

## New routes on the information super-highway

*Social media prove to be a key way to connect  
with the public*

By Mark Whalen

Do you tweet? What's new on your Facebook page? In the current upheaval of traditional journalism, where instant communication is paramount, JPL has become one of the leaders in utilizing social media to best connect with the public.

In addition to its multiple accounts on leading social media sites *Twitter.com* and *Facebook.com*, JPL has now begun to broadcast live video events to *ustream.tv*, a website that enables a potential reach to a global audience of unlimited size.

A good example of the crossover popularity of the social sites was demonstrated in January, when JPL invited Twitter fans—who communicate to one another in messages (“tweets”) of 140 characters or less—for a visit to the Lab. About 150 Twitter fans stopped by for the “Tweet Up” but thousands more followed their JPL tour online.

“We advised people on Twitter who couldn’t come to the event to watch it on the NASA JPL channel on *Ustream.com*,” said Veronica McGregor, manager of JPL’s Media Relations Office. “This was a good way for us to include people who weren’t with us at JPL that evening.”

One of the advantages of *Ustream*, she said, is a chat box next to the video screen, where users comment or debate about the live stream or submit questions. “You can look at social media as being a giant cocktail party,” she said. “Whether it’s Twitter or *Ustream*, it’s almost like you’re in the same room, without the cocktails, having a great conversation.”

A team of Media Relations staffers works on the text chat, answering some questions and directing others to scientists or other mission representatives. About 90 percent of inquiries are answered in real time, McGregor said.

Several events have been shown on *Ustream*, including a live video chat on the Orbiting Carbon

Observatory mission, interviews on asteroid threats and the decoupling of the descent stage of Mars Science Laboratory in a JPL clean room. McGregor said between 3,000 and 7,000 people have viewed each of the chats.

This new dynamic represents a big change from communicating JPL’s activities to the public through the news media. The traditional text news release, often accompanied by images and/or video, had been targeted directly to newspapers, magazines, television and radio. Those relationships with journalists must be maintained, but with the decline of newspapers accompanied by a surge in blogs and other online news, social media has become a major player not to be ignored.

“In the past we would write things to one certain level of understanding, because we were writing it for the news media, who were in turn delivering it to the public. Now all of a sudden we’re getting the questions from the public directly,” McGregor noted. “The thing that makes social media a hit for us is that we’re able to respond to multiple levels of audiences instead of putting out the same style each time.”

One facet of media relations undergoing a change is the live shot, where interviewees speak to questioners from a TV news studio or other remote location. Now the *Ustream* events feature “Live from the JPL cosmic lounge,” a setup in a JPL studio in which a scientist is taking questions live on camera. “Sometimes people want very specific information about the science or the engineering, the computers and their languages used on space missions, as well as very general questions,” McGregor said. “This is taking it one step further, doing live shots for the public.”

At first glance, this effort on social media may appear to be an attempt to grab the younger Generation Y audience. However, with recent media reports spotlighting Facebook’s popularity growing more with women 55 and older than any other age group and that most Twitter

users are 35 or older, fans are to be found across the spectrum.

JPL also posts videos to *YouTube.com*, the difference being that the productions might move around a lot. “People often take our videos and embed them to their own YouTube channel or their blog. Making the material easy to share is important because people are more likely to view something they receive from a friend, McGregor noted. “It means more to them than hearing it from an institution.”

JPL staff, being the enterprising souls they are, are also getting in on the action.

“We get called often by JPLers wanting to start their own Twitter account, and they want to know if there are any rules that govern social media,” McGregor noted. “It’s covered by the same policies that already apply to the release of scientific and technical information, and news, as shown in JPL Rules. Other rules also apply, such as the existing Ethics policy on the use of electronic communication resources.”

“Essentially, JPLers may talk about the work they do here,” she added. “But most people understand that if they have newsworthy information they should come to our office first to make sure there is not a press release or NASA announcement in the works at that moment.”

McGregor said plans for the near future call for a noontime talk to show JPL staff interested in social media exactly what is being done, and also to solicit their ideas and even their assistance.

