

## Lab about to enter its busiest year



ELACHI OUTLINES 2011 AND NEAR FUTURE IN STATE OF THE LABORATORY ADDRESS

Dutch Slater / JPL Photo Lab

By Mark Whalen

In 2011 JPL will begin perhaps the busiest year in its history and Lab Director Charles Elachi told employees in an Oct. 28 State of the Laboratory address that the outlook is positive.

With 19 spacecraft and nine other instruments currently in operation across the solar system, the Lab will tackle four mission launches in 2011, with 11 more missions already approved for the near future, as well as other opportuni-

ties via proposals and announcements of opportunity.

The director cautioned that the coming year is a time for all employees to be particularly vigilant in their work. "It's essential, because this is the busiest time we've ever had, that we are very careful in following our processes, how we handle flight hardware—this is a critical time to make sure we do the right thing."

He told an anecdote about a NASA senior manager who recently made his first visit to the Lab. When asked by an Executive Council member what people in Washington think about JPL, it took him a split second to reply, "When we give JPL a job, it's done right." Said Elachi, "It's one of our future challenges to continue to do things right."

Although Elachi said the year ahead looks like it may be the most contentious he's ever seen in terms of the NASA budget, he said JPL should fare well once a budget for fiscal year 2011 is passed by Congress. Currently, federal agencies are being funded through a continuing resolution that keeps spending levels at the current year.

Elachi noted that in the current tough environment for federal spending, the vast majority of federal agencies will experience a reduction in their budget, while the proposed NASA budget of about \$19 billion for fiscal year 2011 will be about 3 or 4 percent higher than last year.

"This administration has been very supportive of science, and most of the science agencies got an increase, including NASA," Elachi said.

For JPL, the news is particularly good for Earth science, which is "very healthy for the next decade and will receive sig-

nificant growth," Elachi said, adding that JPL handles about half of NASA's Earth observations. Also, the Mars Program is in good shape, with the planetary portfolio to experience growth slightly above inflation over the next four or five years.

The astrophysics budget is flat, Elachi said, but will include new opportunities for JPL. The Laboratory will develop the telescope for the Wide-Field Infrared Survey Telescope, an observatory designed to settle essential questions in both exoplanet and dark energy research. Also, JPL will manage NASA's participation in a European Space Agency mission called Euclid, which will also search for answers to the mysteries of dark energy.

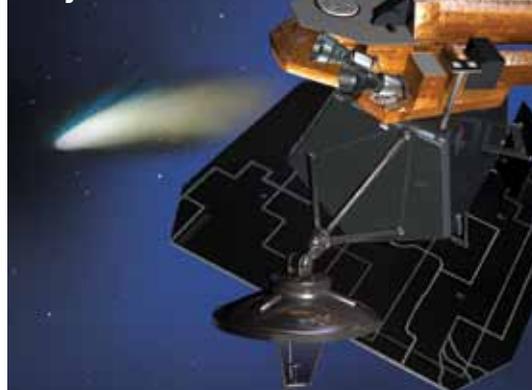
JPL will also have new opportunities in NASA's human spaceflight program. "The key element for human spaceflight, which I fully support, is to ultimately head toward Mars," Elachi said. "Meantime, we need to develop the capability to travel beyond low-Earth orbit; getting to Mars or an asteroid cannot be done with today's technologies. It's critical that our nation makes an investment in new technology, and that's what this administration is trying to do."

JPL has provided key personnel to contribute to NASA's now-cancelled Constel-

*Continued on page 2*

## Epoxi nears close encounter with comet

By Mark Whalen



In July 2005, JPL's Deep Impact mission provided Independence Day fireworks with its successful impact into comet Tempel 1. Now, the same spacecraft is near another historic encounter as it approaches a close flyby of comet Hartley 2 on Nov. 4.

The Epoxi mission is executing another close approach to a comet nucleus as it targets flying past the body at 7 a.m. Pacific time after getting as close as 700 kilometers from the nucleus. This will be the fifth time that a comet has been imaged close-up and the first time in history that two comets have been imaged with the same instruments and same spatial resolution.

