Satellite heads cloudward

Smooth April 28 launch for CloudSat

By Mark Whalen

After yet another graveyard shift at Vandenberg Air Force Base, Deborah Vane, the CloudSat deputy principal investigator, saw the irony. Following delays that were caused by launch vehicle issues, technical glitches and a labor strike, it was now, of all things, the weather that was holding up the spacecraft liftoff.

But finally, JPL’s CloudSat did get off the ground, along with launch partner Calipso, on Friday, April 28 at 3:02 a.m. Pacific time atop a Boeing Delta II rocket.

Vane and other team members were stationed about five miles from the launch pad. “We had numerous nights when the view was spectacular, but on the morning of the launch, the fog rolled in. So all we were able to see was a little flash. But I heard from people in Simi Valley, Pasadena and Redondo Beach who got a spectacular view of the launch,” she said. “It was really gratifying to finally get off the ground,” she said. “It was a great relief; the team was at their physical limits.”

“We’re very excited about the beginning of the CloudSat mission, both because of its potential for some immediate benefit in terms of weather forecasting, as well as the long-term benefits of understanding climate change and the availability of water in the future,” said Dr. Diane Evans, JPL’s Earth science and technology director. “The team has waited a long time for the launch and they are very excited to get to work on the radar data.

CloudSat and Calipso will reveal the inner secrets of clouds and aerosols, tiny particles suspended in the air. The two satellites will eventually circle approximately 705 kilometers (438 miles) above Earth in a sun-synchronous polar orbit, which means they will always cross the equator at the same local time. Their technologies will enable scientists to study how clouds and aerosols form, evolve and interact.

Since launch, “all has gone very well, extremely smoothly” Vane said, adding that by month’s end CloudSat would join the “A-train” constellation, which also includes NASA’s Aqua and Aura satellites and a French satellite known as Parasol. The data sets will be more useful when combined, providing insights into the global distribution and evolution of clouds to improve weather forecasting and climate prediction.

“It takes a while to overtake the A-train, then insert the spacecraft in its appropriate place,” Vane said. Next week the team will test the radar, which will be turned on and set up to receive only.

“We’re going to take our time, proceed cautiously. The radar will be turned on by mid to late May and then we will begin to receive the science data.”

Vane praised the efforts of the launch team at Vandenberg as well as the operations team in Albuquerque, N.M., for their perseverance and not getting frustrated with the delays.

“Getting up and ready for 3 a.m. launches is very demanding,” she said. “Graveyard is a tough shift to work. Most of us also had other tasks to attend to, such as meetings, interviews and guest operations, so it was almost like working 24-hour shifts.

“They really maintained an esprit de corps through the whole thing. This was a small team that had to perform many roles, and they have executed them with extreme dedication.”

Calipso is a collaboration between NASA and the French space agency. For more information about CloudSat and Calipso, visit www.nasa.gov/cloudsat and www.nasa.gov/calipso.

Kids have their day

Hundreds of children stopped by the Lab on April 27 for “Take Our Children to Work” day. Among the activities they enjoyed were a rolling rover (above) and spacecraft building (above right). At right, Leslie Callum watches daughter Khrislynn work on a “Star Finder,” while a group joins Richard Shope for an “Icy Worlds” interactive presentation (below).
Celebrated 70-meter antenna

The Royal Astronomical Society is the United Kingdom’s leading professional body for astronomers and astrophysicists, geophysicists, solar and space scientists and engineers. Its letters are the Royal Astronomical Society (RAS) and the Royal Astronomical Society of Canada (RASC). The Royal Astronomical Society of Canada is the organization of astronomers in Canada.

Spitzer image shows galaxies in magic

A pair of dancing galaxies appears dressed for a costume party in a new image from JPL’s Spitzer Space Telescope. The infrared picture shows what looks like two tiny blue eyes staring through an elaborate, swirling red mask.

JPL honors Dr. Charles Donnellan

She has conducted field studies in California in the region of the Northridge earthquake; the Ventura basin; and the San Andreas Fault. She has also completed fieldwork in Antarctica, the Galapagos, and Alaska, among other sites. Her work also involves involvement in the establishment of the Southern California Integrated GPS Network, an array of 25 GPS receivers used for earthquake hazard assessment and monitoring. The funds fuels scholarships for a science camp, science fair and science workshop for inner-city children.

Werner to give Royal lecture

Dr. Michael Werner, project scientist for the Spitzer Space Telescope, has been invited by the United Kingdom’s Royal Astronomical Society to deliver a lecture to its membership. Werner will give a talk on the 2006 George Darwin Lecture on May 12.