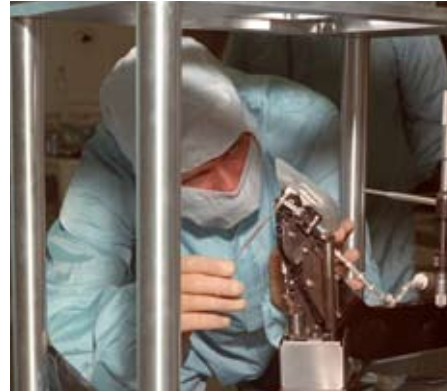
“I’d love to have JPLers volunteer to help administer our Facebook page and add mission news,” she said. “It would not be breaking news for Facebook; it would be taking the news we have released about the mission, and helping to upload new videos or images. There are also plenty of other areas where we would be happy to get help from the JPL population.”



# The camera that saved Hubble

JPL's Wide Field Planetary Camera 2, which developed into a powerhouse for deep-space imaging, is soon coming home

By Mark Whalen



In this October 1992 image, a JPL technician works on the alignment of the articulated pick-off mirror, one of the critical optical elements in the WFPC2 instrument.



**“The workmanship and engineering coming out of JPL was just unparalleled.”**

— John Trauger

Wide Field Planetary Camera 2, the JPL camera responsible for thousands of iconic astronomical images taken by the Hubble Space Telescope, will be decommissioned and brought to Earth by space shuttle astronauts in May after more than 15 years of service and 84,000 orbits of the planet.

History will recall the camera favorably. There is general agreement that Wide Field Planetary Camera 2 saved Hubble.

When Hubble's first deep-space image was beamed down to researchers in May 1990, a problem was discovered. Although the image was clearly better than ground-based images of the same region of stars, a tiny error in the curvature of Hubble's main mirror made it impossible to focus images sharply.

In the ensuing weeks, scientists and engineers scrambled to find the source of the error and a potential solution. About a month after the initial image release, Ed Weiler, then the program scientist for Hubble, told the public about the predicament with the highly touted telescope. JPL astronomer John Trauger recalled NBC News anchor Tom Brokaw's pronouncement following Weiler's press conference that the telescope everyone had heard so much about was broken.

However, Weiler knew from where he spoke. Not only did he acknowledge the problem with the images, he knew that it could be rectified with a modest rework of Wide Field Planetary Camera 2, the backup and successor to the original camera that was to be replaced by a space shuttle servicing mission in 1993. Weiler promised that Hubble's scientific mission would be saved. Now it was up to JPL to make that happen. Fortunately, work was already underway at the Laboratory, and JPL was under contract within a month to build the correction into Wide Field Planetary Camera 2.

Hubble had been the object of great fanfare, promising an unprecedented advance in astronomy that would yield fundamental new insights into the history of the solar system and universe. JPL and Caltech had developed the Wide Field and Planetary Camera to produce the great majority of Hubble's images.

“The promise of the Hubble program, the application of our best technology to push back the frontiers of astronomy, had been instantly transformed in the public eye

**“I think the most surprising thing is that WFPC2 has saved Hubble not once, but twice.”**

— Karl Stapelfeldt



to an icon of technical failure,” said Trauger. To many, Hubble had become a joke.

For those on the science team of the Wide Field and Planetary Camera, Hubble's primary imaging system, this led to substantial angst about the consequences the aberration would have on the many science programs already planned for the first few years of operations, not to mention future career considerations for them.

“There was NASA-wide pressure to get Hubble fixed,” noted Karl Stapelfeldt, a JPL staff scientist who analyzed science results for protoplanetary disks, star formation and solar system objects.

“We had the team that had built the original camera still in place, so we didn't have to relearn some of the lessons,” Trauger said. “The engineers had already confronted many of the issues and knew what to look out for.” However, it didn't come easy.

“What we had was a camera that didn't focus in the normal way; it was exactly wrong,” Trauger said. “This concept of an aberrated focus was unfamiliar to everybody who had to sign off on it. It had Hubble's aberration, but with the opposite sign. How do you test such a device? You have to make something that is just as wrong as the Hubble.”