"Through a combination of images from high- and low-resolution instruments and infrared scans, the flyby will provide the largest, most extensive coverage of a comet nucleus that we've had to date," said Project Manager Tim Larson.

"What's exciting about being able to compare two different comets with the same instrument set is that it gives us an apples-to-apples comparison capability we haven't had before," Larson added. "Each of the four comets we've flown by has some unique features and surprises—Tempel 1 had large, smooth areas that look like they could be flows; we saw patches of bare ice on the surface; there were what appeared to be impact craters and others not necessarily from impacts. There are a lot of questions about how much of that is due to its evolution each time it comes through the solar system, or which things are fundamentally unique to the comet ever since it was born."

"One of the key things we're after on this mission is to try to identify what features of the comet are considered primordial; that is, that were there when the comet formed, versus features that evolve over time, which each perihelion passage."

*Continued on page 2*



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Dutch Slater / JPL Photo Lab

lation Program that would have returned humans to the moon. Elachi sees a potential new opportunity, though, in robotic precursors for human-exploration missions, which are funded in the proposed budget at \$100 million per year for the next three years.

If funded as proposed, Elachi continued, the budget would call for NASA to continue using the International Space Station at least through 2020; to rely more on the private sector for launches to Earth orbit; and to focus beyond Earth orbit and start on the development of heavy-launch vehicle and an Orion capsule, which are needed for deep-space travel.

Another key element of the proposed budget, Elachi pointed out, is the agency's investment in generic technology as well as the technology needed for the Science Mission Directorate. "For each one of these areas we were hoping for a budget of \$500 million this year, but

the compromise authorization bill calls for \$250 million for each of the two technology areas, building up to \$500 million for each."

Elachi said JPL is very excited about the program that's led by NASA Chief Technologist Bobby Braun. "Part of our strategy is to make sure we keep our leadership in technology," he said, adding that a new office will soon be created within JPL's Astronomy and Physics Directorate that will coordinate technology plans and proposals at the program level.

"With a new Congress we will not know most likely until January the impact of the new budget," Elachi said. "We are optimistic for the long term but in the next year things are a bit tight. The continuing resolution means NASA can't spend any money on new initiatives—and can't spend more than what was spent last year."

Elachi said the Lab's budget projection for the next couple of years shows a reduction of 2 to 4 percent lower than this year. It will improve in 2013, when many new missions will be in development. "That has led to us having to tighten our belt for the next two years," he said. "The Executive Council has tried as much as possible to protect the investment element of the burden budget, because that's what will bring future work to the Laboratory."

If Congress approves NASA's 2011 budget, Elachi said, "We have a number of things at play—we have proposals for technology activities, for the International Space Station payload, for some robotic precursor missions, also for some technologies for the human program and for the Department of Defense.

"If these things happen we'll be in great shape." ■

**EPOXI** *Continued from page 1*

The spacecraft and mission team have logged 3.2 billion miles over the past five years, and by the time the data is returned following the upcoming flyby, about 120,000 images of Hartley 2 will have been acquired.

"We expect to have all of the flyby data downloaded to Earth within the first day of the flyby, but will continue redundant playbacks to ensure receipt of 100% of the images," Larson said, adding that the team will continue imaging the comet for about 20 days on departure, followed by a final calibration of the instruments.

"At that point, we don't have any currently approved plans for the spacecraft, so it will remain in its heliocentric orbit," Larson said. "NASA has requested information for possible science investigations for the spacecraft in the future. So what we do down the road will depend on where we go with that announcement of opportunity."

By itself, being able to retarget the spacecraft to a new comet for this flyby is significant, Larson noted, but also being able to do other science on the way there has really enhanced the value of the mission.

"From the time the extended Deep Impact mission was approved, we used it to look at stars to characterize their light output as planets passed in front of them; we've done some opportunistic things like demonstrate arrayed uplinks to the Deep Space Network; we used it to for a DiNet experiment that demonstrated 'Internet in the Sky' type of capability; there's currently work on the next generation of that software, so it's possible we might get approval to run another demo like that," he said. "So it's been able to contribute both science results and engineering demonstrations that have helped advance some the capabilities for spacecraft operations."

