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## Quake forecast program has amazing success rate

By Alan Buis



Historic structures and a vehicle were damaged in Paso Robles from January's 6.5 San Simeon quake.

A NASA-funded earthquake forecast program has an amazing track record. Published in 2002, the Rundle-Tiampo Forecast has accurately forecast the locations of 15 of California's 16 largest earthquakes this decade, including last week's tremors.

The 10-year forecast was developed by researchers at the University of Colorado (now at UC Davis) and from JPL. NASA and the U.S. Department of Energy funded it.

"We're elated our computer modeling technique has revealed a relationship between past and future earthquake locations," said Dr. John Rundle, director of the Computational Science and Engineering initiative at UC Davis. He leads the group that developed the forecast scorecard. "We're nearly batting a thousand, and that's a powerful validation of the promise this forecasting technique holds."

Of 16 earthquakes of magnitude 5 and higher since Jan. 1, 2000, 15 fall on "hotspots" identified by the forecasting approach. Twelve of the 16 quakes occurred

after the paper was published in Proceedings of the National Academy of Sciences in Feb. 2002. The scorecard uses records of earthquakes from 1932 onward to predict locations most likely to have quakes of magnitude 5 or greater between 2000 and 2010. According to

Rundle, small earthquakes of magnitude 3 and above may indicate stress is building up along a fault. While activity continues on most faults, some of those faults will show increasing numbers of small quakes, building up to a big quake, while some faults will appear to shut down. Both effects may herald the possible occurrence of large events.

The scorecard is one component of NASA's QuakeSim project. "QuakeSim seeks to develop tools for quake forecasting. It integrates high-precision, space-based measurements from global positioning system satellites and interferometric synthetic aperture radar (InSAR) with numerical simulations and pattern recognition techniques," said JPL's Dr. Andrea Donnellan, QuakeSim principal investigator. "It includes historical data, geological information and satellite data to make updated forecasts of quakes, similar to a weather forecast."

JPL software engineer Jay Parker added, "QuakeSim aims to accelerate the efforts of the international earthquake science community to better understand earthquake sources and develop innovative forecasting methods. We expect adding more types of data and analyses will lead to forecasts with substantially better precision than we have today."

The scorecard forecast generated a map of California from the San Francisco Bay area to the Mexican border, divided into approximately 4,000 boxes, or "tiles." For each tile, researchers calculated the seismic potential and assigned color-coding to show the areas most likely to experience quakes over a 10-year period.

"Essentially, we look at past data and perform math operations on it," said James Holliday, a UC Davis graduate student working on the project. Instrumental earthquake records are available for Southern California since 1932 and for Northern California since 1967. The scorecard gives more precision than a simple look at where quakes have occurred in the past, Rundle said.

"In California, quake activity happens at some level almost everywhere. This method narrows the locations of the largest future events to about 6 percent of the state," Rundle said. "This information will help engineers and government decision-makers prioritize areas for further testing and seismic retrofits."

So far, the technique has missed only one earthquake—a magnitude of 5.2—on June 15, 2004, under the ocean near San Clemente Island. Rundle believes this "miss" may be due to larger uncertainties in locating earthquakes in this offshore region of the state.

## Genesis samples 'very, very good'

The Genesis team is preparing to ship its samples of the Sun from the mission's temporary cleanroom at the U.S. Army Proving Ground, Dugway, Utah, to Johnson Space Center in Houston.

"We have essentially completed the recovery and documentation process and now are preparing everything for transport," said Eileen Stansbery, Johnson Space Center assistant director of astromaterials research and exploration science. "We still have a way to go before we can quantify our recovery of the solar sample. We have come a long way from Sept. 8, and things are looking very, very good."

A major milestone was the recovery of Genesis' four separate segments of the concentrator target. The segments contain within their structure the samples that are the mission's most important science goal.

"Retrieving the concentrator target was our No. 1 priority," Stansbery said. "When I first saw three of the four target segments were intact, and the fourth was mostly intact, my heart leapt. Inside those segments are three years of the solar samples, which to the scientific community means eons worth of history of the birth of our solar system. I saw those, and I knew we had just overcome a major hurdle."

Other milestones in the recovery process included the discovery that the gold foil collector was undamaged and in excellent condition. The gold foil, expected to contain almost a million billion atoms of solar wind, was considered the No. 2 priority for science recovery. The polished aluminum collector was misshapen by the impact. However, it is intact and expected to also yield secrets about the Sun. Another occurred when the cleanroom team disassembled the collector arrays. They revealed, among large amounts of useable array material, some almost whole sapphire and coated sapphire collectors and a metallic glass collector.

The samples and shipping containers fill the space of about two full-size refrigerators. The Genesis material will probably move to JSC by the first full week of October.

"If you had told me Sept. 8 that we would be ready to move Genesis samples to Houston within the month I would have replied, 'No way,'" said Genesis Project Manager Don Sweetnam of JPL. "But here we are, with an opportunity to fulfill our major science objectives. It is a great day for Genesis, and I expect many more to come."

## Software links pediatric doctors with new research

By Natalie Godwin

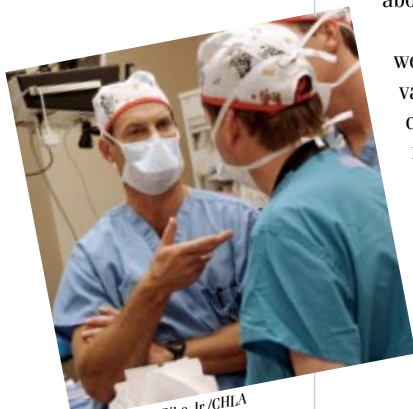


Photo by Bob Riha Jr./CHLA

Surgeons at Childrens Hospital Los Angeles confer before beginning surgery to separate conjoined twins.

Conjoined twins from Guatemala and the Philippines were recently separated after marathon surgeries in the United States, since their small communities lacked the quality medical care for the delicate procedure. Engineers at JPL are working with doctors on a computer system that might eventually allow such high-tech surgeries to be performed in a remote country using a virtual pediatric intensive care unit.

JPL computer engineers created software that will connect information from various hospitals all over the world into one virtual intensive care unit. The system would link doctors who need detailed and specific information with researchers willing to share their data about pediatric medicine.

For example, if a pediatrician in North Carolina were to want information about the most advanced treatment for a child with bone cancer, he could search the database and find the latest medical studies conducted by researchers all over the country.

The software, called Object Oriented Data Technology Software, was modeled after the Planetary Data System, a large software network that helps space scientists translate terminology used in local databases into standard language. Similar software is used to support JPL's Mars Exploration Rovers.

"The problem has been that information has been generated for local use, and now scientists are discovering the value of sharing research within their various communities," said Dan Crichton, JPL senior computer scientist. "This has been true in planetary science and biomedicine and, now, in pediatric medicine."

With the extended databases, pediatricians can also record patient information directly from bedside moni-

tors regardless of their location. The computer system is also capable of storing the information so researchers can use it for clinical trials and helping educate other doctors dealing with similar patients.

Right now, the virtual pediatric intensive care unit is being developed and tested at Childrens Hospital in Los Angeles. Next year the system will be extended to Johns Hopkins Children's Center, Baltimore, and Cornell University Medical Center, New York.

"The goal of the virtual pediatric intensive care unit is to enable us to practice in one critical care unit where we will all have the latest information available to care for critically ill children," said Dr. Randall Wetzel, director of critical care medicine at Childrens Hospital, Los Angeles. "The fast paced, compelling urgency and the overwhelming diversity of diseases seen in children around the world makes communication among caregivers life-saving and essential, but at the same time difficult."

The virtual pediatric intensive care unit is ideal for hospitals without advanced intensive care units. In the next few years, engineers hope to install networked cameras, allowing doctors to check on their patients in remote areas and assist their colleagues working in isolated centers.

"It is extremely rewarding to see this NASA-funded technology solving a problem of national importance," said Dr. Ken Wolfenbarger, manager of JPL's Innovative Technology Transfer Partnerships Office. "As part of its mission, JPL welcomes the opportunity to collaborate with outside companies to develop and transfer dual-use technology through NASA's Innovative Partnerships Program."



# News Briefs



Tom Frascchetti

### Frascchetti honored by CSLA

Dawn Project Manager TOM FRASCHETTI will be honored by his alma mater, Cal State Los Angeles, as Distinguished Alumnus, College of Engineering, Computer Science and Technology on Oct. 21.

Frascchetti, an Arcadia native, earned a master of science degree in electrical engineering at Cal State Los Angeles in 1972. He has worked at JPL for 21 years. Previously, he served as deputy director for the Engineering and Science Directorate.

Cal State Los Angeles annually bestows 11 alumni awards, one for each of its academic colleges.

For more information about the event, contact NATALIE KINKELLA, Alumni Association director of membership and marketing, at (323) 343-6059 or [nkinkella@cslanet.calstatela.edu](mailto:nkinkella@cslanet.calstatela.edu).

### 2005 Benefits enrollment coming up

From Oct. 11–29, employees will be able to select their benefit options for 2005. Enrollment instructions and a detailed Comparison of Benefits chart will be mailed to each employee's home prior to Oct. 11. Retiree information will be mailed at the end of October.

The Benefits@Caltech newsletters sent out in September discussed important changes in the benefits program effective Jan. 1, 2005. These changes include:

- Returning to Blue Cross as JPL's primary insurer for Preferred Provider Organization and Health Maintenance Organizations plans, alongside Kaiser.
- Benefits eligibility expanded to include opposite-sex domestic partners who are registered with the California Secretary of State as long as one of the partners is at least 62 years old.

Employees may make enrollment changes online by accessing the JPL Annual Benefits Enrollment website located on employees' NBS Toolkit.

This year, it's important to review the enrollment materials provided and verify your dependent information online. In addition, if you are transitioning to the Blue Cross HMO plan it's also important to review the primary care provider data online to ensure that you are assigned the correct provider.

To assist you in making your enrollment selections, 2005 plan changes and Blue Cross Pharmacy and Transition of Care will be discussed as follows:

- Monday, Oct. 11, 11 a.m. 1 p.m., Building 180-101
- Tuesday, Oct. 12, 3–5 p.m., 180-101
- Wednesday, Oct. 13, 2–4 p.m., 180-101

Thursday, Oct. 14, 3–5 p.m., 180-101

Friday, Oct. 15, 1:30–3:30 p.m., 167 conference room

Monday, Oct. 18, 11 a.m.–1 p.m., 180-101

Wednesday, Oct. 20, 9:30–11:30 a.m., 180-101

Friday, Oct. 22, 1–3 p.m., 180-101.

In addition, medical and dental question-and-answer sessions will be held on the mall from 9:30 a.m. to 3 p.m. on Oct. 14, 21, 26 and 28.

For questions on enrollment, please contact the JPL Benefits Office at ext. 4-3760.

### Education Fair Oct. 13

Professional Development will host the JPL Education Fair on Wednesday, Oct. 13 from 11 a.m. to 1:30 p.m. on the mall. The event will provide a great opportunity for employees to learn about educational opportunities.

Representatives from 20 local universities and schools who are members of the Consortium of Southern California Colleges and Universities will be on Lab to answer questions regarding certification, undergraduate, graduate and doctorate programs. They will also be available to answer concerns on other education-related issues such as enrollment, scheduling courses, transferring credits, and financial options.

