

Summer 2012 - A Quarterly Publication Huge Crowd at Ames Celebrates Historic Mars Landing



MASA photo by Eric James More than 7,000 NASA enthusiasts came to Ames to celebrate the Curiosity rover's landing.

by Rachel Hoover

A huge crowd of more than 7,000 excited space enthusiasts gathered at NASA's Ames Research Center Sunday, Aug. 5, 2012, to witness history in the making as NASA's Mars Science Laboratory spacecraft carrying the Curiosity rover embarked on a new era of Mars exploration.

Spread in lawn chairs, sleeping bags, blankets and pacing the pavement, the audience paused and held its collective breath to hear the two words they had been waiting for: "Touchdown confirmed." NASA's most ambitious planetary rover mission to the surface of the Red Planet had officially begun at 10:32 p.m. PDT. When they heard NASA engineers

When they heard NASA engineers confirm the spacecraft's successful entry and landing, the crowd went wild. "Go NASA!" exclaimed Rosalba

"Go NASA!" exclaimed Rosalba Bonaccorsi, an environmental scientist and SETI Institute principal investigacontinued on page 2

NASA Lands Car-Size Rover Beside Martian Mountain

NASA's most advanced Mars rover Curiosity has landed on the Red Planet. The one-ton rover, hanging by ropes from a rocket backpack, touched down onto Mars on Sunday Aug. 5, 2012 to end a 36-week flight and begin a two-year investigation.

The Mars Science Laboratory (MSL) spacecraft that carried Curiosity succeeded in every step of the most complex landing ever attempted on Mars, including the final severing of the bridle cords and flyaway maneuver of the rocket backpack.

"Today, the wheels of Curiosity have begun to blaze the trail for human footprints on Mars. Curiosity, the most sophisticated rover ever built, is now on the surface of the Red Planet, where it will seek to answer age-old questions about whether life ever existed on Mars -- or if the planet can sustain life in the future," said NASA Administrator Charles Bolden. "This is an amazing achievement, made possible by a team of scientists and engineers from around the world and led by the extraordinary men and women of NASA and our Jet Propulsion Labo*continued on page 2*



NASA photo by Dominic Hart

The parachute decelerator system for the Mars Science Laboratory (MSL) spacecraft underwent extensive testing at Ames in support of the design and flight-qualification of the final MSL parachute canopy design. The basic design of the canopy is called the disc-gap band parachute, dating back to the 1970s, and has been used for all NASA spacecraft planetary entries to date. The MSL parachute is the largest ever built to fly on an extraterrestrial mission.

Huge Crowd at Ames Celebrates Historic Mars Landing

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tor at Ames working with the Natural and Cultural Resources Management office of Death Valley National Park in support of a science instrument on Curiosity. "For this, it is okay to cry," she added while watching the broadcast of relieved mission controllers wipe their eyes and brace trembling lips in reaction to the fantastic news.

Moments later, the first image taken by one of the rover's cameras appeared on the giant video screens erected on the lawn – proof that Curiosity had safely landed.

"This mission marks the beginning of the next chapter in Mars exploration," said Chris McKay, senior scientist at Ames and co-investigator of two instruments on Curiosity, grinning from ear to ear and giving an enthusiastic thumbs-up as the crowd bustled and cheered around him.

Before the final moments of Curiosity's journey to Mars, visitors were treated to an opportunity to interact with Ames engineers, scientists, researchers and developers to learn about their contributions to crucial aspects of the mission. Children also could build Mars rovers out of paper, see Mars in 3D, and participate in a variety of other hands-on activities.

As the daylight began to fade, the crowd's attention turned to the live broadcast of the NASA TV feed from Mission Control at NASA's Jet Propulsion Laboratory. From then until Curiosity's landing, bursts of excited applause and nervous laughter sprinkled throughout the crowd, as jubilant mission controllers described the spacecraft's successful entry into the Martian atmosphere.

"I was impressed so many people came out to see the landing," said Ivy Deliz, a software developer at Ames, who worked on the software scientists use to plan Curiosity's tasks on Mars. "It's great to see people and specially kids interested in what I think it such an amazing, mind-boggling mission." As the NASA devotees departed,

As the NASA devotees departed, "That was so cool" and "When is the next mission to Mars?" and "I love NASA!" could be heard among the homeward bound crowd. It was quite a night and one that won't be forgotten.

