virus. He also inspired a whole generation of people worldwide through his work in building the NASA Astrobiology Insti-

tute. On a personal level, he improved my life through his friendship. Our planet is an improved place as a result of Barry's few short days in residence."

For more information, visit: <http://lunarscience.arc.nasa.gov/bios/baruch-blumberg>

## Ames hosts employee all hands meeting and picnic



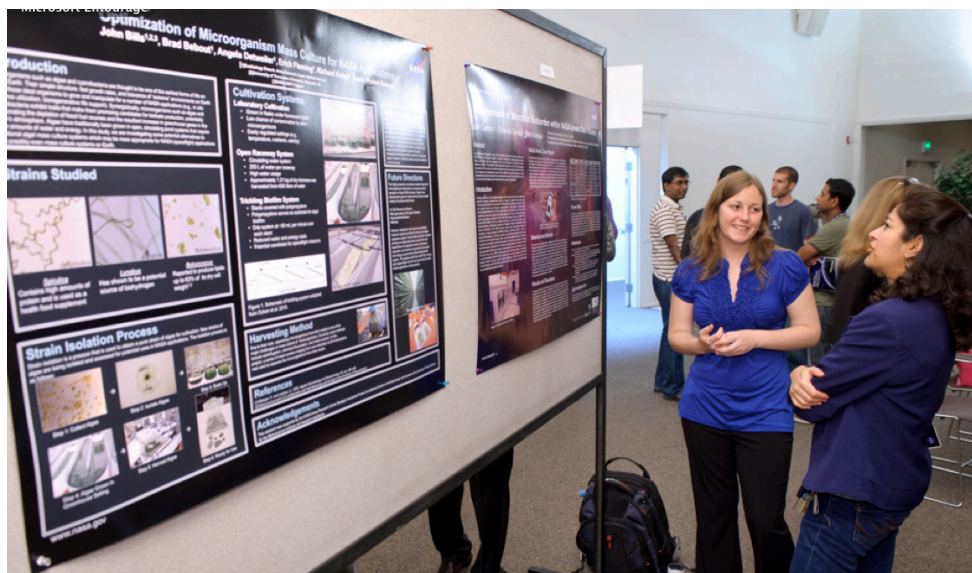
Ames Center Director Pete Worden speaking at the all hands meeting April 19 (left). Topics included: NASA's budget, mission updates, the Employee Viewpoint Survey and others. Immediately after the all hands, the Ames Exchange sponsored an employee picnic (below) at the new NACA Park (across from the Mega Bites cafeteria).



NASA photos by Dominic Hart

## Symposium showcases students' contributions to NASA

The Ames Office of Education and Public Outreach along with the Human Capital Student Programs recently invited Ames employees to the Spring 2011 Higher Education Poster Symposium. The symposium included more than 40 students from the following programs: Arab Youth Venture Foundation (AYVF), Education Associates Program (EAP), Student Career Experience Program (SCEP) and the Undergraduate Student Research Program (USRP). This was an opportunity to hear about the projects the students have been working on during the Spring of 2011, to see firsthand the excellent contributions the students have made to the NASA mission, and to show support to many of the students, who will return to their universities to complete their academic degrees.