JPL honors Adelle Donnellan

Donnellan, a geologist, joined JPL in 1980. Prior to her current position, she served as deputy manager of the Science Division. Her specialty, through both interferometric methods and global positioning system technologies, has been the study of earthquakes, plate tectonics and the corresponding movements of Earth’s crust.

Donnellan is also principal investigator of VestaQuest, a Vesta-Ornament project, which integrates data and computer simulations to improve understanding of earthquake faults and how they interact.

70-meter antenna’s 40th is celebrated

JPL Deputy Director Gene Tidwell addresses the recent gathering at the Deep Space Network complex at Goldstone celebrating the 40th anniversary of JPL’s 70-meter antenna shown in the background. Other speakers were Bill Weber, JPL’s Interplanetary Network director, Barry Goldfeder, program executive for deep-space mission systems, NASA Headquarters; and Doug Mulhaupt, an author and former JPL engineer. Approximately 90 people attended the ceremony, including past Interplanetary Network leaders and retired JPL engineers who had worked on the original antenna.


July 11

Cloning Congress—Meets at noon in Building 306-21T. For more information, call Bill Metcalf at ext. 4-1042.

July 12

Wien Prize—Seminars will be held at 1:00 p.m. on May 29, 30, and June 1 in the Park and Prescribed Playgrounds and Babysitting C Gibbs from 9:30 to 4:30 p.m. in San Bernardino Park. Meet some families from the Caltech/JPL community. Plates, cups, forks, and utensils are provided; just bring a dish to share. For more information, call (626) 395-4652 or visit www.research.caltech.edu.

July 15

JPL Stamp Club—Meeting at noon in Building 103-128.

Programming the Universe: A Quantum Computer Scientist Takes on the Cosmos—Seth Lloyd will discuss his latest book in this course’s Visions talk. Tickets are $5. For more information, call Public Services at (626) 395-4652 or visit www.research.caltech.edu.

July 16

JPL Chorus—Meets at noon in Building 233-105. For more information, call Sherry Drayer at ext. 4-8024 or visit www.research.caltech.edu.

Thursday, May 11

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Two more join exclusive JPL Fellows roster

A scientist and an engineer have joined a select circle honored as among the Laboratory’s most distinguished technical staff.

Rich Zurek and Ted Kopf have been named JPL Fellows, two of only five engineers, scientists and technologists to be accorded the honor. They were recognized at a recent meeting of the laboratory’s executive council. Two more join a select circle of only five engineers, scientists and technologists to be accorded this honor.

Rich Zurek, who currently serves as project scientist for Mars Reconnaissance Orbiter, is an atmospheric scientist who has been active on numerous Mars missions. According to his nomination, Zurek is “accepted and trusted by his colleagues and peers.”

Kopf and Zurek join engineers Gentry Lee and Duncan MacPherson, who were named JPL Fellows in 2003, and Joe Scanlan, who was named a fellow in 2005.

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The fellow designation is the top rung of JPL’s technical career ladder, explained Lee, who along with the other fellows serves on a Fellows Promotion Advisory Board that evaluates new nominees each year.

“This is designed to recognize those who have made extraordinary technical contributions to the success of JPL over an extended period of time,” Lee explained. “Technological brilliance in and of itself is not enough—you might be a Nobel Prize winner, but what is important here is what you have done for the Lab.”
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A JPL state-of-the-art imaging spectrometer that will provide the first high-resolution spectral map of the entire lunar surface successfully completed its critical design review this week.

The Moon Mineralogy Mapper, also known as “M3,” is one of two instruments that NASA is contributing to India’s first mission to the moon, scheduled to launch in late 2007 or early 2008. By mapping the mineral composition of the lunar surface, the mission will both provide clues to the early development of the solar system and guide future astronauts to stores of precious resources.

Chandrayaan-1 is India’s first deep-space mission as well as its first lunar mission. “The entire M3 team feels honored to be able to participate,” said Project Manager Tom Glavich of JPL.

The instrument is on its way to being delivered to the Chandrayaan-1 spacecraft integration in Bangalore, India, next March, Glavich said.

A two-year mission, the mapper will characterize and map the lunar surface composition in the context of its geologic evolution by evaluating primary crustal components and their distribution across the highlands, characterizing the diversity and extent of different types of basaltic volcanism, identifying and assessing deposits containing volatiles, including water, mapping fresh craters to assess abundance of small impacts in the recent past, and identifying and evaluating concentrations of unusual/unexpected minerals.