"We have an excellent team, they've worked very hard to get everything prepared, and we're ready to go," Larson added. "The rehearsals and readiness tests have gone well, the spacecraft is performing well, exactly as we wanted it to upon approach, and I'm very confident about this flyby and our state of readiness."

The mission's encounter phase begins the evening of Nov. 3, when the spacecraft is about 18 hours from the

time of closest approach to the comet's nucleus. At that time the spacecraft will stop transmitting through its large high-gain antenna and reorient itself so its two visible-light and one infrared imager maintain their lock on the comet for the next 24 hours-plus.

The name EPOXI is a combination of the names for the two extended mission components: the extrasolar planet observations, called Extrasolar Planet Observations and Characterization (EPOCH); and the flyby of comet Hartley 2, called the Deep Impact Extended Investigation (DIXI). The spacecraft will continue to be referred to as "Deep Impact."

"Our challenge now is the comet's behavior," Larson said. "It's an active comet, and its apparent location relative to the spacecraft it does keep moving around. It's not surprising, but this one seems to be a bit more active than most of the others we've encountered. So it's a bit more challenging, but not unexpected. But the more of these we fly by, the more we'll get to understand their behaviors." ■



# Information Commons

## A NEW SPACE FOR COLLABORATION

By Mark Whalen

### JPL Library gets a makeover

**With laptop computers, smart phones, e-books and other high-tech gadgets steadily replacing books, journals and other printed materials, a large part of the JPL Library has been redesigned into an informal meeting and collaboration space known as the Hub at the Information Commons, which was dedicated in mid-October.**

Located in the space formerly occupied by reference and journal areas, the facility at the west end of Building 111 may have never looked more appealing to those who have sought a quiet location on Lab for a small gathering with colleagues, with easy Wi-Fi access and gourmet coffee and snacks to boot.

Besides the self-serve coffee station and vending machines, an open floor plan features several large HDTV monitors that can be used as screening booths or to view JPL TV or NASA programming. There's also a concentration of Wi-Fi nodes, allowing visitors to use their laptops with ease. Also included is a demonstration model of Microsoft Surface, a tabletop-like computer without a mouse and keyboard that provides interaction with objects placed on the screen, allowing users to move information between devices like mobile phones or cameras. The model is on loan from the Mars Public Engagement Office.

A high-tech open meeting area equipped with a screen, projector, and computer hookups is also available. A smaller private meeting room with screen, hookup and white board is available on a first-come, first-served basis.

A few soft couches and oversized chairs beckon visitors with a look of comfort but will not dominate the room. "We purposely will not have a lot of tables and chairs, so people can move them around and space can be changed," said Dudee Chiang of the Library and Archives Group, who added that JPLers could possibly have smaller-scale robot testing and demonstrations within the available room.

The monthly JPL Stories series will take place at the commons, and the space can also be used for programs sponsored by on-Lab organizations and projects. Chiang said that, at least initially, no reservations are necessary, except for the large open presentation space. "We want to keep it very informal and flexible," she said.

The commons, which will be open 24 hours a day, seven days a week, was funded by JPL's Institutional Management Committee. Modeled after the Team X facility at JPL—where teams converge to hammer out mission proposals and work in real time—the idea came to fruition after a group of early-career hires brought it up during the Executive Council's spring 2009 retreat.

The result is a small parcel of space one might expect to see at a high-tech company such as Google or Microsoft. But the goal is to offer a little bit of something for everyone, Chiang noted. "Even though the idea for this came from some of our newer and younger employees, we do see people here from all age groups," she said.

The JPL Library was already well on the road to the current transition in communications; with the recent explosion of electronic journals and other periodicals, many paperbound volumes have been discarded. "Right now, we are getting more electronic publications than those on paper," Chiang said, "so we have a couple of Kindles and iPads to loan out."

For the future, she noted, flexibility is the key. "For this space, we really want to keep our options open and want people to use it. It will be interesting to see in 10 years how people are using it. Our general approach is, 'Let's experiment.'" ■



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Easy Wi-Fi access  
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Wi-Fi nodes

High-tech open  
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and computer hookups

Smaller private  
meeting room with  
screen hookup

Several large HDTV  
monitors that can  
be used as  
screening booths

# News Briefs



Gaylon McSmith



Stephanie Granger

## McSmith is new Odyssey manager

Gaylon McSmith has been named project manager for Mars Odyssey, an orbiter that has been operating on an extended-mission basis since completing its prime mission in 2004.