NASA Lands Car-Size Rover Beside Martian Mountain

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ratory. President Obama has laid out a bold vision for sending humans to Mars in the mid-2030s, and today's landing marks a significant step toward achieving this goal."

Curiosity landed at 10:32 p.m. Aug. 5, PDT, near the foot of a mountain three miles tall and 96 miles in diameter inside Gale Crater. During a nearly two-year prime mission, the rover will investigate whether the region ever offered conditions favorable for microbial life.

"The Seven Minutes of Terror has turned into the Seven Minutes of Triumph," said NASA Associate Administrator for Science John Grunsfeld. "My immense joy in the success of this mission is matched only by overwhelming pride I feel for the women and men of the mission's team."

Curiosity returned its first view of Mars, a wide-angle scene of rocky ground near the front of the rover. More images are anticipated in the next several days as the mission blends observations of the landing site with activities to configure the rover for work and check the performance of its instruments and mechanisms.

"Our Curiosity is talking to us from the surface of Mars," said MSL Project Manager Peter Theisinger of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "The landing takes us past the most hazardous moments for this project, and begins a new and exciting mission to pursue its scientific objectives."

Confirmation of Curiosity's suc-



NASA photo by JPL-Caltech

This mosaic of the Curiosity rover is made of 20 images, each 1,024 by 1,024 pixels, taken late at night on Aug. 7, 2012 PDT (early morning Aug. 8, 2012 EDT).

nications relayed by NASA's Mars Odyssey orbiter and received by the Canberra, Australia, antenna station of NASA's Deep Space Network.

Curiosity carries 10 science instruments with a total mass 15 times as large as the science payloads on the Mars rovers Spirit and Opportunity. Some of the tools are the first of their kind on Mars, such as a laser-firing instrument for checking elemental composition of rocks from a distance. The rover will use a drill and scoop at the end of its robotic arm to gather soil and powdered samples of rock interiors, then sieve and parcel out

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tory instruments inside the rover.

To handle this science toolkit, Curiosity is twice as long and five times as heavy as Spirit or Opportunity. The Gale Crater landing site places the rover within driving distance of layers of the crater's interior mountain. Observations from orbit have identified clay and sulfate minerals in the lower layers, indicating a wet history.

The mission is managed by JPL for NASA's Science Mission Directorate in Washington. The rover was designed, developed and assembled at JPL.

Ames Public Affairs Summer Intern Shares Her Experience

BY DEENA KHATTAB In the eight weeks I spent as a Public Affairs Intern, I have come to one very simple conclusion: Ames' Public Affairs Office is really, really cool. In honor of this whirlwind of a summer at Ames, I thought I would share some of the



special moments that made the NASA communications geek inside of me squeal with delight (in no particular order).

1. When nasaimages.org froze. As I spent a considerable amount of time extracting historic images from our archives and uploading them onto Flickr, I ran into this screen numerous times. Instead of being frustrated with technology (which typically occurs whenever a website freezes on me), I was filled with joy that NASA Images generate enough viewers to overload the server. (In other words, we are popular!)

2. Becoming NASA Ames: When I became NASA Ames Research Center. Okay, so I did not actually "become" the center, but I was appointed as a web administrator for the center's Facebook page. This was especially cool because when I went onto the page, my Facebook interface had a thin blue banner across the top that read, "You are now posting, commenting, and liking as NASA Ames Research Center." Thus, I virtually stopped being Deena and became NASA Ames instead, which might be the most exciting thing ever to happen to me on the Internet.

3. **Going Viral**: When I discovered that one of the NASA Flickr images I had uploaded went viral on Reddit. For those who do not spend all of their free time on the Internet, Reddit is a website where users can "upvote" and "downvote" Internet content based on how stimulating they find it. Needless to say, when I discovered that an image I had uploaded to Flickr of "human computers" (female workers that crunched data numbers) at NASA Langley Research Center in the 1940s had gone viral, I freaked out. The image had made it to the top of Reddit's History page, based on



the vast amount of people that had "upvoted"(liked) it. I was amazed that a single image taken more than 70 years ago that had sat in the images archive unnoticed for ages, suddenly was becoming popular, reminding people of NASA's rich history.