NASA photo by Dominic Hart

## Worden marks five years as director of NASA Ames

BY JACK BOYD, WITH GLENN BUGOS

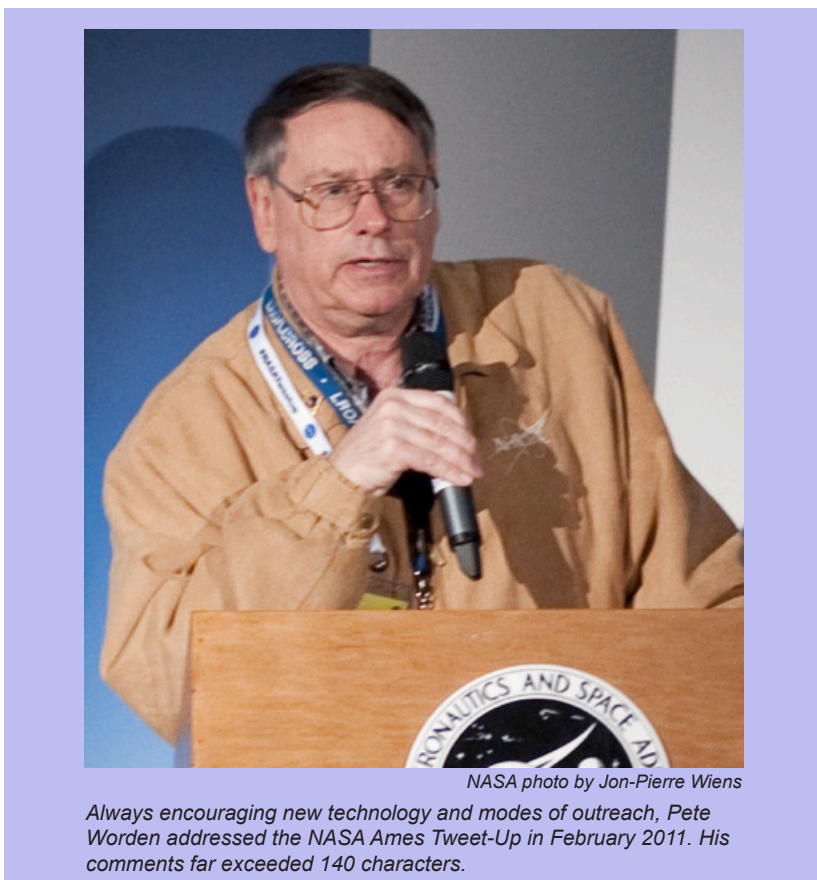
From the moment he arrived on our center as director, Pete Worden joked about how he might not last long. So it's remarkable that May 4, 2011, marks his fifth anniversary as our center director. For those who keep score of such things, he is now fifth in longevity as director. Only Smitty DeFrance, Hans Mark, Harry McDonald, and Sy Syvertson have enjoyed longer tenures to shape our center.

Pete arrived at a tough time for Ames within NASA. Full-cost recovery severely limited what centers could do. Good people left for early retirement, or did jobs beneath their abilities. Constellation sapped funding from our scientists and forced our engineers to stop looking into the far future of technology. Important programs faced cancellation -- like SSBP and SOFIA. For a few months during tough financial times, we had no permanent leadership.

I've seen center directors come and go over my seven decades with NASA Ames. Few have come with as much flourish as Pete Worden. He seemed to have the ear of Headquarters, and arrived with a simple mandate that leveraged Ames' heritage -- to excel in building small spacecraft. Since the bright days of the Pioneer program in the 1970s, Ames had enjoyed only one truly successful satellite program: Lunar Prospector.

Under Pete, Ames managed lots of missions - LCROSS, Kepler, GeneSat and PharmaSat-- and cut metal for LADEE, GEMS and IRIS. Brilliant in their conception, we built these spacecraft on time and on budget. We got back into the business of building instruments for space science. And by building a mission design center, mission operations center, and a cadre of dynamic engineers, Ames is capable now of building many more satellites rapidly in the years to come. As NASA gets back into the technology business, Ames is poised to offer radical innovations in many areas.

Small satellites remain the core of Pete's vision for Ames, but his



NASA photo by Jon-Pierre Wiens

Always encouraging new technology and modes of outreach, Pete Worden addressed the NASA Ames Tweet-Up in February 2011. His comments far exceeded 140 characters.

enthusiasm branches in so many more directions now. It may be that Ames has shaped my friend more than he has shaped the center. He recognized our latent capabilities in so many areas. Our funding is more secure and balanced, being equally funded among our traditional strengths in aeronautics, science, human spaceflight, and working with partners. We reinforced our position in the space sciences, like astrobiology and lunar science. And he encouraged the growth of new sciences, like synthetic biology, quantum technology, and the study of exoplanets. Fundamental biology is especially poised to offer breakthroughs in our settlement of the solar system.

Often disguised in silly costumes, he has personally worked to inspire the next generation of explorers, through Yuri's Night and the International Space University, and simply by hiring people with innovative ideas to work within NASA. He understood their passion for green technologies, as

with research in green aviation and with building Sustainability Base.

Pete seems to know everyone in the space world, probably because he's such a kick to work with. He made Ames a good partner, as with the research branches of the Defense Department and Department of Homeland Security, with the Federal Aviation Administration, with our Silicon Valley neighbors, with universities of varying educational missions, with nations like Russia and Germany with long-established space programs, and with nations like South Korea and Saudi Arabia new to space exploration.

Pete has positioned Ames as the 'Innovation Center,' 'Out of the Box Center,' 'Private Partnership Center,' and as the 'Center for 21st Century Collaboration.'

