

Ames' scientists propose new theory of Earth's early evolution

Two teams of Ames' scientists recently proposed a new explanation for the rise of oxygen in Earth's early atmosphere -- an event that may have jumpstarted the evolution of complex life.

The idea is suggested in two research papers that both address how the Earth got its oxygen-rich atmosphere. One uses theoretical models and the other measurements of 'microbial mats,' communities of microorganisms similar to those found on early Earth. The papers are entitled: "The Role of Microbial Mats in the Production of Reduced Gases on Early Earth," by Tori Hoehler, et al., and "Biogenic Methane, Hydrogen Escape, and the Irreversible Oxidation of Early Earth," by David Catling, et al. They were published in the July 19 issue of *Nature* and the Aug. 3 issue of *Science*, respectively.

Catling's team argues that oxygen increased in Earth's atmosphere more than 2 billion years ago because hydrogen atoms from water hitched a one-way ride into space inside methane gas produced by primitive microbes. This irreversible loss of hydrogen, they say, left behind an excess of oxygen, which gradually filled the Earth's crust and then flooded Earth's atmosphere.

"Without oxygen, the most sophisticated life on Earth would have been green microbial scum," said Catling. "Fortunately, some bacteria in the early oceans were able to separate water into hydrogen and oxygen. The hydrogen was lost to space, leaving the oxygen behind."

Before 2.4 billion to 2.2 billion years ago, the Earth's atmosphere contained almost no oxygen and could support only single-celled forms of life. The first complicated cells, like the ones that make up today's plants and animals, appear in 2.1 billion-year-old fossils just after the rise of oxygen.

Hoehler and his team measured gases released from modern microbial mats in Baja, Mexico, under conditions simulating the early atmosphere. These mats are close cousins to those that once made up much of the early Earth's biosphere. The team found that the mats released large amounts of hydrogen at night. "If the Earth's early

microbial mats acted similarly to the modern ones we studied, they may have pumped a thousand times more hydrogen into the atmosphere than did volcanoes and hydrothermal vents, the other main sources," Hoehler said.

Hoehler and his co-authors suggest that some of the hydrogen might have escaped directly to space, while the remainder could have provided an important food source for other microbes -- such as those that produce methane. "We found that the elevated levels of hydrogen within the mats favor the biological production and release of methane. This supports the premise of Dr. Catling's work," Hoehler said. But either way, hydrogen escaped and the Earth became more oxidized.

Questions of how and why oxygen built up in the Earth's atmosphere have been controversial for decades. Although scientists have ample evidence that oxygen first appeared in the atmosphere a little more than 2 billion years ago, why this happened has long been the subject of specu-



photo by Dr. Dan Albert, Univ. of North Carolina

Examples of the Baja intertidal microbial mats examined by Dr. Tori Hoehler, Code SSX, and his research team.

lation. Fundamentally, the oxygen in the air is a byproduct of photosynthesis. In photosynthesis, plants and microbes use sunlight to steal hydrogen from water. The hydrogen is mostly used to make organic matter from carbon dioxide and the unwanted oxygen is released. But microbes that make oxygen in photosynthesis were living on Earth at least a half-billion years

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Annual airshow returns to Ames



photo by Astrid Terlep

See center spread (pages 6 & 7) for more photos

Center Briefs

Astronaut Cabana assumes NASA lead operations role in Russia

Astronaut Robert D. Cabana has been named NASA's Director, Human Space Flight Programs, Russia, effective Aug. 8. He assumes this role at a time when the International Space Station (ISS), while still under construction, has become self-reliant and larger and more capable than any other space station in history.

Cabana will act as deputy to both the ISS program manager and the Director of the Johnson Space Center, Houston, with full authority to represent both in all matters pertaining to NASA human space flight activities in Russia.

Suspended in space: researchers make important fluid discovery

A NASA-funded study on fluids has yielded a discovery that may significantly change the way electronics, paint, cosmetics and pharmaceutical industries develop products.

Researchers discovered a new approach for suspending fine particles in fluids. Such collections of particles, called colloids or colloidal suspensions, may help researchers better understand how to manipulate small particle assemblies found in fluids such as water or organic solvents (e.g., ethanol).

According to a paper co-authored by a NASA researcher at the University of Illinois at Urbana-Champaign, which appeared in the July 31 issue of the "Proceedings of the National Academy of Sciences," the authors have devised a process that stabilizes particles in fluids to prevent them from otherwise organizing themselves or coagulating into a disordered gel-like structure. The authors have named this approach "nanoparticle haloing."

New view of primordial helium traces structure of early universe

NASA's Far Ultraviolet Spectroscopic Explorer (FUSE) satellite has given astronomers their best glimpse yet at the ghostly cobweb of helium gas left over from the Big Bang, which underlies the universe's structure. The helium is not found in galaxies or stars but spread thinly through the vastness of space.

The observations, published in the August 10 issue of the journal *Science*, help confirm theoretical models of how matter in the expanding universe condensed into a web-like structure pervading all the space between galaxies. The helium traces the architecture of the universe back to very early times. This structure arose from small gravitational instabilities seeded in the chaos just after the Big Bang.

Insignificant Safety

Gravity, an old and constant companion, is still a frontier for science. The cavalier hipster might just say 'gravity sucks' and that's why we're all still here and not disseminated atoms dispersed throughout the cosmos. Although this bears some truth, even with our lack of complete appreciation of gravity, scientifically speaking, there are far more elegant interpretations of gravity than 'it sucks.' But still it remains a mystery.

Safety is also a mystery, but for different reasons. When safety works, nobody knows just what it did. All we know is that somebody didn't get hurt. We don't know who, we don't know how 'not badly,' how much pain was spared -- how much money was saved. But, be assured, any one of these unknowns adds up to a not insignificant total, a mystery and a lovely mystery at that.