On-Lab training organizations are participating to inform employees of the wide range of training currently offered at JPL. Participants include JPL Training Providers, Acquisitions Division; Diversity Programs Office, Ethics Office, Information Technology Education and Training, Learning Management Systems, New Business Systems, Professional Development, Occupational Safety Office, Project Resource Administration Division, Quality Assurance and Software Quality Improvement.

For more information regarding the event or universities, visit <http://hrvet>.

### NASA transition veterans sought

The 11th reunion for individuals employed by the federal government in the National Advisory Committee for Aeronautics is scheduled to be hosted by NASA Ames this fall. The event celebrates the 47th anniversary of the transition from the NACA to NASA.

Those who are among this group and have not received a letter of invitation mailed in late September are requested to contact the organizing committee by phone at (650) 604-1032, e-mail at [nacareunion11@mac.com](mailto:nacareunion11@mac.com), or by letter to NACA Reunion XI, Ames Research Center, Mail Stop 207-1, Moffett Field, CA 94035-1000.

# Special Events Calendar

### Ongoing Support Groups

Alcoholics Anonymous—Meets Wednesdays at 11:30 a.m. For more information, call the Employee Assistance Program at ext. 4-3680.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place).

Codependents Anonymous—Meets at noon every Wednesday. For more information, call the Employee Assistance Program at ext. 4-3680.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meets the first Friday and third Thursday of the month at noon in Building 111-117.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

### Friday, October 8

Percussion—Les Percussions de Guinee with Master Women Drummers of Guinea will present a program called *Amazones* at 8 p.m. in Caltech's Beckman Auditorium. For the first time, the renowned drumming ensemble from West Africa will share the stage with women, who were previously forbidden from playing. Tickets are \$29, \$25 and \$21; high school age and younger, \$10. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Saturday, October 9

Gobo Gobo: The Sounds of Nature—This family event will be presented at 2 p.m. in Caltech's Beckman Auditorium. Two high-definition films, *La Mer* and *Form of Forest: Color of Forest*, will be accompanied by live music. A discussion of the films with Caltech scientist Ann Marie Polsenberg will follow the screenings. Free admission. Presented as part of the "Saturdays at 2:00" series of family events, as well as part of The Tender Land: Pasadena Festival of Art, History, Music and Science. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

Folk Music—Scottish harpist William Jackson will appear at 8 p.m. in Caltech's Dabney Lounge. Tickets are \$15 for adults, \$5 for children under 12. For more information, call (626) 395-4652 or visit [www.folkmusic.caltech.edu](http://www.folkmusic.caltech.edu).

### Tuesday, October 12

JPL Stamp Club—Meeting at noon in Building 183-328.

### Wednesday, October 13

Dr. David Goodstein—The vice provost and professor of physics at Caltech will lecture on his book "Out of Gas: The End of the Age of Oil" at 8 p.m. in Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Library Orientation—Come to Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Dirk Runge at ext. 3-0465 for information.

TIAA/CREF Enrollment Meeting—This workshop, held at noon in T1720-137, is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment options and the completion of their enrollment forms.

### Thu.–Fri., October 14–15

Von Kármán Lecture Series—Mars Reconnaissance Orbiter Project Manager Jim Graf and MRO Project Scientist Dr. Richard Zurek will present "An Unprecedented Look at Mars" at 7 p.m. Thursday in von Kármán Auditorium and Friday in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. Thursday's lecture will be webcast at <http://www.jpl.nasa.gov/events/lectures/oct04.cfm>. For more information, call Public Services at ext. 4-0112.

### Saturday, October 16

Inti-Ilumani—The Chilean group that performs traditional and world music on more than 30 wind, string and percussion instruments will appear at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$29, \$25 and \$21; high school age and under, \$10. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Mon.–Tues., Oct. 18–19

Investment Advice—TIAA/CREF will offer one-on-one counseling. For an appointment, visit <http://tiaa-cref.org> or call (877) 209-3140, ext. 2614.

### Wednesday, October 20

JPL Library Orientation—Come to Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

### Thursday, October 21

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

JPL Astronomy Club—Meeting at noon in Building 306-400. Charles Morris will discuss currently visible comets.

JPL Stories—Julie Webster, manager of the Cassini Spacecraft Operations Office, will present "The Perils and Pleasures of Cassini's Seven-Year Cruise" at 4 p.m. in the Library, Building 111-104. If you have questions about the story series or wish to participate, call Teresa Bailey, ext. 4-9233.

"Voices of Vision" Series—Bob Schieffer, Washington correspondent for CBS News and moderator of Face the Nation, will speak at 8 p.m. in Caltech's Beckman Auditorium. Following the talk, Schieffer will sign copies of his book *Face the Nation: My Favorite Stories from the First 50 Years of the Award-Winning News Broadcast*. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Saturday, October 23

Celtic Music—Ireland's Lunasa will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$22, \$18 and \$14; high school age and under, \$10. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Sat., Oct. 23–Sun., Oct. 24

Finishing Touches For Kidspac—Rides, games, entertainment and more will highlight the annual Pumpkin Festival, to be held at Brookside Park Saturday from 10 a.m. to 6 p.m., Sunday from 10 a.m. to 5 p.m., Free admission. For more information, visit [www.kidspacmuseum.org](http://www.kidspacmuseum.org).

### Sunday, October 24

"Why We Lie: The Evolutionary Roots of Deception and the Unconscious Mind"—Dr. David Livingstone Smith will appear at 2 p.m. in Caltech's Baxter Lecture Hall in this Skeptics Society-sponsored lecture. Free for JPL/Caltech community. For more information, call (626) 794-3119.



From left: Dave Atkinson, Scott Cozy, astronaut Pam Melroy, Sharon Chapman, Eric Hines.

Three JPL employees were recently honored by NASA's Space Flight Awareness Program.

Scott Cozy (Section 3443), Sharon Chapman (3210) and Eric Hines (2731) traveled to the Coronado Springs Resort and Conference Center in Lake Buena Vista, Fla., for a series of events held Aug. 22–27. Joining them was program guest Dave Atkinson, deputy technical manager of the Information Technologies and Software Systems Division. The four joined about 300 program honorees, including international partners working on the International Space Station.

The group's activities included a VIP tour of Kennedy Space Center, a dinner reception and an awards breakfast.

## SFA program honors JPLers



# Family of Explorers

to travel New Year's parade route

By Mark Whalen



Right: Dr. Charles Elachi checks out the picture of the Lab's 2005 Rose Parade float, revealed Sept. 30.

Anticipation is building for the completion of the JPL/Caltech entry in the 2005 Tournament of Roses Parade. With the strains of Elton John's "Rocket Man" being played in the mall on Sept. 30, Laboratory staff got a sneak peek at the float's design as they enjoyed about 1,800 root beer floats.

Pasadena-based Phoenix Decorating Company, selected early this year to design and build the float, revealed a picture of what the float will look like. In keeping with the 2005 Rose Parade's theme of "Celebrate Family," the Lab named its float—a 50-foot robot that will honor nine of the Lab's current missions—"Family of Explorers."

"This has been an extraordinary year for us, a great year of exploration and discovery," said JPL Director Dr. Charles Elachi. "Our intent is to culminate this year and start next year with another amazing event. The Rose Parade float is something we can all be proud of — to have millions of people around the world see what you do."

Indeed, the robot's arms and legs will be adorned with small models of Cassini, Stardust, Jason, Genesis, Galaxy Evolution Explorer (Galex), the Spitzer Space Telescope, the Gravity Recovery and Climate Experiment (Grace), and the twin Mars Exploration Rovers, Spirit and Opportunity. The rovers will appear at the bottom as the robot's "roller skates."

Construction began about four months ago and is intended to be completed around Thanksgiving, said Bill Lofthouse, founder of Phoenix Decorating Company. He said the base of the float would be about 50 feet long.

As the float rolls along Orange Grove, Colorado and Sierra Madre boulevards, special effects will include smoke, carbon dioxide, strobe lights and animation. "Rockets" behind the robot's arms will be activated.



Dutch Slagter/JPL, PhotoLab

The company, Lofthouse said, works on about 20 Rose Parade floats on average. For 2005, they are building 22 floats besides the JPL/Caltech entry. In addition to the Rose Parade, their experience includes floats for parades accompanying the Orange Bowl in Miami and the Fiesta Bowl in Tempe, Ariz.

Lofthouse told the crowd he was "pleased and honored" to be selected for the job. "Why wouldn't anyone be pleased to work with JPL and Caltech? You have no equal anywhere in the world."

A joint JPL/Caltech float committee solicited design concepts and ideas from the JPL community earlier this year, then worked with Phoenix to select the final concept in April.

"When we decided to have a float in the parade, our first thought was to design it and build it at JPL," joked committee chair Dr. Richard O'Toole, manager of the Legislative and International Affairs Office. "However, after thinking about an RTG-powered float that would last 12 years and cost a million dollars a pound to build, we decided to select someone else."

On the serious side, "This is not NASA money building the float," O'Toole said. "This is award fee money that's come back to Caltech and would have come to JPL for our terrific performance of the last year. That's what we're celebrating with this float, that's what's paying for it and no one should be concerned that we're using NASA funds."

JPL staff will make more contributions to the completed product. So far, more than 140 people—JPLers, their families and friends, and some high school clubs—have signed up to help decorate the Lab's float. Flowers, seeds or other natural materials, such as leaves or bark, are applied to floats during the last week in December at Rosemont Pavilion, next to the Rose Bowl.

The volunteer opportunity starts Dec. 26. Participants must be 13 years of age or older. To sign up, contact Public Services Office Manager Kim Lievense at ext. 4-0112.

For when parade day comes, the JPL Store is selling Rose Parade ticket packages. For \$45, you get a ticket to the parade, breakfast at Caltech's Dabney Lounge and an official parade program. Call ext. 4-6120.

In keeping with the 2005 Rose Parade's theme of "Celebrate Family," the Lab named its float—a 50-foot robot that will honor nine of the Lab's current missions—"Family of Explorers."

## Astronaut visits local Explorer School

NASA EDUCATOR ASTRONAUT BARBARA MORGAN was joined by Blaine Baggett, executive manager of JPL's Office of Communications and Education, during a visit with students at Lake View Elementary School in Huntington Beach on Sept. 24. Lake View Elementary is part of NASA's Explorer School program, a three-year partnership of scientific and engineering adventures to engage students using unique NASA resources and capabilities. The visit was one of several conducted in recent weeks with Southern California Explorer Schools.



Bob Brown/JPL, PhotoLab



## Passings

**CLARENCE HOLRITZ**, 89, retired from the former Deep Space Network Support Section, 377, died Aug. 16.

Holritz joined JPL in 1961 and retired in 1980. He is survived by his wife, Patricia, daughter Carole, sons David and Michael, five grandchildren, and four great grandchildren.

Services were held at Pacific View Memorial Park in Corona Del Mar.

**MARGARET "MARGE" BRANDENBERG**, 82, a retired executive secretary for the former Information Systems Research Section (364) in the Information Systems Division, died at her home in Leisure World, Laguna, on Sept. 6.

Brandenberg worked at JPL from 1955-85. She is survived by a cousin, Grace McMillan, in New Jersey.