He suffered some setbacks; then he worked hard to restore fairness and trust. At first he flew a pirate flag, and proclaimed that Ames is run by pirates and thieves. Five years in now, he wants us to



be pirates and thieves who are also loved and respected. And we are.

And we are having fun. We have freedom to explore new ideas. He has an appreciation for our heritage, and a strong sense of what future he intends to invent. He never hesitated to explain why he was here. Ames was the launchpad from which we would start to settle the solar system.

Every few months now, Kepler has delivered a "wow" moment. By unveiling the planetary diversity around our galaxy, this little spacecraft has set an agenda for planetary science for decades to come. A constant and unexpected stream of "wow" moments, setting new agendas in many areas, is what it's been like with Pete in the office. And stay tuned; there's more to come.

Here are 55 signs of success during the past five years at Ames with Pete Worden as director:

1. May 2006: Tests of Constellation models in Unitary Plan Wind Tunnels.
2. June 2006: Ames earns engineering tasks for the Constellation Exploration Vehicle.
3. August 2006: FACET wins NASA's Software of the Year Award.
4. December 2006: Ames and Google sign a new Space Act Agreement.
5. December 2006: GeneSat launch shows small satellites deliver big microbiology.
6. March 2007: Future Flight Central simulates an entire airport before it is built.
7. April 2007: First Yuri's Night at NASA Ames displays much youthful enthusiasm.
8. May 2007: Ames hosts a major earthquake emergency response simulation.
9. June 2007: Nano Chem-Sensor successfully flies in space.
10. August 2007: Handheld scanner checks space shuttle Endeavour tiles for faults.
11. September 2007: Ikhana UAV spots fire through smoke above California wildfires.
12. September 2007: Ames collaborates on Russian Foton M3 space biology mission.
13. October 2007: Google

Moon makes NASA's planetary image archives accessible.

14. November 2007: SPEGIS experiment aboard STS-118 shows virulence of bacteria.

15. November 2007: Mission Design Center opens to engineer small satellites.

16. December 2007: Army Advanced Supercomputing Facility opens at Ames.

17. February 2008: Ames launches ARCTAS campaign to study the Arctic atmosphere.

18. April 2008: Ames starts to build Lunar Atmosphere and Dust Environment Explorer.

19. April 2008: NASA Lunar Science Institute opens its doors.

20. June 2008: Ames shares Collier Trophy for ADS-B NextGen air traffic technology.

21. August 2008: NFAC tests pressure instrumented UH-60A rotor.

22. November 2008: Green aerotourism firm Airship Ventures takes off from Moffett Field.

23. December 2008: Pleiades unveiled as third fastest supercomputer in world.

24. January 2009: NASA Astrobiology Institute selects new team members.

25. February 2009: Pete Worden named Federal Laboratory Director of the Year.

26. March 2009: University Associates announce plans to build a campus at Moffett Field.

27. May 2009: SOAREX refines our knowledge of re-entry physics.

28. May 2009: PharmaSat explores effects of antifungals on yeast in microgravity.

29. June 2009: Ames selected to develop IRIS to study the sun's chromosphere.

30. June 2009: Ames teams with Goddard to build Gravity and Extreme Magnetism SMEX.

31. June 2009: LCROSS launches to moon, on-time and on-budget.

32. July 2009: Ames hosts the International Space University summer program and the inaugural year of Singularity University.

33. August 2009: Ames earns Voluntary Protection Program STAR Certification.

34. October 2009: LCROSS

impacts the moon, revealing water and other useful minerals.