4. Best Photo Ever: When I uploaded onto Flickr what is possibly the most beautiful space image anyone has ever seen. I realize that everyone at the agency has his or her preferences, but when I stumbled upon the image in the archive, my jaw dropped. This photograph from Apollo 16, taken on April 21, 1971, has the perfect positioning of Astronaut Charles Duke, Jr., beside a moon crater with a parked Lunar Roving Vehicle in the background. Everything about this photo – the depth of shadows in the crater; the lens flare that creates a multitude of tiny rainbows on the left side; the subtle crosshairs from the camera's reseau plate; the golden reflection on Duke's helmet; and the distinct bootprints in the foreground – make this the most visually appealing photograph I have ever seen. (The 150-plus Flickr users that have added this image to their favorites agree with me.)

5. **The Economist**: When an editor from The Economist came to Ames. While I actually had no part in the aforementioned editor's visit and have met plenty of NBC, CBS, and local newspaper reporters in the past few weeks that are quite impressive, the fact that someone from what is – in my opinion – one of the best news magazines in the world, visited Ames

made me star struck. It also is exciting, because The Economist's lack of bylines makes its staff seem anonymous and elusive. Thus, a visit from one of the editors feels to me almost as rare as finding life on Mars.

VASA photo

6. **Curiosity on Mars**: When Curiosity landed on Mars, and one out of the 7,000 people gathered on the lawn started quietly singing "This Land Is Your Land." This one is self-explanatory. Because something actually landed on Mars during my internship, I now can truthfully say that I have had the ultimate "NASA experience." During my summer internship at Ames, I got to witness one of NASA's greatest successes in space exploration.

7. Wearing a Flight Suit: When I wore a NASA flight suit. On the penultimate day of my internship, there was a blue flight suit innocently bundled up on a chair in our office, and it just happened to be my size. Of course, I did what any other space enthusiast would do. I immediately donned it while I continued doing my normal work.

All in all, it has been quite an eventful eight weeks and these quality experiences have been added to my list of significant life moments. I have gleaned so much knowledge of the way communications works at the center, and cannot wait to apply my new skills in the future.

Editor's Note: Deena Khattab plans to attend the University of Southern California this fall with a double major in journalism and history.

Social media enthusiasts share excitement of Curiosity

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On Aug. 3, 2012, 24 of NASA Ames' social media followers joined Ames scientists, engineers, leadership and public affairs hosts in real life for a "NASA Social" focused on Ames' contributions to the Mars Science Laboratory (MSL) Curiosity. Throughout the day, participants posted to Twitter, Facebook, Google+, Instagram, and more to share their experiences with hundreds of thousands of people in their combined social networks

> All photos by NASA / Eric James

George Raiche explains the inner workings of the Arc Jet facilities, which tested elements of MSL's heat shield.





NASA Social participants share their introduction to Ames' air traffic management research in Future Flight Central before witnessing the unveiling of a new Mars panorama.

Kepler Mission Deputy Science Team Lead Natalie Batalha discusses the Kepler mission



Brad Bebout hosts followers in his Mars research lab studying methane production.



The keynote event of the Curiosity-themed day was a tour by David Blake, principal investigator of the Chemical and Mineralogy (CheMin) instrument on MSL. Blake shared the basics of CheMin and demonstrated its technology.

Ames community celebrates successful Curiosity landing



As JPL celebrates the successful Curiosity landing, NASA enthusiasts at Ames join the celebration of the historic moment.



Ames scientist Chris McKay enjoys the chance to talk with the public.



Scientists at NASA Ames made major contributions to MSL.



Ames scientists love what they do and sharing their enthusiasm with the public.



NASA photo by Eric James

The NASA enthusiasts who came to the landing event showed an active interest in learning more about MSL and Ames' involvement with this mission.

NASA Ames Researcher Receives Presidential Award



Jessica Koehne recently received the 2011 Presidential Early Career Award for Scientists and Engineers.

BY JESSICA CULLER

President Obama has named Ames researcher Jessica Koehne of Code TSS as a recipient of the 2011 Presidential Early Career Award for Scientists and Engineers (PECASE). NASA recipients and 90 other federal researchers will receive their awards in a ceremony scheduled in Washington.

NASA photo by Dominic Hart

The PECASE awards represent the highest honor bestowed by the federal government on scientists and engineers beginning their independent careers. The award recognizes recipients' exceptional potential for leadership at the frontiers of scientific knowledge, and their commitment to community service as demonstrated through professional leadership, education or community outreach.