**DR. DAVID BENDER**, 91, a retired astrophysicist in JPL's former Advance Project Group in the Mission Design Section, died Sept. 13.

Bender participated in planning the orbital mechanics of many mission projects, and his analytical techniques were widely used to evaluate missions. He was a pioneer in the generation of spacecraft trajectories that fly by or rendezvous with asteroids. To acknowledge his role as the leading expert in the orbits of minor planets, asteroid number 2725 was named in his honor.

He is survived by his son and daughter-in-law, Robert and Leta Bender; daughter Susan Rodrigues; and grandchildren Jeff, Allison and Kimberly.

Memorial donations in his name may be made to the Nature Conservancy, 4245 N. Fairfax Dr., Suite 100, Arlington, VA 22203-1606.

## Letters

I want to acknowledge and express my appreciation to the Jet Propulsion Laboratory, the New Millennium Program Office, and my officemates for the lovely plants, flowers, cards, and their expressions of sympathy toward me and my family for the loss of my wife, Cece, who went to be with the Lord on Sept. 2, 2004. Thank you and God bless you for your encouragement and support.

Chris Weaver

My father and I would like to thank my co-workers at Woodbury for their support and generous contribution to the American Cancer Society in memory of my dear brother Scot. I would like to especially thank my office-mate Ali Smilgis for her support and my management for their understanding. Thank you, too, to JPL for the lovely plant.

Kathie Reilly

## Retirees

The following JPL employees retired in September:

John Hultberg, 40 years, Section 313J; Ralph Bartera, 39 years, Section 311G; Ralph Reichert, 35 years, Section 940; Peter Woiceshyn, 34 years, Section 3244; Vincent Anicich, 28 years, Section 3264; Michael Lou, 24 years, Section 354; Sharon Miller, 21 years, Section 3323.

The following employees retired in October:

Harry Reilly Jr., 47 years, Section 333J; Robert Toomath, 47 years, Section 353; Olen Adams, 39 years, Section 3417; Joel G. Smith, 35 years, Section 4031; Charles Black, 29 years, Section 9300; Gilbert Clark, 21 years, Section 3245; Jim Wiesneth, 21 years, Section 2652; Robert Axsom, 19 years, Section 515.

## Classifieds

### For Sale

**BABY FOOD PROCESSOR** by Dex, dishwasher safe, brand new in original packaging, \$20. 714/280-7368.

**BED**, Craftmatic adjustable, Model 1, queen orthopaedic mattress, wireless remote control, variable wave massage, very comfortable, exc. cond., like new, 1 yr. old, must sell, moving, \$1,700/obo (paid \$3,900). 626/844-9211.

**BICYCLE RACK**, heavy-duty, fits into 2" hitch receiver on rear of car/truck/RV, carries 2 bicycles, adjustable for each size, picture available by e-mail at 4cbcee@alltrinet.com, \$50 (retails for \$140). 626/447-3857, Dick.

**BIKE**, Royce Union BMX, front & rear pegs, hand brakes, free-spinning handlebars, exc. cond., \$75. 626/797-3202, Andrew Cox.

**BOYS BIKE**, Diamondback, Octane 20, 6 speeds, 20" wheels, top cond., \$75/obo. 790-6851, Roger.

**CAMERA**, Nikon F100, 24-120 mm D Lens, Hoya ultraviolet and polarization filters, Sun Pak power zoom, 4000 AF, Tamrac camera bag, almost new, \$1,400/obo. 790-5965.

**CHAIR**, reclining barca-lounger type, dk. blue floral pattern, exc. cond., \$100/obo. 790-5341.

**CLOTHES**, infant: jacket, red/navy blue, zip-up w/hood (Old Navy), size 2T, exc. cond., \$5/obo; sweater, sky blue w/navy trim, buttons, size 3T, \$1/obo; zipper shoes, Spongebob motif, size 11M, exc. cond., \$5/obo; photo of each avail. 626/791-6101.

**COFFEE TABLE**, Victorian style, genuine polished Carrera marble top, imported from Italy, hand carved, solid mahogany wood base, constructed and sold in the US, approx. size 33" W x 22" D 17" H, \$300. 368-8160, eves.

**COMPUTER**, Macintosh G3, PowerMac desktop, complete w/19" iiyama monitor (top rated), scanner, Epson color printer, modem, extra RAM, works perfectly, all for \$150. 626/798-2925.

**CONCERT TICKETS**, PJ Harvey, Oct. 25 at the Wiltern, Mezzanine, row L, seats 209 & 210, \$90. 626/791-8161.

**CRIB**, Child Craft, oak, light natural color, incl. Serta Baby Premier Mattress, exc. cond., non-smoking home, \$150. 626/256-6606.

**DESK & HUTCH**, \$40. 626/304-0688, eves.

**FURNITURE**: complete 3-piece bedroom set includes armoire, headboard component, containing mirror, shelf, drawers, 2 attached side dressers, and dresser with mirror, white-wash finish, \$250. 626/794-1432.

**FURNITURE**: 2-piece Bassett sectional (1 pc. is a sleeper), floral print, photo & dimensions avail., cushions need new covers, rest in gd. cond., \$250/obo. 626/791-6101.

**FURNITURE**, almost new, king size, Brass & Nickel head/foot board, purchased at Pacific Design Center for \$2,800, sell \$500/obo; king size Sealy Posturpedic mattress, great cond., \$150/obo. 626/441-5484, Debbie.

**GARAGE SALE**, Sat., Oct. 9, 9:00-3:00, 1250 Hastings Ranch, Pasadena. 626/351-0348.

**HIGH CHAIR**, wood, Windsor style, 38" H, gd. cond., about 5 yrs old, used for visiting grandchildren, photo available, \$50. 909/596-4390.

**JEWELRY**, Paloma Picasso daisy pendant, platinum, round, brilliant diamonds, .15 carat total, G color, VS clarity, 16" chain, paid \$1,395, sell for \$1,000 (purchased at Tiffany's). 626/644-0890.

**JUICE FOUNTAIN**, Breville, powerful, stainless steel motor, great for daily juicing, bought 10/03, used 2-3 times only, original package, \$100/obo. 626/840-0955.

**MEDICAL EQUIPMENT**: Invacare walker, dual-release w/3" fixed wheels, model #6291-3F, lightweight, height adjustments, ergonomic folding mechanisms, 300 lb. weight capacity, lifetime warranty, almost new cond., sell for \$50 (new \$130). 714/280-7368.

**MISC**: all brand new: whole house fan, Master Flow 30" (36 wide) belt drive, \$180 new, sell for \$100; lg. toaster oven, \$75; Cuisart coffee machine, \$75; used exercise equip., Nordic Trak, \$100; rowing machine, \$40; couch set, country motif with Italian floral tapestry, \$500/set. 626/797-3082.

**MISC**: carpet, nearly new, light mauve, high quality, 2 pieces, 16 x 17, \$125, & 12 x 11, \$80; rocking/nursing chair and ottoman, new, solid wood, natural finish, elegant tapestry patterned cushion, \$125; dryer, apartment size, gas, white, \$70. 626/794-1432.

**MISC**: pool table, 8', \$500; tablecloths, 2 slate blue oval, 18 matching napkins & rings; mail-box, oversized, green, \$10; mailbox, new, black, \$10; wig, red, shoulder length, never used, \$20; electric frying pan, \$10; ans. machine, \$5; basketball set, portable, needs net, \$200; fishing pole, saltwater, \$25; matt. for bunk bed, gd. cond., \$10; baseball glove, small, & conditioner, gd. cond., \$25. 626/357-8210.

**MISC**: Kenmore refrigerator, black, 8 years old, works great, \$250; Whirlpool clothes dryer, 10 years old, works great, \$100; Maytag washer, 10 years old, works great, \$100; gas barbecue, \$50; best offer will be considered. 626/859-6393, Cheryl.

**MOUNTAIN BIKE**, Pacific, front and rear shock absorbers, 21 speeds, Shimano gears, hill-assist handle bar extensions, great cond., \$75. 626/797-3202, Ryan Cox.

**PINE TREES**, Bishop, 2, large, healthy and beautiful, 15' and 8', \$70 for both. 249-4561.

**PLAYPEN / TRAVEL CRIB**, Graco Pack & Play, navy blue, folds up for easy transport, incl. navy blue nylon tote bag, non-smoking home, great cond., \$25. 626/256-6606.

**PRINTER CARTRIDGE**, inkjet, brand new, \$16, replaces 51626A, for HP DeskJet 4xx, 5xx, Plus, Fax, etc. 626/679-5168.

**REFRIGERATOR**, Kenmore 22 cu. ft., side-by-side, automatic icemaker, through-door ice & water dispenser, white, gd. cond., avail. after 10/15/04, \$75. 626/794-6860.

**REFRIGERATOR**, GE Hotpoint, 14(?) cu. ft., pale beige, top freezer; WxDxH: external 28.5" x 28" x 61.5", top internal 24 x 18.5 x 15.5, bottom internal 25 x 18.5 x 37; frost-free, exc. reliability, 100% uptime since '92, doors can be hinged either side, all interior plastic intact, cleaned and sanitized (photos: home.earthlink.net/~ckc000/fridge), \$95 (or make offer). 626/791-7219 (eve.), 626/616-5034 (cell), KheeChan@earthlink.net.

**SOFA**, re-upholstered, older but seldom used, vg condition, 8' L x 31" H x 38" D, light blue floral with pink, quilted, \$200; **MATCHING DRAPERY**, floor-length tie-back panels and valance, 2 sets, \$50; **DRAPES**, loose weave, cream with pink dots, floor length, 2 sets, \$50; all draperies have been cleaned and ready to hang, hardware included, photos avail. 909/596-4390.

**TELEVISION**, 27" color Toshiba, stereo, picture-in-picture and more, remote, like new, works great, \$125. 661/972-2225.

**TROPICAL PLANTS**, plumerias, variety of colors and sizes; shell ginger. 626/444-6156, Annie & Bob DePonte.

**WASHER**, Whirlpool, heavy duty, lg. capacity, 2 speed, 5 cycle, temp. and load size selector; Whirlpool gas dryer, lg. capacity 3 cycle, 3 temp. w/perm press cycle, white, works well, sell as set only, avail. after 10/15/04, \$150/both. 626/794-6860.

**WASTEBASKET**, white, plastic w/metal guide rail, about 1 x 2 x 3 ft. tall, installs inside kitchen cabinets to hide trash, brand new, in original box with screws for installation, \$80/obo. 626/840-0955, leave msg.

### Vehicles / Accessories

'97 CHEVROLET Tahoe, gd. cond., loaded, 4-wheel drive, 105K mi., \$9,000. 310/327-1080, Marji.

'00 LEXUS ES 300, automatic, leather powered seats, moonroof, CD changer, metallic two-tone black, power everything, exc. cond., 29K mi., \$19,500. 909/630-5176.

'93 MERCURY Sable GS wagon, 4-dr., automatic V6, metallic silver, very clean in/out, runs great/quiet, regularly maint., 120K mi, \$1,600/obo (KBB \$2,000). 626/304-9249.

'93 MERCURY Villager minivan, gray, new motor, new front & rear a/c, exc. cond., first owner, \$7,000/obo. 909/823-4711, Loni.