35. October 2009: Ares 1-X test relies on Ames Integrated Health Monitoring System.

36. October 2009: NASA App released and soon tops 3.8 million iPhone users.

37. November 2009: OMEGA algal biofuels project expands its testing.

38. December 2009: NASA Ames celebrates its 70th anniversary.

39. February 2010: World Wind Java wins NASA Software of the Year award.

40. February 2010: NASA Research Park partner Bloom Energy displays its fuel cell.

41. March 2010: Ames tops out Sustainability Base, a lunar outpost on Earth.

42. April 2010: Ames sends three biology experiments aboard STS-131.

43. April 2010: Ames launches the NASA Earth Exchange to share planetary data.

44. May 2010: SOFIA science team flies its first light flight.

45. June 2010: CheMin instrument passes key tests before its voyage to Mars.

46. June 2010: Navy begins cleanup of Hangar 1.

47. June 2010: Hayabusa spacecraft's fiery return is tracked to study re-entry physics.

48. July 2010: Certified and accredited Nebula cloud computing environment.

49. September 2010: NASA Ames hosts agency-wide Green Aviation Summit.

50. October 2010: Kepler Science Ops Center wins NASA Software of the Year Award.

51. November 2010: O/ORE-OS nanosatellite reaches orbit.

52. December 2010: Space X returns its Dragon capsule using PICA-X heatshield.

53. January 2011: Efficient Descent Advisor human in the loop simulation finished.

54. February 2011: At mission midpoint, Kepler team reports 700 exoplanet candidates and a six-planet system.

55. February 2011: Mouse Immunology-2 travels to the ISS via STS-133.

## “And This is Our Story,” celebrating Black History Month



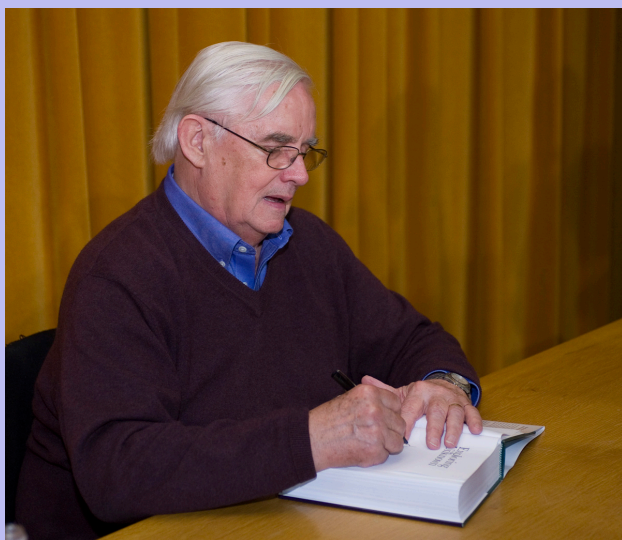
NASA photos by Kyle Cavallaro

On Feb. 16, 2011 in recognition of Black History Month, the Ames African American Advisory Group (AAAG) celebrated four extraordinary and amazing African Americans who have made an indelible mark at Ames. By way of a panel discussion moderated by Rose King, chair of the AAAG, the panel shared experiences in their quest for “diversity and inclusion.” Giving testament to the fact that our past teaches us to do better, to be better, and to treat each other better.” The program, “And This is Our Story,” ended with a poem read by AAAG member

Donald James called “Mother to Son” by Langston Hughes.  
 Panel discussion members at the Black History Month celebration were, in photo from left to right: Dr. Patricia Cowings, research psychologist, Human Systems Integration Division (Code TH) principal investigator of the Psycho physiological Research Laboratory; Dr. Melissa Kirven-Brooks Lockheed Martin Fellow, Lockheed Martin Mission Services, science project manager in Lockheed’s Space Operations and Science Programs for the NASA Astrobiology Institute;

Dr. George Cooper, research scientist, Space Science and Astrobiology Division (Code SSX) involved in research for molecular and stable isotope analysis of meteoritic organic compounds to determine their cosmochemical origins; and Ray Gilstrap, network engineer, Information Technology Directorate (Code I), who is involved in numerous projects in the area of network architecture design, next-generation spacecraft communications systems, and networking for field operations in remote desert and Arctic environments.

## Logsdon reads from “JFK and the Race to the Moon”



NASA photo by Eric James  
 John Logsdon at the recent reading and book signing at Ames

John Logsdon read from “John F. Kennedy and the Race to the Moon” (Palgrave Macmillan, 2010) on April 5, in the N201 Main Auditorium, at a book signing hosted by the Ames Exchange. This was an exciting and comprehensive history of how John F. Kennedy (JFK) and his administration shaped the United States space program over the past 45 years.

JFK, only four months in office, decided that the national interest required the United States to win the space race. His assassination ended plans to moderate the space program’s goals and explore collaboration with the Soviets.

Logsdon is professor emeritus at George Washington University and was the founding director of GWU’s Space Policy Institute. Author of the seminal study, *The Decision to Go to the Moon* (1970), he is a sought-after commentator on space issues who has appeared on all major broadcast and cable networks. He served on the Columbia Accident Investigation Board, and was recently a member of the NASA Advisory Council and remains a member of its Exploration Committee.