McSmith joined the Odyssey team as manager of the mission's science office in 2001. He served as mission manager from 2008 until October 2010, when he succeeded Phil Varghese as project manager. Varghese had become project manager for JPL's Mars Reconnaissance Orbiter.

"The spacecraft continues to be a very reliable platform that conducts its own science investigations, plus important support for other Mars missions," McSmith said. "It's a great honor for me to work with the Odyssey team."

In addition to its own science, Odyssey has relayed to Earth nearly all of the data provided by JPL's Mars rovers Spirit and Opportunity. It provided relay service for the Phoenix Mars Lander and will be in position to do so for Mars Science Laboratory during and after the 2012 landing of the mission's rover, Curiosity.

Following his graduation from Fresno State University in 1970, McSmith served with the U.S. Air Force

followed by eight years as an airline pilot. He came to work at JPL on an aviation weather project supported by the Federal Aviation Administration, and subsequently worked on the Deep Space 1 mission to comet Borrelly and the Galileo mission to Jupiter.

## Granger honored for water-resources research

JPL researcher Stephanie Granger has been named a winner of the Climate Science Services and Remote Sensing Science Services Award, bestowed by the California Department of Water Resources.

Granger and two other researchers received the honor at the Oct. 19-20 Climate Change and Water Adaptation Symposium in Long Beach, which was sponsored by the Department of Water Resources and by the Water Education Foundation.

The awards recognize researchers who have been working closely with the California Department of Water Resources on planning for climate variability and change, and on potential remote-sensing applications that could assist in monitoring impacts associated with climate change.

The other award recipients are Kelly Redmond of the Western Regional Climate Center at the University of Nevada, Reno, and Forrest Melton of

NASA's Ames Research Center and Cal State Monterey Bay.

Granger and Melton are lead scientists on an American Reinvestment and Recovery Act-funded project to explore the potential for developing water-resources applications from pre-existing NASA remote-sensing data.

## Gunapala named distinguished lecturer

Sarath Gunapala, supervisor of JPL's Infrared Photonics Technology Group, has been named a recipient of a Distinguished Lecturer Award from the Institute of Electrical and Electronics Engineers.

Each year, only two of the institute's 750,000 members worldwide are selected annually for the honor, one of the most prestigious awards bestowed by the group. Awardees are named based on recent significant contributions to the field of lasers and electro-optics, and deliver lectures to chapters of the IEEE and Photonics Society in the year following their appointment. Thus far, Gunapala has lectured at Allentown/Bethlehem, Pa., and at Columbia University.

Gunapala, a senior research scientist and principal engineer at JPL, has authored more than 250 publications, holds 20 patents and is a member of

the United States Space Technology Hall of Fame.

## White House blog praises 'petting zoo'

The White House Council on Women and Girls Blog (<http://www.whitehouse.gov/blog/2010/10/15/future-women-science-and-space>) recently featured an article on JPL's participation in the Oct. 3 Girl Scouts of America's science festival at Caltech, which included a display of the Office of the CIO's technology "petting zoo" of emerging information technologies.

More than 1,500 girls and their families were on hand and tested out 3-D technologies, energy-efficient devices, eBooks, space simulation games, educational games and more. Many of the games that were sampled at JPL's petting zoo were displayed on NASA's "Space Place" website at <http://spaceplace.nasa.gov/en/kids/games.shtml>.

"The hands-on exploration proved to be a highly entertaining and an effective way of introducing the girls to emerging technologies and gaining feedback on how they would use it," the blog noted. "The NASA/JPL team was extremely impressed with the questions, the level of interest, and the expertise displayed by the girls."

## Passings

Systems engineer **William T.K. Johnson**, 72, died Sept. 8.

Johnson had worked at the Lab since 1975. He developed sophisticated radar devices for JPL missions such as Cassini, Magellan and Spaceborne Imaging Radar-C/X-band Synthetic Aperture Radar.