That's where many JPL unsung heroes' efforts helped save the day.

Trauger in particular praised the dedicated work by JPL technicians, engineers, managers and scientists. It was life in a fishbowl, and the team was fully aware that

NASA's prestige and the promise of space astrophysics was on the line.

“The workmanship and engineering coming out of JPL was just unparalleled,” Trauger said. “We hear from the scientists, engineers and managers, but let's not forget about the people who never get the credit—the people who assemble things, test them, worry and obsess about whether it's perfect.” Not even a nick on a wire could be tolerated, knowing that maybe five years from now it will crack and you no longer have something that functions.

“These people were just relentless in the care that they took,” Trauger noted. “It was incredibly important to get every detail right and not cheat anywhere. That's what we've learned about Wide Field Planetary Camera 2—it was done right.”

Indeed it was. Wide Field Planetary Camera 2 on Hubble passed the test once deployed into space by astronauts on the December 1993 shuttle mission and has gone on to achieve the great fame anticipated at Hubble's beginnings.

Stapelfeldt noted the huge range of science done with Wide Field Planetary Camera 2.

“Much was anticipated before launch—the distance scale of the universe, stellar populations, detailed structures of galaxies and nebulae—but there was plenty of surprise stuff too: the Shoemaker-Levy 9 comet impacts with Jupiter, protoplanetary disks seen in silhouette, studies of binary brown dwarfs and Kuiper Belt objects.

*Continued on page 3*

The Lab's social media efforts go back to the Mars Phoenix lander, which operated from May to November 2008. The mission built an ultra-popular following on Twitter, filing more than 600 updates to its readers and garnering multiple awards. Many Phoenix fans also started to follow other JPL missions and activities through Twitter.

The Lab's use of new media tools will be spotlighted during JPL's May 2–3 open house at the "Tweet Spot" booth located on the mall. Portions of the event will also air live online on Ustream at <http://www.ustream.tv/channel/nasajpl> on Saturday from 10 a.m. to 1 p.m.

"We'll be offering small prizes for those who can answer a trivia question about a mission or if they're here at open house and respond first from a certain area," McGregor noted. "What makes Twitter so attractive is that you might have a group of people following you but they also have a group following them, so there's the potential for a large number of second-order Twitter followers adding to the audience.

"It's like having a virtual gathering," she added. "That's what I hope is going to happen with open house."

For a list of JPL-related projects and links to their social-networking pages, visit <http://www.jpl.nasa.gov/news/features.cfm?feature=2002>. ■

# Open house May 2–3

If you can't attend this year's annual open house, set for Saturday and Sunday, May 2 and 3, you can still be here—virtually. The "NASAJPL" channel on Ustream TV (<http://www.ustream.tv/channel/nasajpl>) will carry a live video stream and chat on Saturday. Various scientists and engineers will participate in chats between 10 a.m. and 1 p.m., at the top of each hour, for about 20 minutes. Mars rovers will be the topic at 10 a.m., followed by mission control at 11 a.m., window to the universe at noon and the spacecraft assembly area at 1 p.m.

- **Ustream TV**  
<http://www.ustream.tv/channel/nasajpl>
- **Twitter**  
[www.twitter.com.NASAJPL](http://www.twitter.com.NASAJPL)

Questions for the live chat can be submitted in advance to [chatquestion@jpl.nasa.gov](mailto:chatquestion@jpl.nasa.gov). If you are unable to take part in the live chat, the archived video will be available at [ustream.tv](http://www.ustream.tv) at a later time.

If you are on Twitter, follow what visitors are saying about JPL's open house on [@NASAJPL](http://www.twitter.com/NASAJPL), which is at [www.twitter.com/NASAJPL](http://www.twitter.com/NASAJPL).

Prior to the open house, a little advanced planning is in order. The Occupational Safety Program Office requests that general housekeeping in employee areas is in good order, that all chemical storage cabinets are securely locked, and compressed gas cylinders stored outside of buildings are stored upright with two chains and have valve caps attached. Also, when setting up for the open house, avoid creating trip hazards with electrical wiring and ensure that pathways and aisle ways are clear.