## Technology Partnership Division presents awards

BY DEBORAH BAZAR

NASA's extraordinary mission means that there are extraordinary people behind the scenes making it all happen. Our engineers and scientists create groundbreaking technologies and make revolutionary discoveries.

To honor the tremendous innovation, dedication, and talent of researchers at NASA Ames, the Technology Partnerships Division hosted an awards ceremony and luncheon for about 80 innovators on Jan. 26, 2011. Ames Center Director Pete Worden gave opening remarks and handed commemorative plaques to each of the attendees.

Among the achievements being honored were 18 patent awards, two Federal Laboratory Consortium Far West Region awards for Outstanding Technology Development, and the prestigious NASA Software of the Year Award—this is the third year in a row that Ames has won it!

NASA Ames is proud of our researchers, as well as all the other staff, that enable NASA to achieve its mission, and it is especially great when we have an opportunity to publicly acknowledge their great accomplishments.

Below is a list of all the people and awards that were honored at the ceremony.

Patent award recipients: 7635420 Dielectrophoresis-Based Particle Sensor Using Nanoelectrode Arrays: Jun Li, Alan M. Cassel and Prabhu U. Arumugam; 7650232 Trajectory Specification for High-Capacity Air Traffic Control: Russell A. Paielli; 7655497 Growth Method for Chalcongénide Phase-Change Nanostructures: Bin Yu, Xuhui Sun and Meyya Meyyappan; 7655145 Contaminated Water Treatment: Sherwin J Gormly and Michael T. Flynn; 7662459 Versatile Honeycomb Matrix Heat Shield: Peter T. Zell; 7672969 Context Based Configuration Management System: Yuri O. Gawdiak, Mohana M. GurramDavid A. Maluf, Luis A. Mederos; 7698274 Selective Access and Editing in a Database: David A. Maluf, Yuri O Gawdiak; 7702427 Air Traffic Management Evaluation Tool: Banavar Sridhar, Kapil Sheth, Gano Broto Chatterji, Karl D. Bilimoria, Shon R. Grabbe

7704547 Carbon Nanotube Growth Density Control: Lance D. Delzeit; 7718223 Control of Carbon Nanotube Density and Tower Height in an Array: Lance D. Delzeit; 7767270 Selective

Functionalization of Carbon Nanotubes Based Upon Distance Traveled: Bishun N. Khare, Meyya Meyyappan; 7767305 High-Efficiency Tantalum-Based Ceramic Composite Structures: David A. Stewart, Daniel B. Leiser, Robert R. DiFiore, Victor W. Katvala; 7783130 Spatial Standard Observer: Andrew B. Watson; 7784531 Nanoengineered Thermal Materials Based on Carbon Nanotube Array Composites: Jun Li, Meyya Meyyappan, Carlos Dangelo

7795388 Versatile Platform for Nanotechnology Based on Circular Permutations of Chaperonin Protein: Chad D. Paavola, Jonathan D. Trent, Suzanne L. Chan, Yi-Fen Li, Andrew R. McMillan, Hiromi Kagawa; 7796026 Communication Path for Extreme Environments, Charles C. Jorgensen, Bradley J. Betts; 7801687 Chemical Sensors Using Coated or Doped Carbon Nanotube Networks, Jing Li, Meyya Meyyappan; 7816491 Ordered Biological Nanostructures Formed from Chaperonin Polypeptides: Jonathan D. Trent, Andrew R. McMillan, Hiromi Kagawa, Chad D. Paavola

Federal Laboratory Consortium Far West Region Award for Outstanding Technology Development Multi-Aircraft

Control System: Connie Brasil, Todd Callantine, Al Globus, Jeff Homola, Rick Jacoby, George Lawton, Paul Lee, Matt Mainini, Joey Mercer, Ev Palmer, Tom Prevot, Nancy Smith, Khanh Trinh, Easter Wang, James Wong

Fully Implicit Ablation and Thermal Response Program, Version 2 (FI-ATv2): Yih-Kanq Chen, Frank Milos