'02/'03 SUZUKI GSX 600 Katana,

yellow/black, kept in garage, exc. cond., only 1,200 mi., includes helmet, cover and lock, \$5,000. 626/796-1044, Benny.

'99 TOYOTA Camry XLE, top of the line, loaded, V6, CD player, moonroof, power leather seats, auto, 50K mi., exc. cond., \$11,500. 909/630-5176.

'02 VOLVO V4 wagon, only 14,500 mi., 4-cyl., 1.9L turbo, exc. cond., silver color, a/c, stereo/ cass./CD, dash cover, garage parked, all serv-ice records avail., 15K mi. service completed, new rear brakes, both dealer warranty & extra VIP extended warr. (orig. cost \$1,530) are transferable, \$16,590. 626/355-5631, Tim.

'95 YAMAHA FZR 1000, motorcycle, 25K easy mi., adult owned, new battery, tires, \$3,800. 626/584-9844.

### Free

**CAMPER SHELL**, for pick-up truck. 957-2852.

**CATS**: fabulous felines seeking pet-friendly home, 10-year-old Bobtail named Rodney, male, neutered, all shots; 4-year-old Tabby named Candie, female, spayed, all shots; Rodney needs regular grooming, Candie does not. 504-6232.

**COMPUTER DESK**, gd. cond., 48" L x 24" W x (28" H + 24" H hutch), pickup location very close to JPL. 626/345-0079.

**FURNITURE**: solid walnut coffee table with glass top; dark brown vinyl recliner; oriental rug (5-1/2 x 8), two queen sofa beds; all in gd. cond., except sofa beds which are in fair cond. 626/441-6536, Steve or Jeanne.

**GRASS**, St. Augustine, healthy, you dig it up, no weeds but there are tree roots, promise to not leave a mess and watch out for (marked) sprinkler heads. 626/794-9470, Nancy.

**INTEGRA SHOP MANUAL**, factory, well loved and worn, for 1990-'93 models, purchased for over \$50, it got great use but the car was sold to a dealer. 679-3323.

**MELON SEEDS** from organically grown heritage varieties, including Ambrosia, Rayson, Golden Gopher (yes, that's its name) & others, delicious cantaloupe and casaba-type melons not found in supermarkets, easy to grow. 626/798-3235.

**ORGAN**, 1970 Gulbransen Paragon, all transistor, a few keys do not work, a good challenge for someone who likes to tinker, owner's guide w/instructions, a beautiful piece of furniture, with bench. 626/797-7320, Don or Elva, or leave message.

**REFRIGERATOR**, good second one for kitchen or garage. 957-2852.

### Wanted

**BOOKS**, used/new, paperback or hardback, or magazine, romance, science fiction, mystery, etc. 248-0178, engineerbob4449@yahoo.com.

**COMPUTER**, laptop, min. 600 MHz, must have audio/mic. capabilities, USB 2.0 ports, CD-ROM and floppy or CD/RW, needed for child with dyslexia, can pay \$500 max. 390-646.

**CONTROLLER** to join admin. team at Child Educational Center, Caltech/JPL Community, part-time; candidates must have a bachelor's degree and a minimum of 5 years accounting experience with 2 years in a supervisory role; CPA and experience in a non-profit environment is desirable; wonderful, supportive work environment, flexible work hours, good benefits, Equal Opportunity Employer; go to www.ceonline.org for more info; send resume to Elyssa Nelson at emnelson@caltech.edu. 354-3418.

**MATH TUTOR**, Jr. & Sr. high school level geometry, pre-algebra, algebra I & II, SAT math, etc. eves. and/or weekends. 888/784-1639, David, please leave msg.

**RIDER**, from Claremont area to JPL, share gas, work 9-6. 909/624-9564.

**SPACE INFORMATION**/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

**VANPOOL RIDERS**, from Victor Valley/Hesperia. 4-1424, Scott.

**VANPOOL RIDERS**, from Walnut (Grand & Amar). 4-9735, Barbara.

**WELDING MACHINE**, MIG 220V, gd. cond. 323/662-4089.

### For Rent

**ALTADENA** guest house, new studio, fully furnished, all util. paid, 3 mi. from JPL, washer & dryer incl., \$900. 626/798-5796.

**ALTADENA** "sabbatical house," 3 bd. + study, boundary Angeles Nat'l Forest, 3 miles from JPL (trails to Lab behind house), view, hardwood floors, antiques, completely furnished: includes dinnerware, utensils, pots/pans, linens & towels, fine soaps, necessities included, just bring toothbrush & clothes, TV/DVD/VHS, Dish satellite, wireless DSL, garden, fruit trees, patio, BBQ, parking, private, immaculate. 626/798-3235, info/visit.

**GLENDALE**, Rancho San Rafael community, executive view home, 4 bd. + office, 3.5 ba., living rm. w/high ceiling, formal dining rm., family rm. w/built-in entertainment center, lg. kitchen w/breakfast area, laundry rm., 3 fire-places, 2-zone a/c-heat, security system, 3-car garage, yard w/city view, spa, patio, BBQ, community pool & tennis, built 1990, min. 1-yr. lease, non-smokers, \$4,500. 240-6956.

**PASADENA** house, 3 bd., 2 ba., 2-car gar., 3 mi. from JPL in historic Highlands area, quiet area near foothills, private yard, stove/frig., washer/dryer, dishwasher, fireplace, semi-furn., water/gardener/trash incl., \$1,750 + util. + security dep., 1-yr. lease. 626/840-1399.

**PASADENA**, 1920s apartment close to Caltech, 2 bd., 2 ba., living rm., dining rm., kitchen & office, ample storage, hardwood floors, fireplace, front and back enclosed decks, 1,400 sq. ft., gardener, water, trash paid, \$1,800. 249-3602 or 626/398-8865.

**PASADENA**, spacious very private nr. + priv. bath in condo, great location nr. Caltech, quiet, very clean, lg. closets, shared kitchen/living rm., large balcony/nice view (green trees), gated security garage, laundry in building, quiet male preferred, \$530 + \$35 util. 626/796-9221.

### Real Estate

**PASADENA** 3 bd., 2.5 ba., 2-car garage, relatively new attached home in quiet area; community pool, near schools/shops/JPL/Caltech; 2-story, 1,700 sq. ft., family rm., living rm., dining rm., breakfast nook, balcony, yard. 998-2032.

**LA CRESCENT** home, quiet cul-de-sac, 3 bd., 1 3/4 ba., re-plastered & tiled pool, 2-yr.-old roof, new kitchen, game rm. w/pool table, formal dining rm. w/fireplace, central vacuum sys., auto sprinklers, \$739,000. 248-3278.

**LOS ANGELES**, 90032, just 1 block from S. Pasadena, built in 1910, single-family home, beautiful craftsman style, 4 bd., 1.5 ba., stone fireplace w/mantle, nice front porch, hardwood floors, laundry in basement, copper plumbing, newer electrical, tiled counters in kitchen, long driveway, huge lot, nice landscaping, ceiling fans, custom molding, as-is cond., \$489,000. 562/902-4114, Daniel Rowe.

### Vacation Rentals

**ARROWHEAD** cabin, lake view, 6 max., \$140/weekends, \$350/week, others available, security/cleaning deposit required. 952-6221, Mon.-Thur.; 909/337-1036, Fri.-Sun.

**BIG BEAR LAKEFRONT** luxury townhome, 2 decks, tennis, indoor pool/spa, beautiful master bd. suite, slps. 6. 949/786-6548.

**CAMBRIA** house, ocean front, exceptional white water view, accom. up to 4 people, all amenities provided. 702/256-1359 & freynolds2@cox.net.

**FLORIDA** condo, beautifully furnished 2 bd., 2 ba., second floor, on the surf of New Smyrna Beach, half-hour to Cape Canaveral, 90 min. to Disney World, enjoy all the comforts of home, quiet, relaxing, overlooking beach and ocean, BBQ, pool, game room, easy walk to stores and restaurants. 760/439-7821, Darlene, or dthauge@yahoo.com.

**HAWAII**, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season rate \$130/nite/2, \$15/nite/add'l person. 949/348-8047 or jackandrandy@cox.net.

**MAMMOTH**, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. view, Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc't. 626/798-9222, 626/794-0455 or valeriee@caltech.edu.

**OCEANSIDE** condo, on the sand, charming, 1 bd., panoramic view, walk to pier or harbor, pool/spa, game room, slps. 4. 949/786-6548.

**RESORTS**, 5-star Hyatt and Marriott, including Carmel, Tahoe, Sedona, Colorado Rockies, Florida and Puerto Rico, luxurious residential-style studios with furnished kitchenette, starting at \$450 for 7 nights; 1 bd. w/full kitchen, living room, \$700/wk., 2 bd., \$1,000/wk., partial weeks also available; specials, Palm Springs, Lake Tahoe, Vail, Park City, Puerto Vallarta, studio, \$399/week. 626/794-9579 or fivestarresorts@earthlink.net.

**ROSARITO BEACH** condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.



JPL'S ONLINE NEWS SOURCE

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# universe

Jet Propulsion Laboratory

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## Deep Impact now in Florida for launch prep

By DC Agle

At Astrotech Space Operations, technician Joe Galamback mounts a bracket on a solar panel on the Deep Impact spacecraft.



Kennedy Space Center

THE JPL-MANAGED DEEP IMPACT spacecraft has arrived in Florida to begin final preparations for a launch on Dec. 30. The spacecraft was shipped from Ball Aerospace & Technologies in Boulder, Colo., to the Astrotech Space Operations facility located near the Kennedy Space Center.

"Deep Impact has begun its journey to comet Tempel 1," said Project Manager Rick Grammier of JPL. "First to Florida, then to space, and then to the comet itself. It will be quite a journey and one which we can all witness together."

The Deep Impact spacecraft is designed to launch a copper projectile into the surface of comet Tempel 1 on July 4, 2005, when the comet is 133.6 million kilometers (83 million miles) from Earth. When this 372-kilogram (820-pound) "impactor" hits the surface of the comet at approximately 37,000 kilometers per hour (23,000 mph), the 1-by-1 meter projectile

(39-by-39 inches) will create a crater that could be as large as a football field. Deep Impact's "flyby" spacecraft will collect pictures and data of the event. It will send the data back to Earth through the antennas of the Deep Space Network. Professional and amateur astronomers will also be able to observe the material flying from the comet's newly formed crater, adding to the data and images collected by the Deep Impact spacecraft and other telescopes.

Tempel 1 poses no threat to Earth in the foreseeable future.

Earlier this week at Astrotech, Deep Impact was removed from its shipping container, the first of the numerous milestones to prepare it for launch. Functional testing was set to begin at the end of this week to verify the spacecraft's state of health after the over-the-road journey from Colorado. This will be followed by loading updated flight software and beginning a series of mission readiness tests.

The tests involve the entire spacecraft flight system that includes the flyby and impactor, as well as the associated science instruments and the spacecraft's basic subsystems.

Next, the high-gain antenna used for spacecraft communications will be installed. The solar array will then be stowed and an illumination test performed as a final check of its performance. Then, Deep Impact will be ready for fueling preparations. Once this is complete, the 976-kilogram spacecraft (2,152 pounds) will be mated atop the upper stage booster, the Delta rocket's third stage. The integrated stack will be installed into a transportation canister in preparation for going to the launch pad in mid-December.