JPL Security notes that prior to the event, personnel should lock office doors and properly secure sensitive items, equipment and material to prevent theft, damage or disclosure. Also, during open house weekend, employees are not permitted to take visitors or family members into areas that are not designated as venues for open house exhibits, including individual offices, conference rooms and labs.

Employees working at or visiting the event are requested to wear their JPL picture badge above the waist in plain view and personnel are requested to challenge anyone without proper identification in closed buildings and report the incident immediately to JPL Security (ext. 4-3530).

For more information, visit <http://www.jpl.nasa.gov/events/open-house.cfm>. ■

## Wide Field Planetary Camera 2

*Continued from page 1*

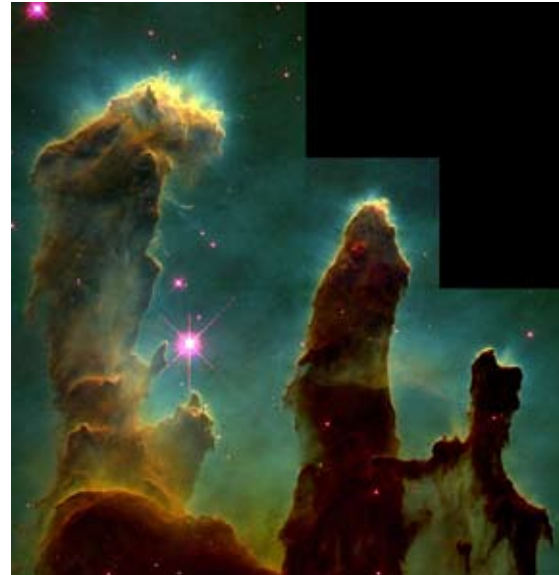
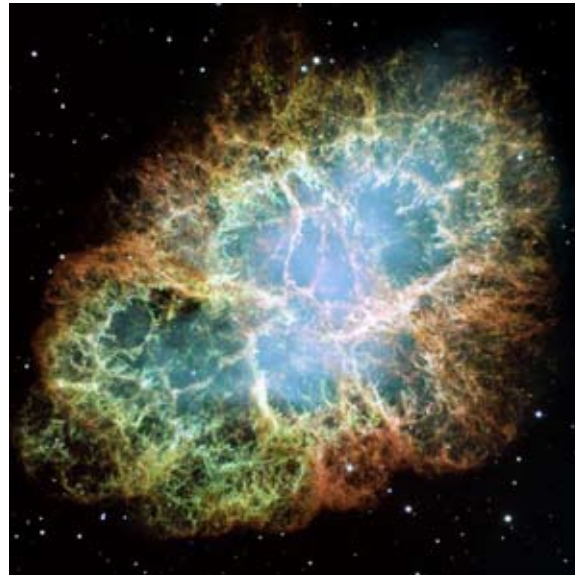
"I think the most surprising thing is that Wide Field Planetary Camera 2 has saved Hubble not once, but twice," Stapelfeldt added. "There was the 1993 fix of the original Hubble optical aberration, and the recent period, 2007 through today, when Wide Field Planetary Camera 2 was recalled back to primary duty after the newer Hubble cameras installed in 1997 and 2002 had failed."

Stapelfeldt also considers among the camera's greatest work the measurement of the Hubble constant (the size/age scale of the universe), census of the faintest galaxies (the Hubble Deep Field) and the "Pillars of Creation," which may be Wide Field Planetary Camera 2's most famous image.

Alas, its days are numbered due to the next and final shuttle servicing mission, which is scheduled for May 12 but may launch a day early. The mission will replace Wide Field Planetary Camera 2 with Wide Field Camera 3, provided by Goddard Space Flight Center, which has larger charge-coupled devices, more pixels and an infrared channel.

When Wide Field Planetary Camera 2 is returned to Earth, plans call for a possible display of the instrument at JPL before it eventually ends up at the Smithsonian Institution as a monument to the birth of space astronomy.