2010 NASA Software of the Year Award:

Kepler Science Operations Center (SOC) Science Pipeline (Release 6.0), Christopher L. Allen, Paresh A. Bhavsar, Steve T. Bryson, Douglas A. Caldwell, Hema Chandrasekaran, Bruce D. Clarke, Miles T. Cote, Forrest Girouard, Jay Gunter, Jennifer R. Hall, Khadeejah Ibrahim, Jon Jenkins, Todd Klaus, Jie Li, Sean D. Mccaulliff, Christopher Middour, Jim Nickerson, Christopher W. Page, David Pletcher, Elisa V. Quintana, Elaine S. Santiago, Jeneen Sommers, Brian P. Stamper, Brett A. Stroozas, Peter G. Tenenbaum, Terry C. Trombly, Joseph D. Twicken, Akm Kamal Uddin, Bill Wohler, Hayley Y. Wu, Michael S. Wu

## Kepler Team celebrates successes



NASA photos by Kyle Cavallaro

On Feb. 10, the Kepler Project Team held a commemorative event in the NASA Ames Exploration Center, inviting Ames employees to join the team to commemorate Kepler's mission midpoint and celebrate its discoveries. Families of Ames employees also were invited to join the event and share in Kepler's successes.

## Linda Cureton speaks at Ames at Women's History event

Ames' Women's Influence Network (WIN) celebrated Women's History month March 30 in the Main Audi-



NASA photo by Eric James

Linda Cureton speaking at the recent Women's Influence Network (WIN) Women's History month celebration at Ames March 30.

torium. This year's theme was "Our History is Our Strength."

NASA's Chief Information Officer (CIO), Linda Cureton, was guest speaker this year. Cureton was appointed NASA CIO in September

## In memorium

Dr. Emma Lucinda Olga Bakes, was born on March 3, 1968, in Blyth, England and took great pride in her Northumberland ancestry for their refusal to conform or behave according to the Great Roman Empire and looked to Hadrian's Wall as her inheritance. She passed away on Feb. 28, 2011.

She earned her B.Sc. from the University of Newcastle Upon Tyne and earned her Ph.D. in theoretical physics from the University of London, Queen Mary and Westfield College. Emma also earned certificates of distinction from the Royal Schools of Music and a black belt in the Jeet Kune Do form of martial arts. She had a passion for art, music and writing.

Emma, inspired by her hero Carl Sagan, became an astrophysicist and moved to the USA. She visited Ames in 1989 for her dissertation and held research and teaching positions at Princeton University and Vassar College, respectively. In 1996, she relocated to the Ames where she worked until 2005. During this time, Emma held research positions with the National Research Council and the

2009. As NASA CIO, Cureton provides the leadership to transform the management of information technology (IT) services and capabilities to support and enable NASA's mission.

Prior to becoming NASA CIO, she served as the CIO of the NASA Goddard Space Flight Center (GSFC) and served in executive positions at the Department of Energy and the Depart-

ment of Justice. Cureton earned a master of science degree in applied mathematics and a post-master's advance certificate in applied mathematics from Johns Hopkins University. She also received a bachelor of science degree graduating magna cum laude with a major in mathematics and a minor in Latin from Howard University.

## Women of Ames

POEM BY ROSE KING

IN CELEBRATION OF WOMEN'S HISTORY MONTH IN MARCH

Blond, Black, Red, Brown, hues of the Earth's rainbow  
Voices soaring through barriers of sea, sky and earth  
Climbing mountains of ice and rock, gliding beneath the sea.  
Listening for the last echo,  
While giving birth to the future.

Daring to push the human condition far beyond  
The confines of the laboratory and man's attempt to tether you.  
Finding creation outside of, what was, what could be,  
Possibilities in the improbable.

Women of Ames

While you look to the future and beyond the horizon,  
I, who am earthbound, rejoice.  
I honor you for your talent, your spirit,  
And your courage to reach the sun.

Search for Extraterrestrial Intelligence Institute (SETI). Her work focused on the origins of life and resulted in several research grants, dozens of peer-reviewed journal papers and a book entitled "The Astrochemical Evolution of the Interstellar Medium." She directed a NASA space mission concept to sample Kuiper Belt objects for organics and served on numerous panels that charted the Nation's space exploration goals.

Emma's work crossed over into biology as she helped establish the new frontier known as astrobiology. This rekindled her dream of becoming a medical doctor and she entered the Stanford University School of Medicine in the fall of 2005. Despite her transition to medicine, Emma continued to provide support to her space science colleagues, and shared her passion for space science with others through her writings and public speaking appearances. All are invited and encouraged to read her recent essay celebrating the confluence of science and humanity:

<http://kepler.nasa.gov/education/sagan/EmmaBakesEssay/>



photo courtesy of SETI

Dr. Emma Lucinda Olga Bakes

Emma's legacy just as her spirit is eternal and her contributions will continue to provide each of us with endless gifts. She proved that the building blocks of life can exist throughout the heavens and this formed the foundation for many of the nation's space exploration endeavours.