Once at the pad and hoisted onto the Boeing Delta II rocket, a brief functional test will be performed to re-verify spacecraft state of health. Next will be an integrated test with the Delta II before installing the fairing around the spacecraft.

Mission scientists are confident that an intimate glimpse beneath the surface of a comet, where material and debris from the formation of the solar system remain relatively unchanged, will answer basic questions about the formation of the solar system, and offer a better look at the nature and composition of these celestial wanderers.

The launch window on Dec. 30 extends from 11:39 a.m. to 12:19 p.m. Pacific Time.

## New infrared mission OK'd

By Whitney Clavin

A new JPL-managed mission will scan the entire sky in infrared light in search of nearby cool stars, planetary construction zones and the brightest galaxies in the universe.

Called the Wide-field Infrared Survey Explorer, the mission has been approved to proceed into the preliminary design phase as the next in NASA's medium-class Explorer program of lower cost, highly focused, rapid-development scientific spacecraft. It is scheduled to launch in 2008.

Like a powerful set of night vision goggles, the new space-based telescope will survey the cosmos with infrared detectors up to 500,000 times more sensitive than previous survey missions. It will reveal hundreds of cool, or failed, stars, called brown dwarfs, some of which may lie closer to us than any known stars.

"Approximately two-thirds of nearby stars are too cool to be detected with visible light," said Principal Investigator Dr. Edward Wright of UCLA, who proposed the new mission to NASA. "The Wide-field Infrared Survey Explorer will see most of them."

The telescope will also provide a complete inventory of dusty planet-forming discs around nearby stars, and find colliding galaxies that emit more light—specifically infrared light—than any other galaxies in the universe. In the end, the survey will consist of more than 1 million images, from which hundreds of millions of space objects will be catalogued.

"The mission will complete the basic reconnaissance of the universe in mid-infrared wavelengths, providing a vast storehouse of knowledge that will endure for decades," said Project Scientist Dr. Peter Eisenhardt of JPL. "This catalogue of data will also provide NASA's future James Webb Space Telescope with a comprehensive list of targets."

NASA's total cost for the mission will be approximately \$208 million. William Irace of JPL is the project manager. The cryogenic instrument will be built by the Space Dynamics Laboratory, Logan, Utah, and the spacecraft will be built by Ball Aerospace and Technologies Corp., Boulder, Colo. Science operations and data processing will take place at the JPL/Caltech Infrared Processing and Analysis Center.

For more information, visit <http://ds9.ssl.berkeley.edu/wise> or <http://explorers.gsfc.nasa.gov>.

## Astronomers: Planet-building is a big mess

By Whitney Clavin



Planets are built over a long period of massive collisions between rocky bodies as big as mountain ranges, astronomers announced Oct. 18.

New observations from the JPL-managed Spitzer Space Telescope reveal surprisingly large dust clouds around several stars. These clouds most likely flared up when rocky, embryonic planets smashed together.

Earth's own moon may have formed from such a catastrophe. Prior to these new results, astronomers thought planets were formed under less chaotic circumstances.

"It's a mess out there," said Spitzer scientist Dr. George Rieke of the University of Arizona, first author of the findings. "We are seeing that planets have a long, rocky road to go down before they become full grown."

Spitzer was able to see the dusty aftermaths of these collisions with its powerful infrared vision. When embryonic planets, the rocky cores of planets like Earth and Mars, crash together, they are believed to either merge into a bigger planet or splinter into pieces. The dust generated by these events is warmed by the host star and glows in the infrared, where Spitzer can see it.

The findings will be published in an upcoming issue of the *Astrophysical Journal*. They mirror what we know about the formation of our own planetary system. Recent observations from studies of our moon's impact craters also reveal a turbulent early solar system.

"Our moon took a lot of violent hits when planets had already begun to take shape," Rieke said.

According to the most popular theory, rocky planets form somewhat like snowmen. They start out around young stars as tiny balls in a disc-shaped field of thick dust. Then, through sticky interactions with other dust grains, they gradually accumulate more mass.

Eventually, mountain-sized bodies take shape, which further collide to make planets.

Previously, astronomers envisioned this process proceeding smoothly toward a mature planetary system over a few million to a few tens of millions of years. Dusty planet-forming discs, they predicted, should steadily fade away with age, with occasional flare-ups from collisions between leftover rocky bodies.

Rieke and his colleagues have observed a more varied planet-forming environment. They used new Spitzer data, together with previous data from the European Space Agency's Infrared Space Observatory and the joint NASA, United Kingdom and the Netherlands' Infrared Astronomical Satellite. They looked for dusty discs around 266 nearby stars of similar size, about two to three times the mass of the Sun, and of various ages. Seventy-one of those stars were found to harbor discs, presumably containing planets at different stages of development.

But, instead of seeing the discs disappear in older stars, astronomers observed the opposite in some cases.

"We thought young stars, about 1 million years old, would have larger, brighter discs, and older stars from 10 million to 100 million years old would have fainter ones," Rieke said. "But we found some young stars missing discs and some old stars with massive discs."

This variability implies planet-forming discs can become choked with dust throughout the discs' lifetime, up to hundreds of millions of years after the host star was formed. "The only way to produce as much dust as we are seeing in these older stars is through huge collisions," Rieke said.

Before Spitzer, only a few dozen planet-forming discs had been observed around stars older than a few million years.



# News Briefs

### R&T poster session Nov. 3

The results of 110 principal investigators in JPL's Research and Technology Development Program will be presented Wednesday, Nov. 3. This poster session will be open to JPL badge holders and Caltech faculty, staff and students from 8 a.m. to 4 p.m. in von Kármán Auditorium and on the mall.

The principal investigators will be standing near their posters to answer questions from 11 a.m. to 1 p.m.; refreshments will be served at this time. At 11:30 a.m., JPL Director DR. CHARLES ELACHI will speak on how the future success of the Laboratory is directly tied to its internal investment in new and enhanced science and technology capabilities.



More than 550 people attended last year's Research and Technology Development Program poster session, which returns on Nov. 3.

The Research and Technology Development Program is an internal JPL fund administered by the Offices of the Chief Scientist and Chief Technologist. The primary purpose of this program is to enhance JPL's ability to address the future objectives and missions of JPL and NASA. Initiated in 2001, JPL's commitment to this investment will continue to grow until it reaches 3% of the Lab's business base. The program funds proposals in the areas of basic research, applied research, development, systems and other concept formulation studies.

### Halloween show, United Way Oct. 29

JPL's annual Halloween Fashion Show and United Way campaign kickoff will be held Friday, Oct. 29, beginning at noon on the mall.

If you plan to wear a costume, be aware of the following restrictions:

- If you plan on wearing a mask or face paint, you must add these touches to your costume after you arrive on Lab. All employees must be fully recognizable by Security personnel when entering the Lab.
- All weapon-related costume props (including toys made of any material) are strictly prohibited.
- Costumes should be in good taste and be respectful of the diverse heritages of the Laboratory population.
- If you would like to bring a family member or friend to the fashion show, you are required to submit the JPL Security and Foreign National Visitor Request Form in advance. Visit <http://eis/international/visitrequest.html>.

During the United Way campaign, food items will be collected for distribution to local United Way food banks. In addition, members of JPL's United Way Steering Committee will be collecting cash donations at the kickoff and will purchase food on your behalf.

### Blood drive in mid-November

The next JPL/Red Cross blood drive will be held in von Kármán Auditorium on Nov. 16 from 10 a.m. to 4 p.m. and Nov. 17 from 7 a.m. to 1 p.m.

The Red Cross will hold several drawings for movie tickets.

Register to donate at [www.givelife.org/index.cfm?hcl=JPL](http://www.givelife.org/index.cfm?hcl=JPL), using work address and work phone only. Once you select your appointment, you will receive an automatic confirmation e-mail. For further assistance, call the Red Cross at (213) 400-0140.

Advance signup sheets will also be available at JPL Occupational Health Services, Building 310-202, prior to the blood drive. For last-minute signups, or to change your appointment, call the Red Cross at (626) 960-6956, ext. 225.

To donate blood you must be at least 17 years old, weigh no less than 110 pounds, have lived in the United States for no less than three years, and be in good health. You should eat a healthy meal and drink fluids prior to donating.

For more information, visit [www.redcross.org/services/biomed/blood/supply/tse.html](http://www.redcross.org/services/biomed/blood/supply/tse.html).

# Special Events Calendar

### Ongoing Support Groups

Alcoholics Anonymous—Meets Wednesdays at 11:30 a.m. For more information, call the Employee Assistance Program at ext. 4-3680.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place).

Codependents Anonymous—Meets at noon every Wednesday. For more information, call the Employee Assistance Program at ext. 4-3680.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meets the first Friday and third Thursday of the month at noon in Building 111-117.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

### Sat., Oct. 23–Sun., Oct. 24

Finishing Touches For Kidspac—Rides, games, entertainment and more will highlight the annual Pumpkin Festival, to be held Saturday from 10 a.m. to 6 p.m., Sunday from 10 a.m. to 5 p.m., at Brookside Park. Free admission. For more information, visit [www.kidspacmuseum.org](http://www.kidspacmuseum.org).

### Wednesday, October 27

JPL Library Orientation—Come to Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. Call Dirk Runge at ext. 3-0465 for information.

Volunteer Professionals for Medical Advancement—Meeting at 10:30 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

### Thursday, October 28

Caltech Architectural Tour—Hosted by the Caltech Women's Club, from 11 a.m. to 12:30 p.m. Free and open to the public. Meet at the Athenaeum front hall, 551 S. Hill Ave. For reservations, call Susan Lee, (626) 395-6327.

JPL Golf Club—Meeting at noon in Building 306-302.

### Friday, October 29

The Passing Zone—World record-holding jugglers Owen Morse and Jon Wee

will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17; high school age and younger, \$10. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Saturday, October 30

Walking With Dinosaurs—This high-definition film screening will be followed by a discussion about the film by Occidental College geology professor Donald Prothero. Admission is \$5. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

### Monday, November 1

Caltech Women's Club—All women of the Caltech/JPL community are invited to von Kármán Auditorium from 11 a.m. to 1 p.m. for a casual gathering to discuss club activities. For more information, call Marianne Kubat, (661) 775-0626 or Katie Clark, (626) 403-7163.

### Tuesday, November 2

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

### Wednesday, November 3

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at La Cañada United Methodist Church, 104 Berkshire Place, La Cañada.

### Thursday, November 4

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

"Everything Bad Is Good For You: Why Today's Pop Culture Is Making Our Kids Smarter"—Steven Johnson, co-editor of *Wired* and *Discover* magazines, will speak at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

JPL Gun Club—Meeting at noon in Building 183-328.

### Saturday, November 6

"Planning for Your Child's Educational Future"—David Levy, assistant dean and director of financial aid at Caltech, and Catherine Thomas, associate dean of admissions and financial aid at USC, will appear from 10 a.m. to noon at Verdugo Hills Hospital, 1812 Verdugo Blvd., Glendale. Hosted by the Child Educational Center. For more information or to RSVP, call (818) 354-3418.