"These talented individuals have already made significant contributions to the agency's mission at this early stage in their careers," said NASA Chief Scientist Waleed Abdalati. "We look forward to celebrating their continued success for many years to come."

The 2011 NASA recipients were nominated by the agency's Science Mission Directorate, Office of the Chief Engineer, and Office of the Chief Technologist. Koehne was recognized for "exceptional dedication to the development of nano-bio sensing systems for NASA mission needs."

The PECASE awards were created to foster innovative developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of participating agencies, enhance connections between fundamental research and many of the grand challenges facing the nation, and highlight the importance of science and technology for America's future. Eleven federal departments and agencies nominated scientists and engineers for the 2011 PECASE awards.

Ames Co-Winner of the 2012 NASA Software of the Year

The NASA Inventions and Contribution Board has selected the NASA App from Ames Research Center as a co-winner of the 2012 NASA Software of the Year award sponsored by the Chief Engineer, the Chief of Safety and Mission Assurance and the Chief Information Officer.

"I am absolutely delighted that the NASA App team has been honored with this prestigious award. As a center, we have enjoyed great success in previous NASA Software of the Year competitions; this award adds to our proud legacy," said Ames Center Director Pete Worden.

Former Ames winners include: Incompressible Navier-Stokes Flow Solver in Three Dimensions (INS3D) (1994), Flow Analysis SoftwareToolkit (FAST) (1995), Center TRACON Automation System (1998), Remote Agent (with JPL, 1999), Cart3D (2002), Future Air Traffic Management Concepts Evaluation Tool (FACET) (2006), Data Parallel Line Relaxation Code (DPLR) (2007), World Wind Java (2009), and Kepler Science Operations Center (SOC) (2010).

The Ames NASA App team includes Jerry Colen, program manager, John Freitas, software engineer, and Charles Du, a former new media specialist who left NASA in 2009.

The NASA App invites the public to discover a wealth of NASA's best and most highly requested content on various mobile platforms i.e. iPhone, iPod touch, iPad, Android phones and tablets. The NASA App supports all the agency's programs, projects and missions by allowing users to gain a better understanding and appreciation of NASA's science, technology and engineering discoveries.

The application uses a collection of backend scripts and servers to gather and aggregate NASA's online content and breaking news from thousands of non-mobile web pages, image databases, video collections, news and image feeds, Twitter accounts, etc.

As the content is gathered and

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aggregated, it is optimized, formatted and then delivered in a very fast, engaging, well-organized and intuitive application. The NASA App makes extensive use of the built-in hardware, features and usability of each of the mobile devices it supports to offer very compelling yet concise information in a clear and easy way. With the integrated social media features (such as Facebook and Twitter), the NASA App makes sharing content easy to further inform, inspire, engage, and excite the public.

The NASA App currently has over 8.7 million user installs. It has received glowing reviews from CNN, Gizmodo, CNET, Macworld, Wired and The Register. Back-end web server traffic has also been astonishing, with a current 2 million hits per day average and peaks of over 8 million.

The NASA App shares the 2012 NASA Software of the Year Award with co-winner QuakeSim 2.0 from NASA's Jet Propulsion Laboratory (JPL).

France Honors Former Ames Test Pilot George Cooper

by April Gage

During a small ceremony held in the French Consulate in San Francisco, Consul General Romain Serman recently presented France's highest honor to George Cooper, former head of Ames flight operations and chief test and research pilot.

As reported in the San Jose Mercury news, the French Consul General commended Cooper, along with two other World War II veterans, for their "courage, selflessness and dedication" helping to "defend and preserve the independence of France and our common values" as he pinned the prestigious Legion of Honor medal to Cooper's chest.

Cooper received the commendation for his performance as a U.S. Army Air Force fighter pilot during World War II, when he flew a P-47 Thunderbolt on 81 missions with the 412th Fighter Squadron.

Deployed first to England, then in France and Belgium, Cooper supported the advance of Allied forces in 1944 and 1945 by attacking the German ground transportation system.

Cooper's strafing sorties required him to fly the P-47 low to the ground while firing a machine gun at targets such as roads, railways, aircraft, land, and water vehicles, as well as fuel stockpiles. Routinely deployed to conduct these highly dangerous ground attack missions and not "top cover" where fighter pilots were likely to engage in air-to-air combat, Cooper encountered German enemy aircraft just three times but managed to shoot down four of them, coming one plane shy of becoming an ace.