Although some folks feel differently, brushing your teeth sucks, that is, compared to having a Hollywood smile with no investment in toothbrushes, toothpaste and all the time it takes clean up the old ivory. So, if gravity sucks because we need to be here on Earth and safety sucks because it requires tedious effort, maybe we need to learn to better appreciate things that suck.

The May 14 issue of the *Astrogram* was dedicated to safety. Many people at the Center made significant contributions to the content and the spirit of that message -- the VPP leads for each directorate, and each and every director as well as a myriad of others. All recognize safety as job #1. Safety, like the prep work that goes into any task and is integral to its success, can get pretty boring for its lack of glamour, its tediousness and its consumption of precious time. What is the premium on your health? Safety time is critical time, critical to your health.

Deputy Center Director Bill Berry recognizes the danger. How dangerous are things at Ames? As Berry has noted, the Center is the safest place you're going to be today, at least according to risk analysis based on statistics. Being at work is six times safer than being at home, and eight times safer than being on the road. So where should we put our efforts for reduc-

ing the risk to your health? Should we ask that you spend more time considering the risks of life at home with your family? Should we ask that you drive more slowly, more



laid-back?

Safety is its own reward, even away from work. But, since our primary responsibility is for your health at work, we are asking for your help. Your efforts to help will only be as successful as is your sincere interest in making safety work. Safety, the preservation of your health, can only succeed if you make it a continual part of your professional activity. Safety requires that you continually ask "what could go wrong here?" Safety requires that you take the critical time to figure out (and then carefully implement) the life-saving, health-preserving features for whatever activity you do: taking time with your posture, whether sitting or standing; talking about the idea of safety with your colleagues; or making small talk count big "what can we do to be more safe?"

Several people participated in the safety puzzle that was in the safety *Astrogram* of May 14. Twenty of those people won awards ranging from VMS rides to \$5 Ames Café vouchers. We are trying to get the message to you that "safety is important, safety is more than just value added, safety means money saved, safety means health and safety is respect for life." Thanks to Code AFJ, Aerospace Simulation Operations, for their support of safety in contributing the VMS awards.

Henry McDonald, Ames Center Director, has stated: "Working safely is a condition of employment, and safety is our most important value." Please take the time to figure out what safety means and share this strategy with your colleagues.

BY PATRICK HOGAN



Employees try to reduce weekend energy use; re-engineering cooling systems is key

Ames energy officials were surprised that the Center's electricity use on weekends was still quite high, even after employees turned off office and other appliances for Saturday and Sunday, July 28 and 29.

For the "How Low Can We Go" weekend, employees were asked to, "look again around your office, your shop, your simula-

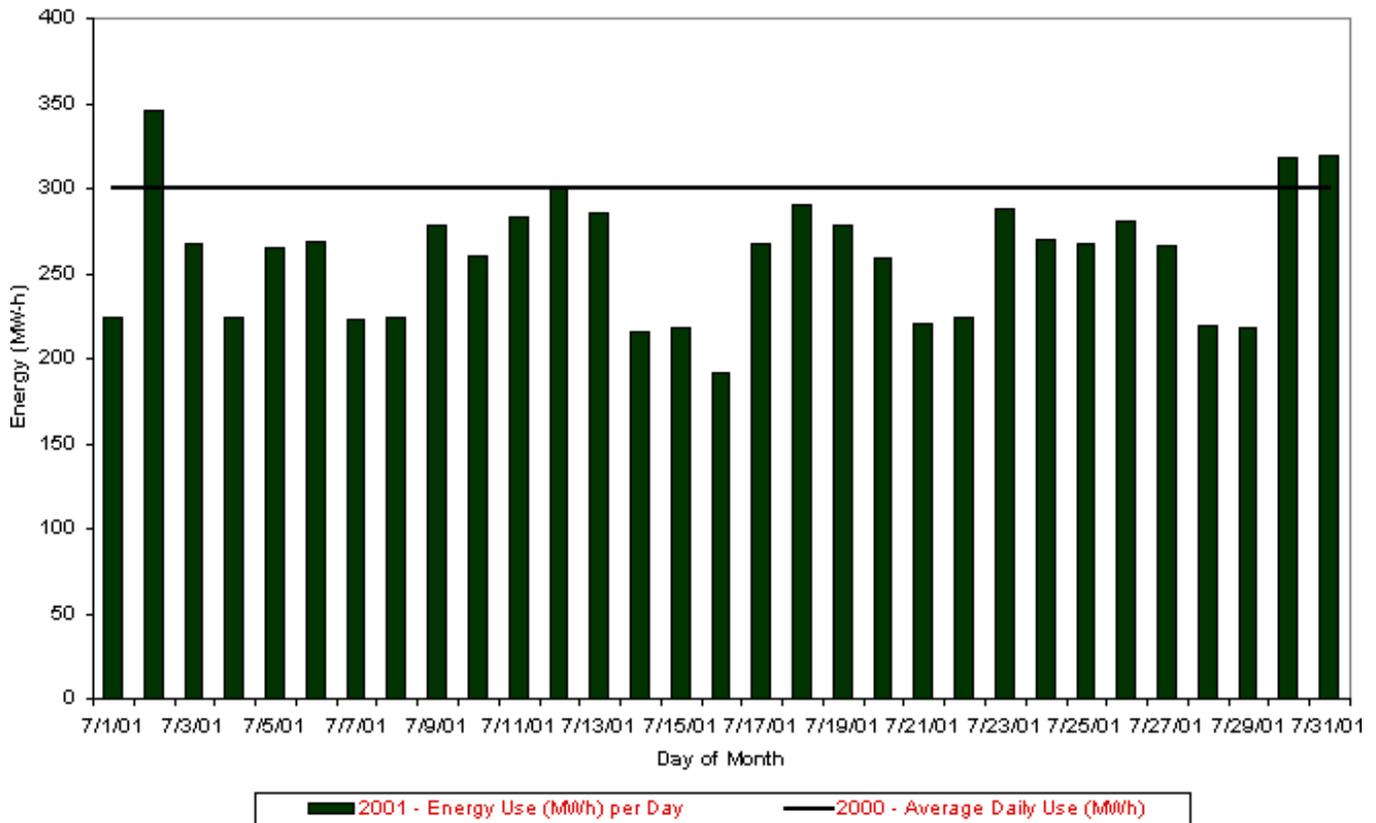
tion, by far, is our most cost-effective solution. Every dollar going to the electricity bill is a dollar not going to research. That's my little mantra," he said.