## French space chief visits



Bob Brown / JPL Photolab

Earlier this month, JPL hosted JPL Yannick d'Escatha, chairman and chief executive officer of CNES (Centre National d'Etudes Spatiales), the French Space Agency. Shown above with JPL Director Dr. Charles Elachi, d'Escatha and two other CNES representatives heard briefings on the Cassini-Huygens mission, Mars Exploration Rovers and the Earth Science Program, including the Orbiting Carbon Observatory, Hydrosphere State Mission and the Ocean Surface Topography Mission.

## Service Awards

For the period of August through September 2004 the following JPL recipients celebrated 25 or more years of service and were invited to attend a luncheon and ceremony in their honor on Oct. 19.

- 45 years: Saterios Dallas, Clifford Heindl.
- 40 years: John Hultberg, William Jensen, David Miller.
- 35 years: G.J. Dick, Matthew Landano, Robert Mackey, Paul Ottenfeld, David Otth, Frank Palluconi, Ralph Reichert, Alfred Silliman, Yolanda Walton, James Williams.
- 30 years: Vickie Baxter, Deborah McCarty, Edward Olsen, Wayne Schubert.
- 25 years: Cheryl de Gyurky, Robert Downer, Stephen Edberg, Robert Frisbee, Thomas C. Hill, Jack Jones, Charles Kaczinski, Roy Kakuda, Harold Kirkham, Sanford Krasner, Fuk Li, Glenn Macala, Jeanne Makihara, Lute Maleki, Firouz Naderi, Allen Nikora, Virgil Shields, Andre Stefanovich, Richard Vasquez.

## Genesis mishap board reports

As scientists begin to unpack more than 3,000 containers of samples of the sun brought to Earth by the Genesis mission, the Mishap Investigation Board has identified a likely direct cause of the failure of Genesis' parachute system to open.

The parachute system failed to deploy when Genesis returned to Earth on Sept. 8. The board, analyzing the Genesis capsule at a facility near Denver, said the likely cause was a design error that involves the orientation of gravity-switch devices. The switches sense the braking caused by the high-speed entry into the atmosphere, and then initiate the timing sequence leading to deployment of the craft's drogue parachute and parafoil.

"This single cause has not yet been fully confirmed, nor has it been determined whether it is the only problem within the Genesis system," said board chair Dr. Michael Ryschewitsch. "The board is working to confirm this proximate cause, to determine why this error happened, why it was not caught by the test program and an extensive set of in-process and after-the-fact reviews of the Genesis system."

Meanwhile, scientists unpacking samples at Johnson Space Center's curation facility remained upbeat in their assessment of the prospects for obtaining useful science from the recovered samples, which eventually will be moved to the JSC Genesis clean room to be cleaned, examined and then distributed to scientists.

"Both Lockheed Martin and JPL have been providing every possible support to our investigation," said Ryschewitsch. "All of the people from both organizations who were involved in the Genesis project have been extremely professional and cooperative in helping the board do its work."





# NASA BESTOWS HONOR AWARDS

To acknowledge the past year's outstanding contributions to the NASA mission, the agency presented its annual Honor Awards at JPL on Oct. 12.



Bob Brown/JPL Photolab



JPL Director Dr. Charles Elachi was joined by Al Diaz, associate administrator for NASA's Science Mission Directorate, in presenting 222 awards in 10 different categories. The honorees included JPL employees and contractors as well as academic, industrial and NASA partners from other centers and from Headquarters.

Honorees were nominated by their colleagues and granted awards by the NASA administrator on the basis of significant accomplishment, exceptional performance or personal impact.

Following is the list of award winners:

## Public Service Group Achievement Award

Given to a group of nongovernment employees in recognition of an outstanding accomplishment that has contributed substantially to the NASA mission.

*The Astrium-Friedrichshafen Small Satellite Team.*

## Group Achievement Award

Given in recognition of an outstanding accomplishment that has been made through the coordination of many individual efforts and has contributed substantially to the accomplishment of the NASA mission. This award may be used to recognize the accomplishments of either a total government employee group or, as a team award, a group comprising both government and nongovernment personnel.

*2-Multiple Spacecraft per Antenna Automation Team; Asset Reporting Improvement and Implementation Team; Atmospheric Infrared Sounder Level 2 Algorithm Development Team; Atmospheric Infrared Sounder Validation Team; Balloon Observations of the Stratosphere Team; Contractor Cost Report Support Team; Deep Space Mission System Flight Network Implementation Team; Deep Space Mission System Multimission Tracking, Telemetry, Command and Data Management Team; Deep Space Mission System Parkes Radio Telescope X-Band Upgrade Task Team; Deep Space Network Arraying Implementation Task Team; Deep Space Network Beam-Waveguide Antenna 20-kW Transmitter Task Team; Deep Space Network Simplification Project Team; Deep Space Station 55 Implementation Team;*

*Galaxy Evolution Explorer Detector Team; Galaxy Evolution Explorer Instrument Avionics Team; Galaxy Evolution Explorer Instrument Mechanical/Thermal Team; Galaxy Evolution Explorer Instrument Optics Team; Galaxy Evolution Explorer Instrument Team; Galaxy Evolution Explorer Mission Assurance Team; Galaxy Evolution Explorer Project Team; Galaxy Evolution Explorer Spacecraft Team; Jason-1 Science Data Team; Jovian Radiation Model Team;*

*Mars Exploration Rover Assembly, Test and Launch Operations Team; MER Avionics Team; MER Business-Management and Acquisition Team; Mars Exploration Rover Camera Subsystem Team; MER Deep Space Mission Systems Operations Team; MER Entry, Descent and Landing Team; MER Flight System Management and Engineering Team; MER Mechanical Team; MER Mission Assurance Team; MER Mission System Development Team; MER NASA Headquarters Management Team; MER Project Management Team; MER Project Operations Team; MER Project System Engineering Team; MER Propulsion Subsystem Team; MER Radar Altimeter Development Team; MER Relay Operations Team; MER Science Operations Team; MER Science/Science Support Team; MER Telecommunications Team; MER Thermal Team;*

*Mechanical Prototype and Hardware Fabrication Section Team; Microwave Kinetic Inductance Detector Development Team; NASA Planetary Data System Mars Odyssey Team; One NASA Portal Team; Prime Contract Transition Team; SeaWinds Project Team;*

*Spitzer Space Telescope Assembly, Test and Launch Operations Team; Spitzer Space Telescope Cryogenic Optical Test Facility Operations Team; Spitzer Space Telescope Focal Plane Calibration Integrated Product Team; Spitzer Space Telescope Helium Utilization Integrated Product Team; Spitzer Space Telescope In-Orbit Checkout Integrated Product Team; Spitzer Space Telescope Mission Assurance Team; Spitzer Space Telescope Mission Design Team; Spitzer Space Telescope Mission Operations Team; Spitzer Space Telescope Observatory Pointing Integrated Product Team; Spitzer Space Telescope Optics and Telescope Focus Integrated Product Team; Spitzer Space Telescope Payload Team; Spitzer Space Telescope Pointing Calibration Integrated Product Team; Spitzer Space Telescope Project Administrative Support Team; Spitzer Space Telescope Reaction Control System Integrated Product Team; Spitzer Space Telescope System Engineering Team; Spitzer Space Telescope Test Facility Development Team; Team Prometheus; Technology Transfer Team.*

## Public Service Medal

Awarded to any individual who was not a government employee during the period in which the service was performed. The award is granted for exceptional contributions to the NASA mission.

*William Joseph Barnhart, George Helou, Timothy Kelly, Christopher Martin, Edwin Odell, Edward Sedivy, Eckard Settlemeyer, Baruch Soifer, Sean Solomon, Joseph Snyder, Steven Squyres, John Troeltzsch.*

## Exceptional Technology Achievement Medal

Awarded for early technology development significantly contributing to the NASA mission, exemplary collaborative effort in achieving significant technology transfer, or exceptional technology utilization achievement resulting in a significant commercial application.

*Ronald Muellerschoen, John Prestage, J. Brooks Thomas.*

## Exceptional Scientific Achievement Medal

Awarded for unusually significant scientific contributions toward achievement of the NASA mission. This award may be given for individual efforts that have resulted in a contribution of fundamental importance in this field or have significantly enhanced understanding of this field.

*Steven Ostro, Christopher Webster, Yuk Ling Yung (Caltech).*

## Exceptional Service Medal

Awarded for significant, sustained performance characterized by unusual initiative or creative ability that clearly demonstrates substantial improvements or contributions in engineering, aeronautics, space flight, administration, support or space-related endeavors that contribute to the NASA mission.

*Mark Adler, Arthur Amador, Jeffrey Biesiadecki, Leo Bister, Mark Boyles, Kevin Burke, Gerald Carek (Glenn Research Center), Gun-Shing Chen, Jessica Collisson, Z. Nagin Cox, Joy Crisp, Kerry Erickson, Linda Facto, Thomas Fouser, Kim Gostelow, George Greanias, Martin Greco, Jeanne Holm, J. Frank Jordan, Edward Kopf Jr., Joel Krajewski, Wayne Lee, Kimberly Lievense, Sue Linick, Eduardo López de Romaña Dalmau, Jacqueline Castro Lyra, Michael Mangano, Rob Manning, Scott Markham, Ed Massey, Edmond Momjian, Thomas Pagano, Keyur Patel, Dennis Potts, Kanna Rajan (Ames Research Center), Thomas Ramsey, Glenn Reeves, Ralph Roncoli, Robert Ryan, Armond Salazar, Miguel San Martin, John Schreiner (Ames Research Center), Janester F. Short, Charles Stelzried, Henry Stone, Frank Surber, Christine Szalai (Ames Research Center), Wallace Tai, Joan Walton (Ames Research Center), Richard Welch, Ronald Welch, Marc White, William Whitney, Mary Wong.*

## Exceptional Achievement Medal

Awarded for significant, specific accomplishment or contribution clearly characterized by a substantial and significant improvement in operations, efficiency, service, financial savings, science or technology that contributes to the NASA mission.

*Nelson Alhambra, Sami Asmar, Eric Baumgartner, Catherine Cagle, Katrina Christiann, Brian Cook, Juan Cruz (Langley Research Center), Louis D'Amario, Szabolcs deGyürky, Kevin Delin, James Donaldson, Richard Ewell, Jason Gates, David Gruel, Bruce Haines, Paul Hardy, Jeffrey Hilland, Tom Hoffman, Kent Kellogg, Michael Klein, Philip Knocke, Björn Lambriksen, David Lavery (NASA Headquarters), Emily Law, Kim Leschly, Christopher Lewicki, Daniel Limonadi, Dankai Liu, John Louie, Mark Maimone, Timothy McElrath, Timothy Munson, Juliana Murphy, Tracy Neilson, Jeffrey Oseas, Mary Reaves, Dara Sabahi, Christopher Salvo, Wesley Schmitgal, Mark Schwochert, Amit Sen, Donald Sevilla, Adam Steltzner, Ernest Stone, Arthur Thompson, Aurelio Fernando Tolivar, Glenn Tsuyuki, Christopher Voorhees, Michael Watkins, Jason Willis, Robert K. Wilson, John Wirth.*

## Exceptional Engineering Achievement Medal

Awarded for unusually significant engineering contributions toward achievement of the NASA mission. This award may be given for individual efforts or applications of engineering principles or methods that have resulted in a contribution of fundamental importance in this field or have significantly enhanced understanding of this field.