"Hubble is such a stable and powerful platform for astronomy," Trauger said, "we now realize—in a more personal and visceral way—how powerful a space telescope can be." ■



The mosaic of the Crab Nebula, left, and the "Pillars of Creation," right, are two of the Wide Field Planetary Camera 2's better-known images.



False-color image of the Eskimo Nebula, left, about 5,000 light-years distant, is composed of WFPC2 images in nitrogen, hydrogen, oxygen and helium emission lines.

This image of the Whirlpool Galaxy, right, uses data collected Jan. 15 and 24, 1995, and July 21, 1999.

# News Briefs



Leslie Livesay

## Livesay to head 3X

Leslie Livesay has been named director for engineering and science. She replaces Peter C. Theisinger, who has returned to manage the Mars Science Laboratory project.

Livesay was previously deputy director for astronomy and physics. At JPL she has served as manager of the Avionic Systems and Technology Division, Deep Space 1 spacecraft manager, telecommunication subsystem project element manager for the Mars Pathfinder Project, supervisor of the Radio Frequency Subsystem Group and technical lead for the NASA Scatterometer radio frequency subsystem.

## Earth proposals selected

NASA has selected for funding five of 10 proposals submitted by JPL principal investigators for the agency's Modeling, Analysis and Prediction Program, which supports observation-driven modeling that integrates the research activities in NASA's Earth Science Program.

Overall, NASA selected 52 of the 158 proposals submitted. The winning JPL principal investigators and their studies:

Jean Dickey, "Validation Of Geophysical Models Via Geodesy;" Eric Rignot, "A Three-Dimensional, High-Resolution Flow Model of the Greenland Ice Sheet: Validation and Prediction;" Joao Teixeira, "Cloud Transitions In the Tropics and Sub-Tropics: Improving the Representation of Shallow Cumulus Convection In Coupled Systems;" Duane Waliser, "Judicious Application of Satellite Observations To Evaluate and Improve Cloud Ice and Liquid Water Representations In Conventional and Multi-Scale Weather and Climate Models;" and Olga Kalashnikova, "Improving Dust Emission, Transport and Direct Radiative Forcing By Combined Multiangle Imaging Spectroradiometer/Modis Observations and Transport Model Predictions."

For more information on NASA research opportunities, visit <http://nspires.nasaprs.com/external>.

## Back from the station



Astronaut Greg Chamitoff speaks to a von Kármán Auditorium audience April 8. Chamitoff showed video and described his time aboard Expedition 17 to the International Space Station, a tour that lasted from May to November 2008. He described "unbelievable" views of Earth and space from the station, and enjoyed weightless workout routines where "everybody's an acrobat; it's hard to pass up a Superman opportunity."

## Passings



William Jensen

**William Jensen**, 69, a retired senior member of the technical staff, died Jan. 31.

Jensen began at JPL in 1962 as a U.S. Navy lieutenant on special assignment to NASA as a research and development engineer. He worked in ground data systems and mission operations for Ranger, Surveyor and Mariner Venus Mercury, as well as Mariner Venus Mercury, where he was instrumental in developing solar sailing strategies.

In 1976 Jensen was flight control chief for Viking when it became the first spacecraft to land on Mars. He headed mission control for Voyager's launch and later moved to the Deep Space Network, where in 1984 he became manager and chief engineer for spaceflight operations, developing a multi-mission control team capability at JPL.

Jensen later became a manager within the Institutional Business Systems Division and played a key role in the implementation of JPL's New Business Systems in 1998. He is also responsible for the design of the project management structure that is used to implement New Business Systems' enterprise-wide information technology projects. Though officially retired in 2005, Jensen continued as a consultant through January 2009.

Jensen is survived by his wife, Kaaren, daughter Danika, son Derek and two grandchildren. A celebration of life was held in April.

**Bob Weaver**, 73, a retired aeronautical engineer, died Feb. 8.

Weaver joined the Laboratory in 1961 as a project engineer in the wind tunnel group. He later worked on a wide variety of projects ranging from solar energy research to the analysis of explosions resulting from launch accidents. He retired in 1997.