The cost per kilowatt-hour has almost doubled since last year, and another increase early in the next fiscal year is expected.

ing cooling system to be operated when no one is in the building," he said.

One conservation idea is to consolidate critical cooling loads into one area of a building, and provide a smaller cooling system for that area separate from the building system, according to Frankel. "Other possible changes are seven-day

NASA Ames Non-Wind Tunnel Daily Energy Use



tor and your computer areas and find any energy savings you may have overlooked."

"The results show that even when we are not working, the Center energy demand is quite high," said Ames' energy czar Steve Frankel in an e-mail to staff. "Based on the results, Ames uses 80 percent of the energy when no one is working as compared to when everyone is working. The reasons energy use was not reduced to a greater percent has much to do with our history of very low-cost electricity," he explained.

"We are going to have to go building by building to see what the electricity loads are and how we can reduce them," he said. "We are setting inspection schedules now."

"The energy situation is not getting better, and we need to continue centerwide e-mails to remind people to conserve. Con-

"Discovering ways to get bigger weekend savings involves thinking of how to better manage building and equipment cooling," engineers said. Changes in cooling are less dependent upon individual efforts than upon changing systems and procedures, although employees should still continue to shut down non-essential equipment for the weekends.

"We all need to think differently about how our critical labs and spaces are using energy," Frankel said. "Many buildings use the same cooling systems to serve both office space and critical research areas. Many buildings have also converted office space into critical computer space. These computers are never turned off and need cooling 24 hours a day. In some situations, two or three rooms require the entire build-

schedules for cooling systems," he said.

"Even if work needs to occur during the daytime on the weekends, the systems can be turned off at night," he said. "Another idea is free cooling. At night, the outside air is often cool enough to meet the demand, so the chillers would be shut off until the next day," he continued.

"Ideas for conservation as well as questions are welcome," Frankel said.

Employees may contact Frankel of Plant Engineering at ext. 4-4214 or George Sutton of the Electric Power Office at ext. 4-0185.

In addition, there is a new address for the Ames Energy web page at: <http://jf.arc.nasa.gov/energy/index.html>

BY JOHN BLUCK



On your mark, get set, reach for the stars!

To explore some of the fantastic careers in the fields of engineering, science and technology, fifty local female high school students visited Ames and met profession-

cruting female high school students interested in science, engineering and technology related fields. The goal is to attract participants who come from typically un-

they were able to overcome racial and gender boundaries throughout their careers.

The tour continued to the Space Camp facility where counselor Heather Smith explained the various activities that Space Camp participants enjoy. The overview included the one-sixth-gravity chair for learning to walk on the moon, and the various mock-ups of the International Space Station and a typical space shuttle.

At the NAS facility, Gina Morello, Marcia Redmond, Cliff Williams and Chris Gong welcomed the girls and served as narrators for the tour of the visualization lab and the supercomputers on the second floor, including the new 1024 Silicon Graphics machine that is currently being installed.

Finally, in the Space Sciences auditorium, Louisa Beck and Jennifer Dungan explained how they use geography, Earth science, GIS and remote sensing to study land-cover usage and disease.

"I learned that women are able to do as many things as men," said one visiting young woman. Another student said "The lecture about medical science and epidemics was very interesting to me, I may want to look into that field of work." Yet another commented "I like learning a lot about technology and it's expansions."

The Get SET program is grounded in the belief that girls are steered away from technology-related fields by many influences, including schools, media, families and societal norms. The program is designed to counter these influences and broaden perceptions of opportunities available to women. Specifically, Get SET provides a support network to help encourage exploration in the fields of computer science and engineering.

The program was initiated in 1992 by SWE-SCV as a spin-off of the SWE Higher Education Outreach Program originally funded by NASA. The program is now funded through other means, but NASA remains an active sponsor.

Further information is available online at: <http://www.swe.org>.

By JENNIFER NIETO



photo by Tom Trower

Young women in the Get SET program pose at the entrance to Ames' Visitor Center during a recent visit.

als in such fields on August 1.

These bright young women are all participants in "Get SET" (Science, Engineering, and Technology), an outreach program chartered by the Santa Clara Valley section of the Society of Women Engineers (SWE-SCV). The program is aimed at re-

der-represented groups in such fields.

The visit kicked off with a picnic at the Visitor Center. With the 40x80 wind tunnel as a backdrop, Rose Ashford, Ana Papsin, Brenda Collins and Sheila Johnson made brief presentations about their duties at Ames, and explained some ways in which

'Exploring Earth's extremes' at Ames



photos by Dominic Hart

Ames hosted the "Exploring Earth's Extremes" workshop at the Moffett Training and Conference Center July 24-25. The objective of the workshop was to evaluate the relevance of exploring extreme environments on Earth in the context of future possible NASA missions to Mars and Europa, Jupiter's moon.