He is survived by his wife, Toni, daughters Taj Chiu and Alexis Marsh, stepson Matthew Murray and grandchildren Madeline, Caitlin, Joseph, Nicholas and Cooper. A portion of Johnson's cremains will be put into Earth orbit to honor his first JPL project, the SeaSat remote sensing satellite, and his last, Deformation, Ecosystem Structure and Dynamics of Ice.

**Roger Anderson**, 88, retired supervisor of the Performance Measurement Group and a procurement contract manager, died Sept. 10.

Anderson worked at JPL from 1965 to 1987. He managed contracts for the Surveyor missions to the moon and the Ulysses Solar Polar Mission.

He is survived by his wife, Lois.

**Herb Simon**, 84, a retired engineer and group supervisor, died Sept. 12.

Simon joined JPL in 1965 and retired in 1997. He designed and implemented ground systems for flight support and served as a supervisor for real-time hardware development in JPL's Mission Control and Computing Center.

Simon was interred at Mt. Nebo cemetery in Spokane, Wash.

**Kurt Heftman**, 82, retired deputy manager of the JPL Mission Support

and Operations Division, died Sept. 20.

Heftman joined the Lab in 1959 and assumed several increasingly responsible positions before being named manager of the Flight Projects Support Office in 1972. Upon retirement from JPL in 1982, he moved to Germany and served as director of operations at the European Space Agency for 10 years.

Heftman is survived by his wife, Dolores; children Kathy, Mike, David and Mark; eight grandchildren and seven great-grandchildren. Services were held Oct. 27 at Fort Rosecrans National Cemetery in San Diego. His family requests consideration of donations in his memory to Disabled American Veterans, <http://www.dav.org/donate>.

**Robert H. Lee**, 82, retired supervisor of the Thermophysics and Fluid Dynamics Group in the Applied Mechanics Section, died Sept. 28.

Lee joined the Lab in 1952 and retired in 1988. His JPL career also included work for Division 35 in wind tunnel and photovoltaics studies.

He is survived by his wife, Kathy, and son Michael. Services were held in Valley Center, Calif. His family requests consideration of donations in his memory to Elizabeth Hospice, 150 W. Crest St., Escondido, CA 92025.

**Elmer Christensen**, 86, a retired mechanical engineer, died Oct. 2.

Christensen began his 31-year career with JPL in 1956 by working on the Sergeant program, followed by the Ranger, Surveyor and Apollo programs, including a two-year assignment to NASA Headquarters. He was also on the Mariner Mars 9 mission team and was the project science representative to mission operations.

Prior to his 1987 retirement he was involved in research on large-scale renewable energy power generation (geothermal and photovoltaics).

He is survived by companion Kay and children Grant, Vicki, Emily and Bert. Services were held Oct. 23 at Crescenta Valley United Methodist Church.



Elmer Christensen

like you all in my life. Thank you!

*"The amount of support, concern and genuine love that surrounds you from family, friends, co-workers and even strangers is enough to push you the distance. Whether spiritually or physically they are sent to you to carry you through a journey that no single person can do alone. My advice would be to tell the whole world you are sick because that is truly when you see God's angels at work."...*  
Wendy Casiano, 2010

Orlando Casiano

I would like to say "thank you" to all friends and co-workers at JPL for their kind words and support after the passing of my mother. Also thanks to JPL for the beautiful plant; this kind gesture was sincerely appreciated.

Hans Zima

Laura White and the Fields family would like to thank the Acquisition Division and the University Subcontracts Section for their kind words expressed at the passing of my mother-in-law. Thank you also, JPL, for the beautiful plant; the family sincerely appreciated it.

Laura White, Section 269

## Retirees

The following JPL employees retired in October:

**Edward Smith**, 49 years, Section 3263; **Clark Burgess**, 29 years, Section 173A; **Ed Massey**, 23 years, Section 7050; **Nancy King**, 22 years, Section 3216; **Gary Noreen**, 20 years, Section 315A; **Fred Thibodeaux**, 18 years, Section 2726; **Clifford Findley**, 12 years, Section 2662.



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