Photo by National Adivisory Committee for Aeronautics (NACA)

Though several of his colleagues were downed, Cooper, and his aircraft, made it through the war without a scratch.

Prior to his military service, Cooper studied engineering at University of California at Berkeley, focusing on mining engineering and working in California gold mines during summer breaks.

While at Cal, he met and married classmate Louise Garrod, and joined the U.S. Army's Reserve Officers' Training Corps to earn extra money, not anticipating the war and his subsequent call to active duty.

After the attack on Pearl Harbor, Cooper completed flight school and earned a pilot degree, then served as a flight instructor in the Southeast Training Command before being posted with the Ninth U.S. Army Air Force. By March 1945, he was eligible to leave the front and returned home to the Saratoga foothills and his wife Louise.

In 1945, Cooper was hired as a test pilot at Ames (then known as the Ames Aeronautical Laboratory of the National Advisory Committee for Aeronautics), where he further distinguished himself as an exceptional aviator and research engineer. At Ames from 1945 until his retirement in 1973, Cooper tested more than 135 aircraft (including 41 kinds of aircraft carrier planes), routinely pushing them straight down into hazardous highspeed maximum dives during test trials. Flight testing can be fatal but, just as he did in wartime, Cooper survived his test flights without a scratch (though he did have to crash-land a malfunctioning Douglas SB2D into a local prune orchard, to the decided detriment of several trees and the aircraft.)

The intrepid pilot's death-defying testing of aircraft designs was only part of his contribution to flight research. Cooper helped develop ways for pilots to contribute to the flight research and design process with greater safety and reliability by using, for example, simulators and other mechanisms for translating human experience and expertise into useful data. One of the best-known examples of his many efforts in this area is Cooper's Pilot Opinion Rating Scale, a standardized methodology he developed for test pilots to effectively formulate observations about aircraft handling characteristics. The system, later adjusted in collaboration with Robert Harper and renamed the Cooper-Harper Handling Qualities Rating Scale, remains in use as an international standard.

Jack Boyd and Hans Mark Converse as 'Masters of NASA'

BY GLENN BUGOS

Jack Boyd and Hans Mark share a friendship dating back to 1969, when Boyd got a request from the Administrator to give Mark a tour of NASA Ames as he was being courted to be its third center director. Over many decades, the two men helped shaped NASA, honed each other's perspective on NASA culture, and forged a friendship. Today their advice is still actively sought. Boyd serves as a historian and senior advisor to the center director and Mark as a professor at the University of Texas Austin.

For an hour on Aug. 13, 2012 they captivated a crowded auditorium with

tales of battles fought, as with developing tilt rotor aircraft and massively parallel supercomputers, and of giving a vision to the agency. Both men are known fondly as exceptional mentors of NASA leadership, and many questions revolved around how young people can best grow as leaders of NASA. Boyd recalled his own mentors helping him discover what their younger colleagues are most passionate about, then helped them pursue their goals.

NASA's Academy of Program/ Project and Engineering Leadership (APPEL) developed Masters with Masters as interviews which pair expert practitioners to share insights, stories,

lessons learned and best practices. Lewis Peach, formerly of NASA Ames, helped organize the event, and Ames employees generated lots of good questions. Links to the video of the event are at: http://appel.nasa.gov

Edward J. Hoffman, director of APPEL and the interviewer, recalled his first meeting with Mark at a reception for students interning at NASA. Hoffman was pursuing his doctorate in organizational psychology and Mark asked him, jovially, "Why are you here?" It was a question they continued to explore during the evening, and one Hoffman says a question everyone should revisit often.

Students Shine at Ames 2012 Summer Poster Symposium

by Alexander Nichol

The Office of Education and Public Outreach presented the 2012 Summer Higher Education Poster Symposium Aug. 8, 2012 in Shenandoah Plaza.

The event coincided with the Ames Exchange staff BBQ and the Office of Diversity and Equal Opportunity Diversity and Inclusion Day events. This year's symposium was the biggest on record, featuring a total of 203 posters from individual interns and research groups. The Poster Symposium was attended by an estimated 987 members of the Ames community, who had the opportunity to learn first-hand about the work that our interns conducted over the past ten weeks.