VPP STAR Tip

"Mistakes are seen as an opportunity to learn"

Stacey Menard,
Johnson Space Center
January 28, 2000

Dr. Yvonne Cagle to address Ames staff during safety week

During Safety and Quality Week in September, Yvonne Cagle, M.D. (Lt. Col. USAF) and NASA astronaut will visit Ames to participate in the Safety Stand-Down Day. Dr. Cagle will speak in the Main Auditorium at 9:30 a.m. on Wednesday, September 26.

Selected by NASA in 1996, Cagle has completed extensive training and evaluation and is prepared for assignment as a mission specialist. She is currently assigned to the Astronaut Office Operations Planning Branch, supporting the shuttle and space station.

As a flight surgeon and FAA senior aviation medical examiner, she will share her views on mission safety and the medical challenges of long-term space flight.

Cagle was born in West Point, New York but considers Novato, California her home town. Her association with NASA began in 1989, before her selection as an astronaut. She was a flight surgeon assigned to a tactical hospital in the United Kingdom, when she volunteered to serve as the Air Force Medical Liaison Officer for the STS-30 Atlantis shuttle mission to test the Magellan spacecraft. She was assigned to the transatlantic landing site at Banjul, West Africa, to provide emergency rescue and evacuation of the shuttle crew, should it have been required.

Since formally joining NASA, Cagle has contributed on-going data to the longitudinal study on astronaut health, and served as a consultant for space telemedicine. She was a member of the NASA Working Group and traveled to Russia to establish international medical standards and procedures for astronauts. She also conducted health screenings of MIR-18 consultants from the Russian Federation.

Make your plans now to attend the September 26 address, ask questions and get an autograph. At the conclusion of this



Astronaut Yvonne Cagle

session, the focus will shift to the Stand-Down Day street fair on Durand Road. At 11:30 a.m., the chili tasting and voting will begin. There is still time to organize a team and enter the chili cook-off. The point of contact for this event is Christel VanArsdale at ext. 4-1175 or email her at: cvanarsdale@mail.arc.nasa.gov

For more information on the featured speakers, the training class offerings and other events scheduled for Safety and Quality week, log on to the Code Q web site: <http://www.q.arc.nasa.gov>. For questions, contact Jack Stanley at ext. 4-4242 or by email at: jstanley@mail.arc.nasa.gov

Former Ames physicist dies

Robert J. Debs, a city councilman during the 1960s and a physicist at Ames until 1976, died July 19 after a long illness. He was 82.

In 1942, Debs earned his Bachelor's degree in electrical engineering from the University of Illinois. He later worked on radar design as a U.S. Navy civilian employee at Raytheon and Westinghouse during World War II.

Debs later attended the Massachusetts Institute of Technology where he earned his doctorate in physics degree in 1952. That same year, Debs and his wife, Virginia, moved to Mountain View, where Debs worked on the prototype of what eventually became the Stanford Linear Accelerator.

The Debses relocated to Palo Alto in 1955 and Debs worked at the General Telephone and Electronics Research Lab, as a staff physicist.

Debs served as chairman of the Stanford Chapter of the Federation of American Scientists and in 1963, joined Ames as a staff physicist. Later, he was promoted to branch chief. He retired in 1976 following surgery for a brain tumor.

Debs is survived by his wife, Virginia Debs and son, Douglas Debs, both of Palo Alto; and daughter, Martha Debs of Brussels/Amsterdam. Private services were held recently.

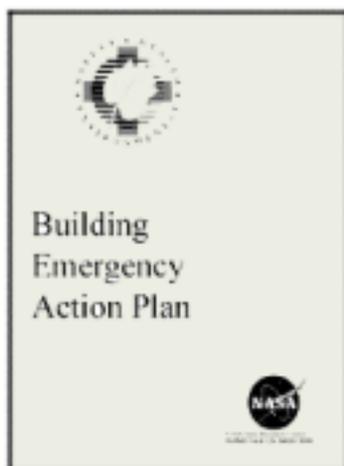
RAdm. William Moffett, Jr., passes on

Rear Admiral William Adger Moffett, Jr., USN (Ret.) died of congestive heart failure in Westminster-Canterbury in Virginia Beach, Virginia on July 23. He was 91.

Moffett, Jr., was the son of Admiral Moffett for whom Moffett Field is named. Moffett senior was also the first chief of the former Bureau of Aeronautics and is considered to be the "Father of Naval Aviation."

Moffett, Jr., graduated from the Naval Academy in 1930, becoming a naval aviator in 1932. He eventually qualified to fly more than 100 types of aircraft, from biplanes to jets. His decorations included the Distinguished Flying Cross and the Air Medal for combat actions in the Guadalcanal areas while in command of the Navy's first Heavy Bomber Squadron, VB-101.

Memorial services were held on August 15 at Arlington National Cemetery.



Now you can find your BEAP online!

<http://beap.arc.nasa.gov/>

Community Outreach & Involvement

Annual airshow returns to Ames . . .



photo by Astrid Terlep



photo by Jonas Diño



photo by Tom Reddy



photo by Tom Reddy



photo by Astrid Terlep

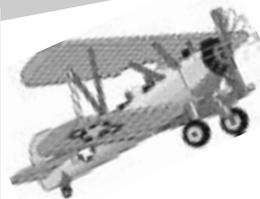


photo by Astrid Terlep

Community Outreach & Involvement



photo by Astrid Terlep



photo by Tom Reddy

... and 100,000 guests applaud!



photo by Tom Reddy



photo by Pam Davoren



photo by Tom Reddy



photo by Astrid Terlep

Research Institute for Advanced Computer Science Summer Student Research Program winds down



photo by Tom Trower

The RIACS Summer Student Research Program participants for 2001: Left to right, back row: Ellen Campana from University of Rochester; Jonathan Moody from Carnegie Mellon, Scott Johnson from University of Wyoming; and Judah DePaula from University of Texas. Middle Row: Peggy Leising, RIACS/SSRP program manager; Brent Venable from University of Padova; Kristin Branson from UCSD; and Adrian Agogino from University of Texas. Front Row: Kate Mullen from Bard College; Matthew Deans from Carnegie Mellon; and Vandii Verma from Carnegie Mellon. Not pictured: Michael Whalen from University of Minnesota and Alex Groce from Carnegie Mellon.