He is survived by his wife, Louise; son Scott and daughter-in-law Mary Newton; daughter Margaret and son-in-law Brian Dunfee; and step-granddaughter Elizabeth Dunfee.

Retiree **Roy Downing**, 74, died March 5.

Downing worked at JPL from 1974 to 1990. He is survived by his wife, Lily, daughters Denise and Karen, and stepsons Vaughan, Robert and Bruce.



Diane Ainsworth

**Diane Ainsworth**, 56, a former media relations specialist in the Office of Communications and Education, died March 29.

Ainsworth worked at JPL from 1989 to 2000. She produced press releases, press kits and other published materials—and worked to secure news media coverage—for many of the Lab's Earth science and Mars missions, as well as Galileo and various astrophysics projects. She also contributed numerous science articles to Universe.

She is survived by her parents, Don and Virginia, and brothers Stephen and Donald. Services are pending. The family requests memorial donations to the American Heart Association.



Steve Pelentay

**Stephen Pelentay**, 83, a retired member of the Viking and Voyager imaging teams, died April 2.

Pelentay worked at the Lab from

1976 to 1993. He led JPL's Image Processing Lab, was technical group supervisor for imaging operations and worked on the Federal Aviation Administration's Voice Switching Control System Project.

He is survived by children Stephanie, Paul, Annice, Mary, Christie and son-in-law John, and grandchildren Jillian, Justin, Paul James and Christian. The family requests that memorial donations be considered to Angels Among Us, c/o St. Elizabeth School, 1840 N. Lake Ave., Altadena, 91001 and the Stephen and Annice Pelentay Memorial Fund, 1901 Venice Blvd., Los Angeles, 90006.

## Letters

I would like to thank over 80 of you for coming to my luncheon and for your generous gifts, with special thanks to Michele Sawnor, Cheryl Hillhouse, Rose Nadjarian, etc. for the wonderful party! Mable, Amy, Brian and I appreciate the great speeches given by Ed Luers, Dave Linick, Doug Griffith, Ed Massey and Al Beers. Dave's awards and Anne-Marie Krause's poem brought down the house! Many thanks to Ed Massey for the beautiful Voyager and Ulysses picture signed by both teams, to Julie Sprein, Nigel Angold of ESA, Cindy Byrne Koh, Lynn Osornia, and to the German Space Operations Center for the Recognition Certificate! I truly appreciate the retirement well-wishes from you, Larry Dumas, and many others from NASA Headquarters, CNES, Madrid, Canberra, ITT, Stanford, Berkeley, Harvard, Lockheed-Martin, etc. It has been a great honor to have you as my colleagues and friends!

Peter Poon

This is in deep appreciation of the support and understanding of my co-workers in NBS (especially my group 2231) given to me during the time my dad, Eugene Alpeter, was getting chemo. And sincere thanks to everyone for the cards, plants and dona-

tions to his hospice after he passed. I could not have gotten through it all without you.

Kathie Reilly

My family and I would like to express our sincere thanks and appreciation to my Spitzer family and all my friends for their expressions of sympathy and support upon the recent passing of my grandmother. My appreciation is also extended to JPL for the beautiful plant. Sincerely,

Monica Beltran and family

## Retirees

The following JPL employees retired in April:

**Daina Parlee**, 35 years, Section 2745; **Neville Marzwell**, 26 years, Section 3401; **Robert Wingren**, 26 years, Section 172B; **John Treicher**, 21 years, Section 3451.

## Correction

A listing in Universe's April issue of employees who retired in March contained an error. The listing incorrectly showed Lynn Barath retiring from Section 312 after 17 years of service; the name that should have been shown is that of Lynn Baroff.



**JPL RETIREES:  
FOR ACCESS TO CLASSIFIED ADS  
AT JPL'S ONLINE NEWS SOURCE**

<http://dailyplanet>

**E-MAIL US AT  
universe@jpl.nasa.gov**

# Universe

**Editor**  
Mark Whalen

**Design**  
Audrey Steffan

**Production**  
David Hinkle

**Photography**  
JPL Photo Lab

Universe is published by the Office of Communications and Education of the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109.