A memorial service is scheduled for April 28 and an educational trust fund in the name of Emma's son Titan Dinsdale Mendoza is being established. Inquires may be sent to Donald.R.Mendoza@nasa.gov

# Ames Ongoing Monthly Events Calendar

African American Advisory Group (AAAG) Mtg., every fourth Wednesday of each month, 12 - 1 p.m., Bldg. N255 Rm 101C. POC: Chair - Jim Busby, ext. 4-2792.

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

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

Ames Bicycling Club, every third Wednesday of each month, 12 noon - 1 p.m., Bldg. N-245 Auditorium. For information on the club go to the website <https://ames.clubexpress.com>. POC: Julie Nottage at jnottage@mail.arc.nasa.gov, ext. 4-3711.

Ames Bowling League, Homestead Lanes Thursdays at 6:20 p.m. Need substitute bowlers. Sign up questions: Steve Howard at ext. 4-4884.

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

Ames Contractor Council Mtg., first Weds. of ea. month, 11 a.m., Bldg. N-200, Committee Room. POC: Elisa Taube (408) 541-2838.

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

Ames Federal Employees Union (AFEU) Mtg., third Wednesday ea. month, noon. Bldg. N-247, Rm. 109.. Guests welcome. Info at: <http://www.afeu.org>. POC: Paul K. Davis, ext. 4-5916.

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

Jetstream Toastmasters, Mondays, 12 p.m. - 1 p.m., Bldg. N-269/Rm.179. POC: Tim Steiger, ext. 4-0195, [tim.steiger@nasa.gov](mailto:tim.steiger@nasa.gov). Web: <http://jetstream.freetoasthost.com>

Ames Mac Support Group Mtg., third Tuesday of each month, 11:30 a.m. to 1 p.m., Bldg. N-262, Rm 180. POC: Tony ext. 4-0340.

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

Moffett Aikido Club, Monday and Wednesday evenings, 6:30 p.m., Bldg. 944, across from former McDonalds. Aikido is a non-competitive, defensive martial art known as the "Way of Harmony." POC: Diane Pereda (650) 575-9070 or Robert Dean (650) 787-1007, email: [mfaikido@aol.com](mailto:mfaikido@aol.com)

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

Ames Nimble Knitters Club, every Tuesday at 11:30 a.m., Bldg. N210/Rm 141. POC: Rosalyn Jung, [knitfan2@yahoo.com](mailto:knitfan2@yahoo.com) or Diane Alexander at ext. 4-3140. URL: <http://knit.arc.nasa.gov>

Ames Green Team (formerly the Green Ames Working Group) meetings are held the first Thursday of each month in N237, Room 101, from 1:30-2:30 p.m. For information, call Roger Ashbaugh, Ames Environmental Management Division, ext. 4-5602. <http://environmentalmanagement.arc.nasa.gov/reports/eo-13514.html>

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

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

## 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**

**Visitor Center Gift Shop (White Tent N-943-A, Tues-Fri, 10 a.m. to 4 p.m., Sat. - Sun, 12 - 4 p.m., ext. 4--5412**

Remember to purchase your baby shower, birthday, holiday gifts at Ames' two gift shops!

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

**Barcelona Café Bldg. 3, 6:30 a.m. to 2 p.m., ext. 4-4948/Catering ext. 4-4948**

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

**Moffett Field Golf Club with 'Tee minus 1' Grill and Sports Bar.** Catering available. Call (650) 603-8026. Extended Happy Hour Thursdays, \$5 and \$6 pitchers of beer starting at 4 p.m. to 8:30 p.m.

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

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

**NASA Lodge (N-19) 603-7100**

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

**Ames Swim Center (N-109) 603-8025**

Closed for repairs, for updates visit <http://amesexchange.arc.nasa.gov/swim/index.html>  
The pool is heated year round! The pool is currently available for lap swim, pool parties and special events. POC: Ryan Storms, Pool Manager (650) 603-8025. Memberships: single memberships: \$60/yr. Family memberships: \$80/yr. After purchasing a membership, there is an entrance fee: daily entrance fee - \$3/day or lap pass fee - \$50 for 20 uses. Platinum membership - \$380/yr. (no daily fee). Special events: include military training, swim team events, kayak role practice, etc. The cost for special events is \$75/hr, or \$50/hr for military.