Participants in the 2001 Summer Student Research Program (SSRP), co-sponsored by NASA and the Research Institute for Advanced Computer Science (RIACS) are shown here. The SSRP program provides an opportunity for students to gain experience and expertise solving challenging problems at the forefront of information technology and space science.

They are just completing a 10-week internship at Ames, teaming with NASA scientists on research projects in a variety of areas in information technology. The students worked in the areas of automated planning and scheduling, natural language understanding, model-based autonomy for spacecraft and rovers, automated software synthesis and verification, Bayesian statistics, visualization and collaborative virtual environments, temporal constraint problems, Amphion/NAV, Kalman Filters, safety-critical software and collective intelligence.

Airborne Science reunion set for September 17



Ames employees are invited to attend a "Celebration of NASA's Airborne Science Program – Past and Present." The event will be held on September 17 in the NASA Ames Hangar, Building 211 from 6:00 p.m. to 10:00 p.m. There will be three noteworthy speakers, a buffet-style dinner and lots of old friends.

For reservations, you can call Patti Bergin at ext. 4-6314 or e-mail her at: pbergin@mail.arc.nasa.gov. The cost is \$35 per person. Make checks payable to "Airborne Science Reunion" and send them to Pattie Bergin at: NASA Ames Research Center, M/S 158-1, Moffett Field, CA 94035. The deadline for registration is Sept. 1.

For up-to-date information, visit the event web page at: www.http://geo.arc.nasa.gov/air_sic_dinner. Invite a friend and come join the fun.

'SHARP' students graduate from hands-on education program

Twenty-five outstanding local high school students turned their wildest dreams into reality this summer as they aimed for the stars with the help of some of the nation's brightest aerospace scientists and engineers.

On Aug. 9, the students graduated from the Summer High School Apprenticeship Research Program (SHARP) at Ames, an eight-week intensive science and engineering hands-on learning and work experience. The students were selected from a competitive pool of applicants within a 50-mile radius of Ames based on their demonstrated enthusiasm and qualifications for a career in the fields of mathematics, science, engineering and technology.

"One of the main attractions of the program is the reputation of former SHARP participants, both in the community and on-site," said SHARP director Dr. Ray Hill. "Over 90 percent of SHARP participants go on to complete a university degree, and many return to NASA as valued members of the Agency's work force," Hill said.

Sustaining NASA's strength and growth through future decades will require increased numbers of diverse, experienced and capable scientists and engineers, according to Hill. Today's students will be the employees who design and produce the increasingly advanced products and data collection methods needed in the future, he added.

"SHARP is one of the cornerstones of our NASA education program," said Ames Center Director Dr. Henry McDonald. "We look forward to new students coming to our center each year and bringing with them fresh ideas, new perspectives and genuine enthusiasm," McDonald said.

Programs such as SHARP enable NASA to recruit and maintain a diverse workforce by reaching out to underrepresented youths and encouraging career paths in the fields of mathematics, science, engineering and technology, according to Hill.

Some of NASA's top scientists and engineers serve as mentors to students during the program. This summer, SHARP apprentices at Ames assisted with research in the areas of life, Earth and space sciences, astrobology, information technology, thermal protection systems and safety.

They also prepared written reports and delivered oral presentations during their apprenticeship training. In addition, SHARP students participate in a variety of activities, such as college fairs, seminars and field trips.

SHARP was established in 1980 in response to a presidential directive for all federal laboratories and research institutions to conduct summer apprenticeship programs for high school students traditionally underrepresented in the fields of mathematics, science, engineering and technology. The program aims to stimulate interest in science-related fields in young people from underrepresented communi-

ties. By establishing individual working relationships between students and active researchers, NASA ultimately hopes to cre-



SHARP students celebrate their 2001 graduation with their coordinator Dr. Ray Hill and assistant Augustus Fitzgerald.

ate a resource pool of potential applicants for future NASA employment.

SHARP is one of many educational programs offered by Ames for students from elementary school through college. In addition, Ames offers an array of Internet-based and multimedia software for use in the classroom, as well as teacher education workshops and materials.

Further information is available at: <http://education.arc.nasa.gov/>

SHARP is sponsored by NASA's Education Division and participating NASA centers. Further information is available online at: <http://education.nasa.gov/sharp>

BY JENNIFER NIETO

Ames scientists propose new theory of Earth's early evolution

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before oxygen first flooded the atmosphere.

For oxygen to stay in the atmosphere, the hydrogen and oxygen (or the organic matter made from the hydrogen) must be kept apart. Otherwise, they will react with each other and the oxygen will disappear. Conventional theories have focused on the burial of dead organic matter deep in the Earth, where it is 'hidden' from atmospheric oxygen. The possibility that a lot of hydrogen might escape to space was ignored, for

the most part.

According to Catling, his theory of high levels of hydrogen-containing methane gas, which acquired its hydrogen indirectly from water, also would account for why early Earth didn't freeze. "Three billion years ago, the sun was only 4/5ths as bright as it is now. The Earth should have frozen over," he said. But methane, a powerful greenhouse gas, would have kept the Earth warm.

Related information about both papers

may be obtained at:

<http://www.sciencemag.org> and
<http://www.nature.com>

Other authors, all of Ames, include Brad Bebout and David Des Marais on the Nature paper and Kevin Zahnle and Christopher McKay on the Science paper.

NASA's Exobiology and Astrobiology programs provided funding for both projects.