The instrument will accomplish its goals by acquiring spectroscopic measurements of the lunar materials in the visible and near-infrared spectrum, while simultaneously mapping the distribution of these materials across the surface at high spatial resolution. This data will provide a much-needed long-term baseline for future exploration activities.

The mission’s observations will address several important scientific issues, including early evolution of the solar system, fundamental processes acting on planets that shape their character: assessment of potential impact hazards to Earth; and assessment of space resources.

From its vantage point in orbit around the moon, the spacecraft will measure the sunlight reflected by all of the rocks and soil over which it passes. It will be sensitive to wavelengths from 430 to 3,000 nanometers, which covers visible light and the near-infrared region (including short-wave infrared). This range is dominated by solar reflection, rather than by heat radiated by the ground lunar surface.

The mapper was selected in 2005 as a NASA Discovery Program instrument of opportunity. The principal investigator is Carlé Pieters of Brown University.

Chandrayaan-1 is a truly international mission, with payloads from Europe as well as the United States. Besides the Moon Mineralogy Mapper, Chandrayaan-1 will include a second NASA instrument, a miniature synthetic aperture radar developed by the Applied Physics Laboratory at Johns Hopkins University that will look for ice deposits in the moon’s polar regions. Data from the two instruments will contribute to NASA’s increased understanding of the lunar environment as it implements the Vision for Space Exploration, which calls for robotic and human exploration of the moon’s surface.

On May 9, NASA Administrator Mike Griffin and his counterpart, Indian Space Research Organization Chairman G. Madhavan Nair, signed two Memoranda of Understanding in Bangalore, India, for cooperation on India’s Chandrayaan-1 mission.

“It is my hope and belief that as we extend the reach of human civilization throughout the solar system, the United States and India will be partners on many more technically challenging and scientifically rewarding projects.” Griffin said.

Glavich said the next milestone for the mapper team is to send the mission’s engineering model electronics to India for spacecraft integration in July.

For more information on the mission, visit http://moonmineralogymapper.jpl.nasa.gov.

Cassini reveals stunning Saturn vista

The Cassini spacecraft provided this stunning vista showing small, battered Epimetheus and smog-enhanced Titan, with Saturn’s A and F rings stretching across the scene. The image was taken in visible light with Cassini’s narrow-angle camera on April 20.

The prominent dark region visible in the A ring is the Echek Gap, in which the moon Pan and several narrow ringlets reside. Moon-driven features that mark the A ring are easily seen to the left and right of the Echek Gap. The Echek Gap is 325 kilometers (200 miles) wide. Pan is 26 kilometers (16 miles) across.

In an optical illusion, the narrow F ring, outside the A ring, appears to fade across the disk of Titan. A couple of bright clumps can be seen in the F ring.

Epimetheus is 116 kilometers (72 miles) across and giant Titan is 5,150 kilometers (3,200 miles) across.

The image, which captures the illuminated side of the rings, was taken at a distance of approximately 667,000 kilometers (415,000 miles) from Epimetheus and 1.1 million kilometers (0.7 million miles) from Titan.

McClure named chief scientist

DR. DANIEL MCCLURE has been named the Laboratory’s new chief scientist, effective June 19.

A 30-year JPL employee, Mc-

Clure brings extensive experience in the strategic planning of NASA robotic missions, line and program management, as well as considerable experience in the development and execution of scientific instruments.

Currently, McClure serves as the principal investigator for the Mars Climate Sounder, an instrument on the Mars Reconnaissance Orbiter. He has also served as the Mars Exploration Program Chief Scientist since 1996. Previously, he managed the Earth and Space Sciences Division and the Planetary Simulations Section, and chaired the Mars Exploration Strategy Group, a NASA advisory panel.

McClure was a Fulbright Scholar at Oxford University in England, where he received his doctorate in Atmospheric Physics.

McClure replaces Dr. Tom France, who will resume his research and teaching activities as a post-doc at JPL upon retirement.

JPL team wins NASA Center Best Award

The JPL-led Cupped Layer Archi-

tecture for Robotics (CLARA) Team has been awarded the 2006 one NASA JPL Center Best Award for its outstanding contribution to NASA mar-

tial operation. The only second winner of the former award, the team is led by Dr. Sanders. The team was honored for creating and applying cutting-edge work for rapidly integrating innovations in robotics into NASA’s flight missions.

The team will be recognized at the 2006 NASA JPL Honor Awards Cer-

emony on June 7.