Included in the presentations were groups from the joint Environmental Protection Agency/NASA internship program, the Tribal Colleges and Universities program, the DEVELOP program, the NASA Academy for Space Exploration, and the Ames Aeronautics Academy. The event was preceded by a Career Fair, featuring representatives from NASA partners such as Jacobs Technology, Greene R&D, Lockheed Martin, and Intrynsx, who spoke with students about career opportunities.

This year's event was an improvement over last year's, in terms of scale and accessibility. The tent was wider and featured fans to help keep the inside temperature manageable. The event was attended by many members of Ames' upper management, includ-



NASA photo by Dominic Hart

Ames Center Director Pete Worden listens to a student discuss what he accomplished during his internship.

ing branch chiefs, division heads, and Center Director Pete Worden. The interns assembled outside the tent mid-symposium to take a photo with Dr. Worden and Deputy Center Director Lewis Braxton III. All in all, the event was a huge success, and we look forward to a repeat in 2013.

Ames Hosts Second Annual Diversity and Inclusion Day



NASA photo by Dominic Hart

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Colorful costumes highlighted Ames' second annual Diversity and Inclusion Day.

by Derek Love

On Aug 8, 2012, the Office of Diversity and Equal Opportunity (ODEO) invited the NASA workforce and the community to participate in the second Annual Diversity and Inclusion Day. This event's theme focused on the diverse Ames workforce.

At 9 am, Ames Center Director Pete Worden provided the opening remarks to kick off the first activity, the Student/Veteran Intern "Speak Out" panel discussion. Panelists included a group of diverse members of Ames' past and present internship programs. Each member brought different perspectives and experiences to the discussion. The members included Joy Pierre, a former co-op intern, who is deputy director of the Human Capital Directorate, Jendai Robinson a Space Grant program intern, and

Planetary Scientists Celebrate Pasts Successes, Bright Future

BY KAREN JENVEY AND TEAGUE SODERMAN

On July 17-19,2012, more than 300 lunar enthusiasts came to Ames Research Center to collaborate on moon research and plan for the NASA Lunar Science Institute's future. The NASA Lunar Science forum, which is sponsored by NLSI, demonstrates the current renaissance in studies of our moon.

In recent years, the amount of data available to scientists has skyrocketed. Five U.S. spacecraft are currently studying the moon, plus several others completed their missions in recent years. With the new data available, discoveries and advancements are plentiful.

"The NLSI catalyzes collaborative research within and among its seven teams, but also strives to include and support the broader lunar science community in a variety of ways," said Yvonne Pendleton, director of the NLSI.

In his summary review of the conference, planetary scientist David Kring of NLSI's Lunar and Planetary Institute team in Houston said "We have made more progress in three years with the NLSI than was made in the previous 30 years of lunar studies, but a lot of questions remain unanswered that require a return to the lunar surface, using both robot and human explorers."

In addition to discussing science results, the forum attendees focused their attention on the future. NASA



NASA photo by Dominic Hart

More than 800 people (500 people in-person and 300 people virtually) attended the 2012 NASA Lunar Science Forum.

officials praised the performance of the current NLSI and announced an expansion of the charter to allow additional emphasis on research that will support both science and exploration.

In NASA organizational terms, this means a closer alliance between the NASA Science Mission Directorate (SMD) and the NASA Human Exploration and Operations Directorate (HEOMD). The joint presentation at the forum by NASA Associate Administrators John Grunsfeld (SMD) and William Gerstenmaier (HEOMD) outlined their rationale for the expansion of the Institute, providing insight into the new era of enhanced collaboration between science and exploration.

One of the greatest accomplishments of NLSI has been a resurgence of young scientists into lunar studies. The NLSI sponsors informal organizations of both graduate students and of young professionals beginning their careers in lunar science.

At the forum, NASA representatives stressed that we need researchers who are passionate about understanding our neighbor the moon, and who want to improve our understanding of our own planet.

Ames Hosts Second Annual Diversity and Inclusion Day

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military veterans Steven Mayo, David Franklin, and Raquel Espinoza with the "Growth Sector" intern program. Shelia Johnson, Ames Community Relations Coordinator, was the panel moderator.

During the discussions, the panelists provided information about their internship experiences at Ames; and shared personal stories related to diversity and inclusion. They also relayed positive feedback for future interns and mentors during the question and answer session.