BY KATHLEEN BURTON

Ames employees participate in breast cancer research walk



Ames employees Ann Hutchison left, of Code DX, and Dana Bolles of Code QE, celebrate their successful completion of the Avon Breast Cancer 3-Day Walk.

Along with Susan Levine of Code JTA and more than 3,000 other 'walkers,' they traversed the 60-mile course from Santa Clara to San Francisco to raise money and awareness about breast cancer. Amberlee Chaussee of Code DXE served as a volunteer crew member during the event.

Each walker raised at least \$1,900 for research, and most had pledges that far exceeded that total.

NASA scholars complete research



photo by Tom Trower

Minority University Research and Education Program (MUREP) NASA scholars, were joined by their mentors and center management to celebrate the completion of their 10-week summer research experience. The closing ceremony, hosted by the Equal Opportunity Programs Office and the Ames Exchange, was held in the Ames Visitor Center on August 1.

Ames Sailing Club hosts world class sailor Dawn Riley

Sailing enthusiasts who attended the meeting of the Ames Sailing Club on Thursday, August 9 in the Ballroom of the Moffett Training and Conference Center were in-

spired by the exploits of the Club's special guest speaker, Dawn Riley, CEO and Captain of America True. Dawn Riley is the only American to sail in three America's Cups and two Whitbread 'round-the-world' races. She was the first woman in the world to manage an America's Cup syndicate. She provides vision and guidance for America True's sailing team and youth outreach program. For her match racing and leadership skills, she received the Rolex Yachtswoman of the Year award for 1999.

During her 45-minute talk, which featured video clips from America's Cup and open ocean races, she described the rigors of sailing in the Southern Ocean, the tedium of race preparation, and her part in the technology development that is crucial to a successful bid for the Cup. She also encouraged members of the audience to help the America True organization with its youth outreach program.

America True used NASA technology to design the boat that Dawn and her crew raced in Auckland, New Zealand during America's Cup 2000. NASA assisted the team with computational fluid dynamic codes to evaluate their design. Using high-fidelity computation analysis tools, currently

in use by NASA for propulsion applications, designers analytically tested the performance qualities of different sail and mast designs to select the optimal shapes and material configurations for the International America's Cup Class (IACC) racing boat.

Dawn Riley is also reaching out to the next generation. True Youth, an outreach program sponsored by America True, challenges young people to aspire to achieve more than they would dream possible. The program depends on volunteers to take disadvantaged kids sailing for an afternoon. Some of the kids may show interest in sailing. Those kids will be given opportunities to learn to swim and sail through community programs at very low cost.

The Ames Sailing Club is sponsored by the Ames Exchange. It was started in 1997 by a handful of Ames sailing enthusiasts and has grown into a fun, active organization. The Club was organized as a means to get Moffett resident agency employees and their families interested, and involved, in the art and sport of sailing.

For the most up-to-date news and information, calendar, photo album, and other information, please visit the Ames Sailing Club website at <http://sail.arc.nasa.gov>. For information about joining the club, contact Joyce Barrett at: jbarrett@mail.arc.nasa.gov.

BY STAN PHILLIPS



photo by Tom Trower

Dawn Riley, CEO and Captain of America True, speaks at Ames Research Center as guest of the Sailing Club.

inspired by the exploits of the Club's special guest speaker, Dawn Riley, CEO and Captain of America True. Dawn Riley is the only American to sail in three America's Cups and two Whitbread 'round-the-world' races. She was the first woman in the world to manage an America's Cup syndicate. She

Event Calendar

Model HO/HON3 Railroad Train Club at Moffett Field in Bldg. 126, across from the south end of Hangar One. Work nights are usually Friday nights, 7:30 p.m. to 9:30 p.m. Play time is Sundays, 2 p.m. to 4 p.m. Call John Donovan (408) 735-4954 (W) or (408) 281-2899 (H).

Jetstream Toastmasters, Mondays, 12 noon to 1 p.m., N-269/Rm. 179. Guests welcome. POC: Samson Cheung at ext. 4-2875 or Lich Tran at ext. 4-5997.

Ames Bowling League, starts September 4. Bowling at the Palo Alto Bowl on Tuesday nights. We are looking for full-time bowlers to fill out our teams and substitute bowlers as well. Pre-league meeting at Palo Alto Bowl on Tuesday, August 28 at 6 p.m. Questions about the league or wish to sign up, contact Mike Liu at ext. 4-1132.

Ames Diabetics (AAD), 1st & 3rd Weds, 12 to 1 p.m., at Ames Mega Bites, Sun rm. Support group discusses news affecting diabetics. POC: Bob Mohlenhoff, ext. 4-2523/email at: bmohlenhoff@mail.arc.nasa.gov.

Ames Child Care Center Board of Directors Mtg, Every other Thursday (check website for meeting dates: <http://acc.arc.nasa.gov>), 12 noon to 2 p.m., N-269, Rm. 201. POC: Joan Walton, ext 4-2005.

Native American Advisory Committee mtg, Aug 28, 12 noon to 1 p.m., Building 19, Rm 1096. POC: Mike Liu at ext. 4-1132.

Ames Contractor Council Mtg, Sep 5, 11 a.m., N-200, Comm. Rm. POC: Paul Chaplin at ext. 4-3262.

Environmental, Health and Safety Monthly Information Forum, Sep 6, 8:30 a.m. to 9:30 a.m., Bldg. 19/Rm 1040. POC: Julie Quanz at ext. 4-6810.

Nat'l Association of Retired Federal Employees (NARFE), Sept 7, S. J. Chapter # 50 mtg, 9:30 a.m., Hometown Buffet, Westgate Mall, 4735 Hamilton Avenue, San José. Lunch at 11 a.m. \$6.27 pp. Sept: Staff from office of Rep's Lofgren's and Honda's. POC: Earl Keener (408) 241-4459 or NARFE 1-800-627-3394.