Reservations for Chase Park call ext. 4-4948  
Reservations for ARC Park call ext. 4-5969

## Ames Cat Network

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

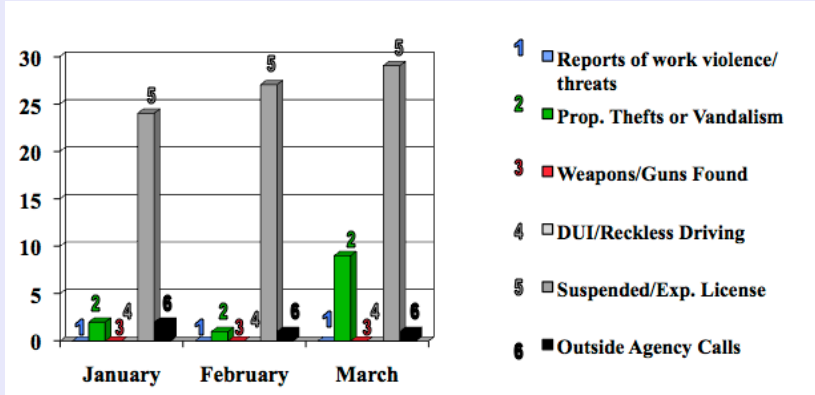
## Ames emergency announcements

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.

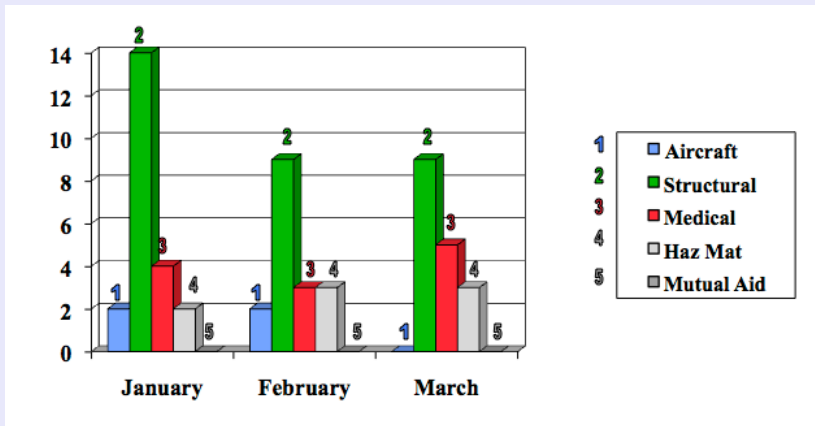
## Protective Services monthly activity

A statistical summary of activities of the Protective Services Division's Security/Law Enforcement and Fire Protection Services units for the month of March 2011 is shown below.

Security/Law Enforcement Activity



Fire Protection Activity



## Silver Snoopy

*continued from page 4*

safety and reliability of human spaceflight. As a direct result of her tireless commitment and exceptional leadership, members of the Ares Integrated Aborts Working Group (a group she established) quickly identified key abort-related issues of an Ares-based launch system.

During the awards ceremony, recipients also received a certificate and letter of commendation, personally signed by an astronaut, citing the astronauts' appreciation of their outstanding performance.

NASA's Astronaut Office awards the Silver Snoopy for outstanding performance to those employees who have significantly contributed to the space agency's goals for human exploration and development of space. The Silver Snoopy is a sterling silver pin that has flown on a shuttle mission, in the form of a Snoopy wearing a space helmet and space suit, To meet the criteria for this award, the individual's work must relate to flight safety or mission success. Job performance must be outstanding to distinguish the individual in his or her particular area of responsibility and it must make a meaningful contribution to flight safety or mission success. This coveted award has been presented to less than one percent of the NASA workforce.

National Aeronautics and Space Administration

ASTROGRAM  
Newsletter of NASA Ames Research Center, Moffett Field, California

National Aeronautics and Space Administration  
**Ames Research Center**  
**Moffett Field, CA 94035-1000**



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You can reach the Astrogram Office at: astrogram@mail.arc.nasa.gov or by phone at (650) 604-3347. Astrogram Web site: <http://www.nasa.gov/ames/astrogram>.

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