*Prasun Desai (NASA Langley Research Center), Don Moore.*

## Outstanding Leadership Medal

Awarded for notably outstanding leadership that has had a pronounced effect upon NASA technical or administrative programs. The award may be given for an act of leadership or for sustained contributions based on an individual's effectiveness as a leader, the productivity of the individual's program, or demonstrated ability to develop the administrative or technical talents of other employees.

*Charles Beichman, Richard Brace, Janis Chodas, Richard Cook, Charles Elachi, James Erickson, James Fanson, Orlando Figueroa (NASA Headquarters), Lee-Lueng Fu, David Gallagher, James Garvin (NASA Headquarters), Barry Goldstein, Richard Grammier, William Irace, Charles Lawrence, James Lesh, Daniel McCleese, Marc Montgomery, Moshe Pniel, Chester Sasaki, Peter Theisinger, Jennifer Trosper, Matthew Wallace, Michael Werner.*

## Distinguished Service Medal

Awarded to any person in the federal service who, by distinguished service, ability or courage, has personally made a contribution representing substantial progress to the NASA mission in the interest of the United States. The contribution must be so extraordinary that the other forms of recognition by NASA would be inadequate. This is the highest honor that NASA confers.

*Thomas Gavin, Larry Simmons.*



# Girl Scout trainers learn the JPL way

Twenty-eight master Girl Scout trainers attended a weeklong professional development workshop at JPL October 4 through 8.

The workshop included an introduction to NASA Earth science topics, a JPL Mission Life Cycle Tour, briefings on relevant NASA networks and resources, and career interviews with more than 30 JPL women scientists, engineers and managers.

The master trainers are responsible for training Girl Scout leaders, who in turn educate the scouts.

"I would like to inspire girls to think about science as a career or just to feel comfortable with it in general," said Debby Stork of the Girl Scouts Council of Little Cloud in Dubuque, Iowa. "I want to take back the feeling, attitude and knowledge I have gained at JPL and pass it along to the leaders. I think the girls can apply the kind of collaboration I have witnessed here at JPL to anything they do in life."

One of the highlights of the visit was a brown bag lunch held on Thursday, where present and former JPL Girl Scouts dined with the master trainers. JPL Earth Public Engagement Lead Karen Yuen, a scout from age 8 to 10, attended the lunch. "I was very happy to spend time with women who are so pas-

sionate and committed to supporting and leading young girls," Yuen said. "I have fond memories as a Girl Scout and I wanted to do my part in supporting the continuation of a great program."

The workshop was part of the NASA Office of Education's Explorer Institute Pathfinder Initiative and was conducted by the Solar System Exploration Education and Public Outreach Forum at JPL, and the Astromaterials Research and Exploration Science Education Office at Johnson Space Center.

"In this workshop, we're building on our three years' experience in designing collaborative programs with Girl Scouts of the USA and in providing professional development for this group," said Leslie Lowes, the outreach forum task manager at JPL. "The collective experience they have in bringing NASA space science topics to trainers, leaders and girls in their local councils will be used to compile best practices and design model activities for use throughout NASA as the relationship expands across the agency."

JPL has a Memorandum of Understanding with Girl Scouts of the USA that was signed in March 2003. NASA Headquarters is now pursuing an agency-wide relationship with the organization at the request of Administrator Sean O'Keefe.

## Passings

**ROSCOE EDWARDS JR.,** 82, a retired supervisor with the Facilities Maintenance and Operations Section 661, died Oct. 2 in Altadena.

Edwards worked at the Lab for 47 years. His service included supervising the Grounds Department and Locks and Keys.

He is survived by his wife, Nancy, a stepson and stepdaughter, step-grandsons, nieces, nephews and brother Cecil.

A memorial service was held Oct. 6 at Mountain View Mausoleum in Altadena.

## Letters

I would like to thank all of my co-workers and friends here at JPL for the many messages, cards and flowers of condolence for the recent passing of my beloved mother, Virginia Stricklin. The MSJL Team has been so wonderful and supportive. Thanks to JPL for the beautiful plant. I really appreciate all the kindness extended to me and my family. Bless you all.

Bobbie Buckmaster

## Classifieds

### For Sale

ARMOIRE/entertainment center, lg., blonde wood, Mediterranean-style w/shelves, crown moldings at top, vertical carving on front & door panels, semi-transparent antique white finish, back can be cut out (has perforations) for lg. TV, exc. cond., can e-mail photo, \$400 firm, 626/794-6860, leave msg.

BABY FURNITURE galore, fair to exc. cond.: crib, \$80; stroller, \$50; modular playpen, \$70; swing, \$40; car seats, \$30 each; port-a-crib \$40; buy all or separately, \$340. 626/355-1654, Steve.

BASEBALL PITCHING MACHINE, Zooka 720, pitches "real" baseballs up to 50 mph, self-contained w/wall charger, 18" & 43" tripods, has about 100 pitches through it, will pitch 500 balls between recharge, great for little league, \$450/obo. 760/244-3009, Dan.

BED, antique, brass and iron, exc. cond., made by Indiana Iron Foundry around 1885, recently repainted and repolished, headboard 58" H x 54" W, footboard 40" H, 73" L, would make a terrific child's bed, \$850. 352-4033, after 5 p.m.

BOY'S BIKE, Diamondback Octane 20, 6 speeds, 20" wheels, top cond., \$75/obo. 790-6851, Roger.

CELL PHONE, no contract, pay as you go, TracFone, \$20. 626/850-4378.

CHAIRS, set of 4, mission-style, for dining room, orig. leather with gold embossed pattern, orig. upholstery nails and fringe, a special set that needs some TLC, photos available, \$275. 805/676-1710, leave msg.

CLOTHES, infant: jacket, red/navy blue, zip-up w/hood (Old Navy), size 2T, exc. cond., \$5/obo; sweater, sky blue w/navy trim buttons, sz. 3T, \$1/obo; zipper shoes, Spongebob motif, size 11M, exc. cond., \$5/obo; photos on request. 626/791-6101.

COMPUTER, Mac G3, PowerMac desktop, complete w/19" Iiyama monitor (top rated), scanner, Epson color printer, modem, extra RAM (320 MB total), OS 9.1, works perfectly, all for \$150. 626/798-2925.

EXERCISE MACHINE, 4000PT Stairmaster commercial grade stair-climber; same model at your gym; electronic control panel for variety of workout levels & monitoring of distance/speed/calories burned; used sparingly, looks brand new, incl. heavy-duty rubber floor mat w/Stairmaster logo; paid \$2,000, bargain at \$950. 909/706-2431, Jeff.

EXERCISER, AB Scissor, used a few times, great cond., includes custom workout timer & how-to-use video, retails new for \$200+, sell for \$130. 323/369-0365, leave message.

FAX CARTRIDGE for Brother machines, model PC-102RF, brand new; \$20; DIET TAPES, Jenny Craig, set of 14, \$25; COMPUTER POWER CONTROL CENTER, 5 power switches + 1

master switch, 5 surge-protected outlets + 2 modem/fax/ phone jacks, new. \$20. 790-3899. FURNITURE: full bed frame, box, mattress, immaculate, 3 yrs., pd. \$1,400, \$400/obo; recliner, mauve/gray, \$50/obo; dining table + 6 chairs, solid maple, need refinish, \$100/obo; sideboard w/glass top cabinet, solid maple, immaculate, \$500, firm; roltop desk, oak, exc. cond., \$400/obo; Ikea cabinets, large, 6 ft., birch veneer, \$30 ea. or 2 for \$50. 848-4541, Mary.

FURNITURE: complete, 3-pc. set includes armoire; headboard component containing mirror, shelf, drawers, & 2 attached side dressers, dresser with mirror; whitewash finish; \$250; rocking/nursing chair & ottoman, new, solid wood, natural finish, elegant tapestry patterned cushion, \$125; reclining chair, office/tv, lg., brown, \$45; crib and toddler bed, like new, solid wood, natural finish, w/mattress, \$150 and \$75. 626/794-1432.

FURNITURE: 2-piece Bassett sectional (1 pc. is a sleeper), floral print, cushions need new covers, rest in vg cond., photo & dimensions available, \$250/obo. 626/791-6101.

FURNITURE, oak: dining table, claw, w/leaf and 4 chairs, \$125; coffee table, \$40; ice box, storage cabinets, 2 for \$50. 248-4356.

FURNITURE: Techline, for office, white 6 pieces, \$400; beautiful Spanish reversible hand-made rug, 7' x 9', orange & hot pink on beige background, \$250; tall wood framed mirror, \$25; mission oak server, 38 W x 20 D x 37 H, \$400; 2 ceramic lamps, dusty rose, \$15 ea. 626/584-0860 (day) or 626/794-3144 (eve). Donna.

HOME BREW EQUIPMENT, two 5-gallon Cornelius kegs with ball locks, \$25 each; misc. ball-lock hardware, clamps and hoses, \$20. 323/342-9363.

ICEBOX, antique, oak, exc. cond., made around 1915, 44" H x 32" W x 18" D, \$600. 352-4033, after 5 p.m.

JEWELRY: ladies ESQ Contessa gold-tone watch, \$70; ladies New Coach metropolitan brown leather strap watch, \$65; ladies New Coach classic stainless steel watch, \$65; diamond-cut bracelet, 14K gold, tri-color, \$150; diamond-cut necklace, 14K, two-sided, 18", \$200; oval garnet tennis bracelet, 14K gold, \$80. 626/644-0890.

LUGGAGE, 5 pieces, soft-sided tapestry, all in exc. cond.; 2 cases, 2 carry-ons, 1 garment bag, \$50. 661/949-9464.

MICROWAVE, white, Panasonic, \$40; SCANNER, Umax 1220P for Windows, \$15; STEREO SYSTEM, Sony LBT-G2000, w/3-disc CD changer, \$75; BED FRAME, queen size, \$5. 323/342-9363.

MISC: dishes: china; lamps; utensils; dresser, \$225; chest, \$225; night stands, \$75; mirror, \$75/obo on all; glassware: white sofa, \$220; white love seat, \$200/obo; dining room table & 6 chairs, \$600/obo; sm. display cabinet; large desk, \$5; bookcase, \$25/obo on all items. 626/797-7905.

MISC: carpet, nearly new, light mauve, high quality, 2 pieces, 16 x 17 (\$125) & 12 x 11 (\$80); dryer, apt. size, gas, white, \$70; sink, antique, off-white, pedestal, \$70. 626/794-1432.

MOUNTAIN BIKES, Trek: 13.5" frame w/26" tires, small frame w/full-size wheels, 18 gears, cyan/indigo color, gd. cond., \$85; 6-speed, red, small frame, \$85; JACKET, boy's, Quicksilver, snowboard, red w/white trim, L, fits about 4'10", used once, \$40; SUIT/SHIRTS, Nordstrom, same size; HEATER, quartz; LAWNMOWER, push-style, w/grass catcher; CHEMISTRY SET for kids, Smithsonian, slightly used; ERECTOR SET, slightly used; all negotiable. 952-8455.