The final activity was the "Culture Passport" journey that took place on Shenandoah Plaza. The event consisted of employees and others from the Ames workforce and the community who designed and hosted a cultural exhibit. Each exhibit contained items such as artifacts,



NASA photo by Dominic Hart

Ames Deputy Center Director Lewis Braxton III gave a certificate of appreciation to Jendai Robinson for her participation in student intern "SPEAK OUT" presentation.

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cultural wear, art, costumes, informational documents and literature that showcased their individual culture or interest. Visitors began their journey receiving a "Culture Passport." The participants stopped at each exhibit to learn interesting facts, such as common points of interest and how the exhibitor's background influenced the many facets of their life. Participants also recorded their observations in their passport and received a journey stamp from the exhibitor which acknowledged their visit. During the journey, participants experienced each cultural exhibit, were enriched with knowledge about diversity, and garnered the appreciation for the cultural qualities in others.

The objective of this event was to learn to leverage our differences and similarities in order to optimize the value that all of us bring to NASA.

NASA Collaborative Environment to Advance Earth Science



First application of NEX: global vegetation density estimates shown at 30-meter resolution (nearly 340 billion pixels) from Landsat satellite data.

BY RUTH MARLAIRE

NASA soon will open a new chapter of discovery using enhanced Landsat Earth-observing data in a state-of-the-art, high-performance computing and data access environment called NASA Earth Exchange (NEX). It is a virtual laboratory that will allow scientists to tackle Earth science challenges with global, high-resolution satellite observations.

After extensive development and testing, NASA is making NEX available to the research community for further research and development. With the agency's state-of-the-art Pleiades supercomputer, located at the NASA Advanced Supercomputing facility at Ames, researchers can use NEX to explore and analyze large Earth science data sets in hours, rather than months. Scientists can produce complex, interdisciplinary studies of world phenomena and share their findings instantly on the NEX platform.

"Because of the large volume of high-resolution Landsat data, scientists who wanted to study the planet as a whole prior to NEX needed to invest tremendous amounts of time and effort to develop high-end computational methods rather than focus on important scientific problems," said Tsengdar Lee, high-end computing program manager at NASA Headquarters in Washington. "NEX greatly simplifies researchers' access to and analysis of high-resolution data like Landsat."

This new environment boasts a large collection of global data sets and analysis tools from NASA and other agencies, including surface weather records, topography, soils, land cover and global climate simulations. Using NEX, scientists now can fit Landsat scenes together like a giant jigsaw puzzle to create snapshots of global vegetation patterns containing more than a half-trillion pixels in less than 10 hours. These global vegetation products, referred to as the Normalized Difference Vegetation Index, complement the more standard products from the Moderate Resolution Imaging Spectroradiometer on NASA's Aqua satellite, but with 10 times higher resolution.

"The science community is under increasing pressure not only to study recent and projected changes in climate that likely impact our global environment and natural resources, but also to design solutions to mitigate, or cope, with the likely impacts," said Ramakrishna Nemani, a senior Earth scientist at Ames. "We want to change the research paradigm by bringing large data holdings and supercomputing capabilities together, so researchers have everything they need in one place."

Developed by a team at Ames, NEX combines Earth-system modeling, remote-sensing data from NASA and other agencies, and a scientific social networking platform to deliver a complete research environment. Users can explore and analyze large Earth

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science data sets, run and share modeling algorithms, collaborate on new or existing projects and exchange workflows and results within and among other science communities.

Scientists believe costs and time associated with research development may be reduced significantly by allowing NEX members to collaborate instantly in this type of large-scale supercomputing work environment. For example, NEX may relieve researchers from redundantly retrieving and integrating data sets and building modeling analysis codes.

NEX uses Landsat data, which constitutes a large collection of images collected over 40 years by a series of satellite sensors. The enhanced collection of Landsat data gives scientists the opportunity to study and understand changes on a planetary scale, looking at one-guarter acre at a time.

NASA, in cooperation with the Interior Department and its science agency, the U.S. Geological Survey, launched the first Landsat satellite in 1972. The resulting 40-year archive of Earth observations from the Landsat fleet supports the improvement of human and environmental health, biodiversity, energy and water management, urban planning, disaster recovery and crop monitoring. The Landsat program is jointly managed by NASA and the Interior Department.