The one NASA JPL Center Best Award recognizes individuals and teams for significant and accomplishments in pro-

moting NASA’s strategic goals and supports a one NASA approach, which includes collaboration and learning, the NASA’s behavior of making decisions for the common good, collaborating to leverage exist-

ing capabilities, and standardization that demonstrates efficiency.

Information about the 11 Center Best recipients and their outstanding achievements is available on the One NASA website (http://www.jpl.nasa.gov).

Santa Monica third in Science Bowl

Santa Monica High School, a JPL-

sponsored team, took third place in the National Science Bowl tournament during the final weekend in April in Washington, D.C. Santa Monica had advanced to the final round after win-

ing a regional competition in March in which the team competed.

The study shows that thunder-

storms over Tibet are mainly responsible for the large amount of water vapor entering the stratosphere,” said Dr. KONG JF, professor at Georgia Tech’s School of Earth and Atmospheric Sciences, who led the study.

“Because Tibet is at a much higher elevation than India, the storms over Tibet are strong and penetrate very high, and sent water vapor right into the stratosphere.”

The findings are published in the Proceeding of the National Academy of Sciences. For more information, visit http://dx.doi.org/.

Spitzer shows comet breakup

The JPL-managed Spitzer Space Telescope has captured a picture of the bits and pieces making up Comet 73P/Schwassman-Wachmann 3, which is currently breaking apart on its periodic journey around the sun. The new infrared view shows several chunks of the comet riding along its own dusty trail of comet dust.

“Spitzer has revealed a trail of dust-like debris delimiting the comet’s orbit,” said Dr. William Beach of California Institute of Technology, which is continuing to break apart on its periodic journey around the sun. The new infrared view shows several chunks of the comet riding along its own dusty trail of comet dust.

“The comet consists of a collection of fragments that fly along like ducks in a row around the sun every 5.4 years. This year, the bunch passed by Earth beginning on May 12 before swinging by the sun on June 6. The Swanson Team doesn’t get too close to Earth, about 7.3 million miles, or 30 times the distance between Earth and the moon, but they should be visible through binoculars in the distant night sky.”

Comet 73P/Schwassman-Wachmann 3 should be dimly visible through binoculars on a dark night between the Cygnus and Pegasus constellations (a right ascension of 20h 26m, declination +77°).
NASA Administrator Mike Griffin told an all-hands meeting of JPL personnel on May 18 that he foresees a stable future for the laboratory, but no new major role at least in the near term in NASA’s plan to send humans to the moon and beyond.

By Frank O’Donnell and Mark Whalen

Given the prospect of a flat NASA budget for the years ahead, Griffin told the Tuesday gathering in von Kármán Auditorium that his biggest challenge has been to find a way to fund missions under the Vision for Space Exploration while maintaining stable workforces at each of the agency’s 10 field centers.

He said that the cut in JPL’s workforce last fall from 5,400 employees and contractors to about 5,000 was driven by the fact that the previous level was based on expectations of growth in NASA’s science programs that couldn’t be maintained given the budget cap and his charter to remake NASA’s human program. “I felt I had no choice but to nip that in the bud,” he said. “I did feel that I could maintain a commitment to a 5,000-person laboratory. I’m committed to a stable, viable, healthy JPL at that level.”

Griffin cited the importance of placing humans and cargo in low-Earth orbit: “an essential first step” in the next stage of exploration. “It’s got to be done right,” he said.

“Humans are going to need a lot of robotic assistance,” said the administrator. “I would anticipate there could be a lot of involvement in that at JPL . . .”

Griffin foresees a potential human presence on Mars as early as the early to mid 2020s. “To me, the key is getting back into space in a reliable, robust, dependable way with enough lift capacity,” he said. “It doesn’t matter what Mars mission strategy you use, we already know we’re going to need a space-station equivalent mass and will need a million pounds of hardware to go through low-Earth orbit.”

Among his other observations in response to questions from JPLers:

— Asking about space collaborations with China, Griffin noted that he will be visiting that country next fall, but “can’t predict the outcome.” The space station partnership is well forged and long established, and so that’s not on the table. Whether there ever could be a visiting vehicle at the space station from the Chinese, I couldn’t say right now.

— Griffin believes there are many opportunities for young people interested in joining NASA. He noted that while he and JPL Director Dr. Charles Elachi were at the beginning of their careers 35 years ago, the Vietnam war and NASA’s Apollo lunar program were winding down, and “in aeronautics you had to scramble hard for any opening at all.” By contrast, 25 percent of NASA’s current workforce is eligible to retire in the next five years, “which will create openings at the younger end of the pipeline.”