NATO-RTO lecture series at Ames on "Error Estimation and Solution-Adaptive Discretization in Computational Fluid Dynamics," Sept 10 - 14. **Registration info at:** <http://www.nas.nasa.gov/NATO-RTO>. For more information, send an e-mail to: miedmond@mail.arc.nasa.gov

Ames Federal Employees Union (AFEU) general meeting, Sept 19, 12 p.m. to 1 p.m., Bldg. 19, Rm 1042. Guests welcome. Info at: <http://www.afeu.org>. POC: Marianne Mosher at ext. 4-4055.

Ames Amateur Radio Club, Sept 20, 12 noon, N-T28 (across from N-255). POC: Michael Wright, KG6BFC, at ext. 4-6262. URL: <http://hamradio.arc.nasa.gov>

Safety and Quality Week Scheduled for September 24 thru 28 -- includes Safety Stand-Down Day, Chili Cook-off and much more. Training classes offered all week. POC stanley@mail.arc.nasa.gov, ext. 4-4242. Environmental, health and safety monthly information forum at: <http://q.arc.nasa.gov/qe/events/EHSeries/>

Ames Classifieds

Ads for the next issue should be sent to astrogram@mail.arc.nasa.gov by the Monday following publication of the present issue and must be resubmitted for each issue. Ads must involve personal needs or items; (no commercial/third-party ads) and will run on space-available basis only. First-time ads are given priority. Ads must include home phone numbers; Ames extensions and email addresses will be accepted for carpool and lost & found ads only. Due to the volume of material received, we are unable to verify the accuracy of the statements made in the ads.

Housing

3 bd/1.5 ba, 2-story townhs on Luz Avenue, San José. Freshly painted inside, dishwasher, gas heat, w/w carpet, outside child play area/large patio. 1 car port. Easy access to H101/680/280. \$285K. Azucena (408) 559-2881.

House for rent: 3bd/2ba/2 car garage located just outside the center. Ready for immediate occupancy. \$2,200 per month includes water, garbage and gardener. No smoking, no pets. Call (408) 730-9208.

3 bd/2 ba 1,700 sq.ft. Yr. 2000 Mnfrctd. home right off Shoreline (5 min commute or 15 min walk). Grmt. ktchn. w/bay windows. Mrbl. frplc. Huge Mstr. bd. and bthrm w/jazz. Cntrl. A/C and heating. Lots of amenities. \$185K James (650) 428-0123.

House for rent, 2bd/1Ba, recently remodeled, near downtown Sunnyvale, park, transportation (Pastoria x Washington). \$1,900/mo. Outdoor pets and smoking. Call (408) 736-8260.

Miscellaneous

Free to a good home; 4 year old Lab, Shepherd mix male dog (has had all his shots). Great personality, loves to play fetch and loves the water. Owner has had this dog from a pup, but moved to an apartment and can't keep him. Dog needs a fenced yard to play in and lots of attention. Call (650) 938-9922 before 9 p.m.

Couch, quality leather, light sky-grey. 8 foot long. Great condition. \$551 or B/O. Shirley (408) 777-8048.

Pair of San José Sharks hockey tickets for games on Sept 20 and 25 available. Tickets are \$34 each. Call (408) 735-0524.

S-10 bench seat (black cloth), \$80 or best offer. Gary (408) 268-7891.

Aluminium pickup shell. Fits an extended cab, short bed pickup. Side windows, brake light. \$100. Julie (650) 365-4758.

Z-Rig aluminum canopy with frosted windows, fits small pickup. \$75. Call (650) 938-9922 before 9 p.m.

Transportation

Ultralight Aircraft, single seater, Rotec Rally 2B, 3 axis control, stick & rudder. No UV exposure, treated with TLC. Original owner. All doc's. \$3,450. Glenn (408) 842-8411.

'70 VW convertible classic, original owner, no smog needed; transmission ok; needs work on top & possibly engine. \$1,600. Esther or Art (650) 961-2732.

'85 Cadillac Sedan deVille, 94k total mls, 14k mls on new engine, all leather interior. Relatively new transmission, radiator, ac compressor, motor mounts, water pump and parts, brakes, heater hose, distributor, etc. Blue book value for Cad of this year, miles and gd cond is \$2,700. C. McCloskey. Call (408) 253-3027 or email conradmccloskey@cs.com

'87 Toyota 4Runner 4WD, white, 5 spd. AC, good condition, 5K. Call (209) 835-6351 or email: ntan@mail.arc.nasa.gov.

'89 Dodge Grand Caravan, 149K mls, orig. owner, blue with blue interior, very clean, seats 7, roof rack, towing pkg, AC, AM/FM, cass stereo, cruise control. \$2,800. Julie (650) 365-4758.

'92 Honda Prelude, blue, driver side airbag, 4 cylr, 2.3 liter, 5 spd, 105k mls, A/C, sun roof, alloy wheels, PS, PW, PL, AM/FM stereo with cassette, 6 disc CD changer, cruise control, ABS, Rear spoiler, must sell to make way for the baby! \$7,500 or B/O. Bryan (650) 943-2322.

'95 Acura Integra LS 3 door-hatchback, 5-spd manuell, black exterior beige interior, 62k mls only and in exc cond. AC/moonroof/AM-FM stereo/pwr windows. Never been to the mechanic. Nd a larger car for baby. \$10,000. Maya (650) 988-6993 or zvaka@excite.com

'95 Toyota T-100 extended cab pickup with shell, sport rack, tow package, bedliner, AM/FM cassette, air, etc. 85,000 ml. \$11,400. Call (650) 969-5867.

'99 Jeep Gr. Cherokee Laredo 4X4 6cyl, leather, pwr. seats, tow pkg., 10-disc CD changer, premium sound, 45K miles, asking \$19,000. Call (408) 823-1111.