MOVING SALE: computer table, \$50; bookshelf, \$20; microwave, \$25; foldable table, \$10; foldable chairs (2), \$5/ea.; silverware, dishes, pots, pans & other kitchen utensils, best offer; www.geocities.com/vgoal1 for pictures. 443/286-8972.

NECKLACE, ladies Paloma Picasso daisy pendant, platinum, round, brilliant diamonds from TIFFANYs, .15 carat total, G color, VS clarity on 16" chain, paid \$1,395, sell for \$950. 626/644-0890.

ORGAN, Yamaha 415 electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. \$7,500, sacrifice \$2,000; PORT REPLICATOR, for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, \$85; CONTROLLER CARD, Ultra ATA, w/cable, fits into 32-bit PCI 2.1 or 2.2 expansion slot on motherboard, brand new, \$20. 790-3899.

PATIO FURNITURE: 60" rectangular glass table w/olive green aluminum frame, 6 matching high-back chairs w/straps, & matching 2-person loveseat bench, \$250. 701-6882, Paul.

POTTERY KICK WHEEL, approx. 3' W x 3' L x 2.5' H, \$100. 626/296-2729, Claudia. REFRIGERATOR, Kenmore, 18 cu. ft., black, 8 yrs. old, works great, \$200; DRYER, Whirlpool, gas, 3 speed, 10 yrs. old, works great, \$90; WASHER, Maytag, 10 yrs. old, works great, \$90; COMPUTER MONITOR, Sony, 17", color, \$75; best offer accepted. 626/859-6393, Cheryl.

SCHOOL DESK & CHAIR, solid oak, classic, 60" L x 30" H x 34" D, \$400 for both. 626/791-5376.

SOFABED, 80," soft brown, exc. cond., \$150; SOFA, 7', Aztec teal, purple, orange, raspberry tones, vg cond., \$100. 248-4356.

TELESCOPE, 6" Newtonian reflector, equatorial mount, tripod, hand-adjust knobs, eye-pieces, image quality is great for price, \$169. 626/799-4381.

TROPICAL PLANTS, plumerias, variety of colors/sizes; shell gingers. 626/444-6156.

WALLPAPER, approx. 6 (double) rolls, spring flower pattern, \$10/each. 626/798-3658

WASHER, Whirlpool, \$75; DRYER, Kenmore, \$75; REFRIGERATOR, \$100; all gd. cond. (El Monte). 626/535-9595, Tanisha.

WOOD STOVE, free-standing, cast iron, vg cond., several hundred pounds for high thermal inertia, stove pipe and chimney cap included, \$225. 310/392-9073.

### Vehicles / Accessories

'93 ACURA Legend, 4 dr., auto, champagne, exc. cond., 90K mi., one owner, \$5,500/obo. 952-6033.

'01 BMW 325i, premium sport pkg., loaded, exc. cond., metallic silver, gray leather, xenon, 17" wheels, new brakes, 38K mi., \$24,200. 626/379-3424.

'98 CHEVROLET Corvette coupe, Torch Red w/black interior, automatic, pwr. seats/windows, 10 CD, exc. cond., looks like a new car, chrome wheels, 85K miles, \$22,500. 805/376-2088.

'91 DODGE Stealth ES, 5 speed, 6 cyl., 220 HP, red ext., black leather interior, power windows/locks, 129K mi., runs well, \$3,000. 213/448-1856.

'00 FORD Explorer Sport, white, 2 dr., 2wd, V6, stick, a/c, pwr. steering/breaks/windows, keyless entry, LoJack, am/fm cass., 38K mi., pristine cond., see at http://home.comcast.net/~macmaven/explorer.jpg, \$9,990. 353-2103 or 653-7312.

'00 LEXUS ES 300, automatic, leather powered seats, moonroof, CD changer, metallic two-tone black, power everything, exc. cond., 29K mi., \$19,500. 909/630-5176.

'90 MERCURY Cougar, low mileage (74,335), \$1,300/obo. 626/535-9595, Tanisha.

'92 OLDSMOBILE Achieva SCX, V4 coupe, am/fm, pwr. windows/doorlocks, great cond., 180K mi., \$1,950/obo. 468-2956, Chuck.

'93 PLYMOUTH Grand Voyager LE minivan, good condition, newer paint, many extras, 140,000 miles, \$2,500. 626/358-2134, eves.

'91 PLYMOUTH Grand Voyager minivan, 7-passenger, 84K mi., white/wood, auto trans., power steering/brakes/windows, leather, white, runs well, one-family ownership, well-maintained, \$2,700/obo. 323/254-8415.

'95 REXHALL Aerbus, excellent cond., low mileage, king bed in bedroom, plenty of storage space, \$28,000. 626/303-5571, Al.

'98 SATURN SL2, only 47K mi., vg cond., CD player, antilock breaks, pwr. windows/doors, red, \$6,400/obo. 521-9966.

'97 SATURN SL1, automatic, blue, beige interior, airbags, FM stereo, exc. cond., just smogged, \$3,500. 626/379-3503, Erik.

'95 SATURN SC2, 5 spd., dk. green, leather interior, airbags, sunroof, leather, exc. cond., just smogged, \$4,000. 626/379-3503, Erik.

'99 TOYOTA Camry XLE, top of the line, loaded, V6, CD, moonroof, power leather seats, auto, 50K mi., exc. cond., \$11,500. 909/630-5176.

TRAILER HITCH SYSTEM, Eaz-Lift, class III white-distribution assembly, includes: hitch head w/2-5/16" ball, spring bars, snap-up mounting brackets, sway control, free Tekonsha electronic brake control, set of detachable rear view mirrors, \$125/obo. 626/447-3857.

'95 YAMAHA FZR 1000, very nice, exc. cond., 25K mi., \$3,900. 626/584-9844.

### Free

BAR STOOLS (2), with pads for swivel seats, no backs. 626/791-7645.

CAT, friendly, affectionate, 6-yr.-old spayed female, long haired, brown, tabby mixed ("fuzzy"), to a cat-loving home, all immunizations up to date, prefers solitary feline lifestyle, although she has shared her space w/2 other female cats in the past. 909/239-8896.

CLEAN FILL DIRT, 13 cu. yds. avail., haul as much as you like, near Los Robles/Jackson, Pas. 626/791-3103, dtrask6@its.caltech.edu.

### Wanted

BOOKS, used/new, paperback/hardback, or magazine/romance/science-fiction/mystery, etc. 248-0178, engineerbob4449@yahoo.com.

CHRISTMAS DECORATIONS and trees in good condition for a charity fundraiser in Dec. 626/797-1310, eve.

COMPUTER, laptop, min. 600 MHz, must have audio/mic. capabilities, USB 2.0, CD-ROM and floppy or CD/RW, needed for child with dyslexia, can pay \$500 max. 390-4646.

MATH TUTOR, Jr. & Sr. high school level geometry, pre-algebra, algebra I & II, SAT math, etc. eves. and/or weekends. 888/784-1639, David, please leave msg.

PET/HOUSE SITTER for two friendly dogs in the Pasadena area. 626/791-7645.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

STONE MASON and/or upholstery shop referral, reasonably priced. 626/794-6860, Carol.

VANPOOL RIDERS from Diamond Bar/Walnut, leaving from Walnut (Grand & Amar). Ext. 4-9735, Walbara.

### For Rent

ALTADENA "sabbatical house," 3 bd. + study, boundary Angeles Nat'l Forest, 3 mi. from JPL (trails to Lab behind house), view, hardwood floors, antiques, completely furn.: incl. dinnerware, utensils, pots/pans, linens & towels, fine soaps, necessities incl., just bring toothbrush & clothes, TV/DVD/VHS, Dish satellite, wire-less DSL, garden, fruit trees, patio, BBQ, parking, private, immac. 626/798-3235, info/visit.

GLENDALE guest house, 640 sq. ft., 1 bd., 1 ba., liv. rm., patio w/backyard, amenities incl. refrigerator, stove, washer/dryer hookups, 15 min. from JPL, no pets, \$925 + sec. deposit. 244-6388.

MONTROSE, garage apt., cable & util. included, no pets, \$475. 957-6821.

PASADENA, 1920s apt. in triplex, close to S. Lake & Caltech, 1 bd., 1 ba., liv. rm., din. rm., kitchen & hobby/office, 1,000 sq. ft., hardwood floors, covered parking for 1 car, coin washer/dryer on premises, trash/water/gardener pd., \$1,100. 249-3602, Stan or Margaret.

PASADENA, spacious rm. w/priv. bath in 3-bd. apt., walk-in closet, balcony, 15 min. to JPL, central heating/ac, shared kitchen, dishwasher, covered parking, laundry facilities, hi-speed internet w/wireless access, 2 male apartment-mates, 1 working for JPL, no smoking, \$700, incl. util. 949/923-0578.

SAN MARINO house, 3 bd., 2 ba., 2-car gar. w/automatic opener, newly painted, remodeled kitchen, dishwasher, a/c, laundry hookups, fireplace, spacious family rm. overlooking yd., no pets, exc. neighborhood & school district, \$3,000 + util. & sec. dep. 626/576-7333.

TUJUNGA, 3 bd., 2 ba., 2,000 sq. ft., 2 story, gorgeous, private, woodsy, hillside home, 2-car attached garage, lg. lot, lots of parking, stove, dishwasher, new heating/cooling, fireplace, beautiful large yard and garden, washer/dryer, will consider pet, \$2,100, \$2,500 security, avail. Dec. 11, prefer lease, will consider month to month. 352-3840, Jim.

Vacation Rentals  
ARROWHEAD cabin, lake view, 6 max., \$140/weekends, \$350/week, others avail., security/cleaning deposit required. 952-6221, Mon.-Thurs., 909/337-1036, Fri.-Sun.

BIG BEAR LAKE, cozy cabin, blocks from Snow Summit, sleeps 6, very private, plenty of parking, cable TV, DVD, shuffleboard table, \$140/weekend, \$350/wk. 726-1270.

BIG BEAR LAKE/FONT luxury townhome, 2 decks, tennis, indoor pool/spa, beautiful master bd. suite, slps. 6. 949/786-6548.

CAMBRIA house, ocean front, exceptional white water view, accom. up to 4 people, all amenities provided. 702/256-1359, crenylenids2@cox.net.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf. 1 bd. w/loft, compl. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/night, high season rate \$130/night/2, \$15/night/add'l person. 949/348-8047 or jackandrandy@cox.net.

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. view, Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc't. 626/798-9222. 626/794-0455, valeriee@caltech.edu.

OCEANSIDE condo, on the sand, charming, 1 bd., panoramic view, walk to pier or harbor, pool/spa, game room, slps. 4. 949/786-6548.

PLAYA DEL REY beach house, on the sand, 2 bd., 2 ba., wood-burning fireplace, sheets & towels provided, \$1,050/week, free departure cleaning for JPLers, emailkerri@aol.com, 790-7088, photos/reservations.

RESORTS, 5-star, local and worldwide, luxurious residential-style studios with furnished kitchenette, starting at \$450 for 7 nights; 1 bedroom w/full kitchen, living rm. \$700/wk.; 2 bedrooms, \$1,000/week; studio specials: Palm Springs, Lake Tahoe, Vail, Park City, Puerto Vallarta, \$399/week. 626/794-9579 or fivestarresorts@earthlink.net.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking, 626/794-3906.

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