— The administrator said he shared concerns raised by a JPLer in the audience that the government’s foreign export rules, called International Traffic in Arms Regulations or ITAR, aren’t accomplishing their objectives. Intended to prevent the proliferation of technologies that could be used against the United States, the current implementation of ITAR is unacceptably “creating competitors” overseas. “It is preventing us from accessing the best and brightest in the world,” said Griffin. “In my capacity as a government official, I am doing what I can do within the purview of my office to try to make” that case.
**Letters**

I would like to thank my coworkers and friends for their support during this time. I have been in the field for 35 years, and I feel extremely lucky to have had a fulfilling career. I would like to express my gratitude to my family for their support.

Robert Pull

To my friends and the JPL community, Heathkit thanks you for the continued support and gifts on the loss of my mother. Special thanks to our wife, Michael Pullen. We wish all of our readers many blessings and kind words.

William Pullen and family

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ROGERS, CA, 2 bd., 2 ba., $1,150; van F. 626/289-9540.

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**Vehicles / Accessories**

**Travels**

**Fazzings**

KENDO KAWANO, 75, a retired electronic engineer in Section 810, died April 14.

Kawano joined the Lab in 1957 and retired in 1990, with his final JPL assignment in the Technologies Application Program Office. He is survived by his wife, Kusum, brother Paul, sister Carol and nephews Blake and Garrett.

JOIN "JACK" STEVANS, JR., 90, a retired employee of the photo lab.

Stevens worked at JPL from 1954-88, much of it in the Advanced Concepts and Systems Engineering at JPL, where he made significant contributions to, among other things, electrical spacecraft propulsion. He is survived by his wife, Mary, daughters Barbara and Margaret, sons Mike and many grandchildren and great-grandchildren.

JORDEN CHESTER, 70, retired from Section 4621, died April 27.

Chester worked at JPL from 1970 to 1994. He is survived by his wife, Jacqueline; children Cynthia, Thankyou, Jon and Martha; and grandchildren Ryan, Margan, Allison, Jennifer, Sam, Ray and Mark.

DENIS LE CROISSETTE, 91, oversaw development of the spacecraft instruments on the Surveyor and Apollo missions, and was the first U.S. effort to make a soft landing on the moon. Parts of two instruments for which Le Croissette was responsible, the television camera and the surface sampler on Surveyor 3, were returned to Earth by Apollo 11 astronauts in 1969.

He retired from JPL in 1984 and later took an author for National Geographic, as well as also continued in medical research. Le Croissette served as a consultant for NASA, DoD and industry. He received an honorary doctorate from Oklahoma University and was also appointed a clinical professor of radiology at UCI medical school.

Le Croissette is survived by his wife, Lea; children Mark and Frank; and grandchildren Scott, Cameron and Liam.

No services were scheduled. Donations are suggested to the American Cancer Society or San Diego Hospice.

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KENDO KAWANO, 75, a retired electronic engineer in Section 810, died April 14.

Kawano joined the Lab in 1957 and retired in 1990, with his final JPL assignment in the Technologies Application Program Office. He is survived by his wife, Kusum, brother Paul, sister Carol and nephews Blake and Garrett.

JOIN "JACK" STEVANS, JR., 90, a retired employee of the photo lab.

Stevens worked at JPL from 1954-88, much of it in the Advanced Concepts and Systems Engineering at JPL, where he made significant contributions to, among other things, electrical spacecraft propulsion. He is survived by his wife, Mary, daughters Barbara and Margaret, sons Mike and many grandchildren and great-grandchildren.

JORDEN CHESTER, 70, retired from Section 4621, died April 27.

Chester worked at JPL from 1970 to 1994. He is survived by his wife, Jacqueline; children Cynthia, Thankyou, Jon and Martha; and grandchildren Ryan, Margan, Allison, Jennifer, Sam, Ray and Mark.

DENIS LE CROISSETTE, 91, oversaw development of the spacecraft instruments on the Surveyor and Apollo missions, and was the first U.S. effort to make a soft landing on the moon. Parts of two instruments for which Le Croissette was responsible, the television camera and the surface sampler on Surveyor 3, were returned to Earth by Apollo 11 astronauts in 1969.

He retired from JPL in 1984 and later took an author for National Geographic, as well as also continued in medical research. Le Croissette served as a consultant for NASA, DoD and industry. He received an honorary doctorate from Oklahoma University and was also appointed a clinical professor of radiology at UCI medical school.

Le Croissette is survived by his wife, Lea; children Mark and Frank; and grandchildren Scott, Cameron and Liam.

No services were scheduled. Donations are suggested to the American Cancer Society or San Diego Hospice.