Lost:

Palm Pilot III (clear see-through case). Looks like a VISOR. Has leather-like cover and a broken paper clip inside one of pocket. Might have a business card from BBC (United Kingdom) personnel. Might have lost it in the following buildings: 243, 244, T20G, Cafeteria, 2, 3. Call Guille del Carmen at ext. 4-1860.

Ames public radio

1700 KHz AM radio -- information announcements & emergency instructions, when appropriate, for Ames employees.

Astrogram deadlines

All Ames employees are invited to submit articles relating to Ames projects and activities for publication in the *Astrogram*. When submitting stories or ads for publication, submit your material, along with any questions, in MS word by e-mail to: astrogram@mail.arc.nasa.gov on or before the deadline.

Deadline	Publication
Mon, Aug 27	Mon, Sep 4
Mon, Sep 10	Mon, Sep 17
Mon, Sep 24	Mon, Oct 1

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 N-235 (8 a.m. to 2 p.m.) ext. 4-6873

Ask about NASA customized gifts for special occasions. Check centerwide emails for special sales and events. Maker your reservations for Chase Park here.

Mega Bites (Ames Café) N-235 (6 a.m. to 2 p.m.) ext. 4-5969

Catering is available for your office B.B.Q. or luncheon. Come by for details. See daily menu at: <http://exchange.arc.nasa.gov>

Visitor Center Gift Shop N-223 (10 a.m. to 4:30 p.m.) ext. 4-5412

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

Tickets, etc... (N-235, 8 a.m. to 2 p.m.) ext. 4-6873

Get your exclusive discount tickets for Air Expo Moffett Field 2001. Supplies are limited, so get yours early. Check our web site for all discounts to local attractions, <http://exchange.arc.nasa.gov> and click on tickets.

NASA Lodge (N-19) 603-7100

Open 7 days a week, 7:00 a.m. to 10 p.m. Rates from \$40 - \$50.

NASA Swim Center (N108) 603-8025

The pool is open for the summer. Book your office birthday party. A fun way to spend the day.

Vacation Opportunities

Lake Tahoe Squaw Valley townhs, 3bd/2ba, balcony view, horseback riding, hiking, biking, golf, river rafting, tennis, ice skating and more. Summer rates. Call (650) 968-4155, DBMcKellar@aol.com

South Lake Tahoe cottage with wood fireplace and hot tub. Rates from \$50 to \$130 per night. Call (650) 967-7659 or (650) 704-7732.

Vacation rental, Bass Lake CA 14 miles south of Yosemite. 3 bd/1.5 ba, TV, VCR, MW, fireplace, charcoal BBQ, priv. boat dock, great lake view. Sleeps 8. \$1,050/wk. Call (559) 642-3600 or (650) 390-9668.

Big Sur vacation rental, secluded 4bd/2ba house in lovely canyon setting. Fully equipped kitchen. Access to priv. beach. Tub in patio garden. Hiking, biking and jogging. Halfway between Carmel & Big Sur. \$175/night for 2, \$225 for 4 & \$250 for more, plus \$150 cleaning dep. Call (650) 328-4427.

Accomplishment & Recognition

More kudos for Ames engineer

Imagine you are driving to work and suddenly your car changes direction. Now, imagine your airplane doing that at 30,000 feet or even worse at 300 feet. Thanks to an Ames engineer, this is less likely to happen on one of the most heavily used commercial airliners, the Boeing 737.

Kuo-Chuan (K.C.) Shih of the Army/NASA Rotorcraft Division's Flight Control and Cockpit Integration branch, continues to be recognized for his accomplishments related to the National Transportation Safety Board (NTSB) investigation of US Air flight 427 in 1994. Shih's latest recognition was in the NASA's Aerospace Technology Enterprise's annual report in the 911 'emergency' technology calls section. This section covers NASA's world-class technical resources used to help identify and solve technical problems in the aviation and aerospace community.

Shih credits his insight into the 1994 investigation to a combination of good fortune and being in the right place at the right time.

After moving from Taiwan, Shih earned a degree in aeronautics and worked at Ames and various companies where he gained extensive knowledge in electronics, servo control and flight control.

Shih has worked on numerous Ames projects, including the quiet short-haul research aircraft (QSRA), the XV-15 tilt rotor and the VSRA (Harrier YAV-8B) vertical/short take-off research aircraft. Shih is currently working on the Rotorcraft-Aircrew

Systems Concepts Airborne Laboratory, also known as RASCAL. The RASCAL is an UH-60 helicopter modified to be an airborne fly-by-wire control simulator.

This combination of experience made Shih a perfect candidate to participate in the 1994 investigation. Shih was the only NASA member on the NTSB expert panel. Impressed with Shih's technical expertise and insight, the NTSB and the FAA have repeatedly requested his participation in subsequent panel meetings of FAA 737 flight control engineering test and evaluation board challenge teams.

Shih credits much of his success to Ames. "We are well trained under the NASA environment. We are trained to a systematic and analytical approach to technical problems," he said.

Despite all of the recognition, Shih remains humble and grateful for all of the opportunities and support he has received at Ames. "I really don't deserve this highlight in the aerospace technology enterprise annual progress report compared to



photo by Tom Trower

K.C. Shih

the work being performed in other programs. But, I really appreciate the visibility that it has given to NASA Ames Research Center," he said.

To view the article in the 2000 progress report visit: <http://www.aerospace.nasa.gov/library/ar00/911.htm> To read the article on Shih's recognition for his contributions to the NTSB accident investigation in the May 7, 1999 Astrogram edition, visit: <http://www.amesnews.arc.nasa.gov:8080/astrogram/astrostories/050799/Shih.html>

BY JONAS DIÑO

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astrogram@mail.arc.nasa.gov or by
phone at (650) 604-3347.



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