Ames Ongoing Monthly Events Calendar

African American Advisory Group (AAAG) Mtg., last Tuesday of each month, 12 - 1 p.m., Bldg. N255 Rm 101C. POC: Rose King, ext. 4-3442.

Moffett Aikido Club, Monday and Wednesday evenings, 6:30 p.m., Bldg. 944. 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

Ames Amateur Radio Club, third Thurs., of ea. month, 12 noon, N-T28 (across from N-255). POC: George Tucker, at ext. 4-2200.

Ames Bluegrass Club, every Tuesday from 11:30 a.m. to 1 p.m. in Bldg. 944. Players of all instruments and all levels are welcome, but we are particularly interested in experienced players willing to help improve the group's musical skills. POC: Bob Haberle at ext: 4-5494 or email: robert.m.haberle@nasa.gov

Ames Bocce Ball Club, Ames' newest Exchange-sponsored club is seeking members. POC: Mike Lindsay email: michael.c.lindsay@ nasa.gov

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

Ames Contractor Council Mtg., first Weds. of ea. month, 11 a.m., Bldg. N-200, Committee Room. POC: Herb Finger at ext. 4-6598.

Ames Federal Employees Union (AFEU) Mtg, third Wednesday ea. month, noon. Bldg. N-204, Rm. 101. Guests welcome. Check for occoasional schedule changes at: http://www. afeu.org. POC: Paul K. Davis, ext. 4-5916.

Ames Golf Club, Members will have the opportunity to play about 13 tournaments per year at a variety of 18-hole golf courses in the Bay and Monterey Area. POC: Barry Sullivan: Barry.T.Sullivan@nasa.gov. Ames Green Team (formerly the Green Ames Working Group) meetings are held the first Tuesday of each month in N237, Room 101, from 10:00-11:00 a.m. For information, call Roger Ashbaugh, Ames Environmental Management Division, ext. 4-5660. http://environmentalmanagement.arc.nasa. gov/reports/eo-13514.html

The Hispanic Advisory Committee for Excellence (HACE) Mtg., first Thursday of each month, 11:30 a.m. - 12:30 p.m., Bldg. N-255, Rm. 101C. POC: Jeanette Zamora, jeanette.zamora-ortega-1@nasa.gov.

Ames Jazz Band Club, Bldg. 944, 5:30 p.m. - 7 p.m., POC: Ralph Bach, email: ralph.e.bach@nasa.gov

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

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

Ames Roller Hockey Club, meets daily from noon to 1 p.m. at rink on north end of the 80foot-by-120-foot wind tunnel, Playsers should have experience skating and wear protective equipment.

Ames Safety Committee, third Thursday of each month, 10 a.m. - 11 a.m., Bldg. N-237, Rm. 200. POC: John Livacich, jlivacich@ mail.arc.nasa.gov, ext. 4-3243.

Women's Influence Network (WIN), first Wednesday of each month, Bldg. 241 room 237, 11:30 - 12:30 p.m., POC: Elena Serna, elena.serna@nasa.gov

Exchange Information

Information about products, services and opportunities provided to the employee and contractor community by the Ames Exchange Council. Visit the web site at: http://exchange.arc.nasa.gov

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

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

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.

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.

Protective Services monthly activity

A statistical summary of activities of the Protective Service Division's Security / Law Enforcement and Fire Protection Services units for the month of July 2012 is shown below.

Security / Law Enforcement Activity



Fire Protection Activity







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



NASA photo by Lee Jones

In February 1964, Armstrong climbing out of the cockpit of an airplane at Ames with Hangar One in the background.

Neil Armstrong, the first man to walk on the moon during the 1969 Apollo 11 mission, died on Aug. 25, 2012, following complications resulting from cardiovascular procedures. He was 82.

Armstrong's words "That is one small step for (a) man, one giant leap for mankind," spoken on July 20, 1969, as he became the first person ever to step onto another planetary body, instantly became a part of history.

"Neil Armstrong was a hero not just of his time but of all time," President Barack Obama said via Twitter. "Thank you, Neil, for showing us the power of one small step."

"Neil was not only a friend, but a superb NACA research pilot, a quiet and incredibly competent NASA astronaut, and a person who enhanced all of our lives. He can never be replaced," said Jack Boyd, NASA Ames senior advisor for history.

Armstrong is survived by his wife, two sons, a stepson, a stepdaughter, 10 grandchildren, and a brother and a sister.



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