

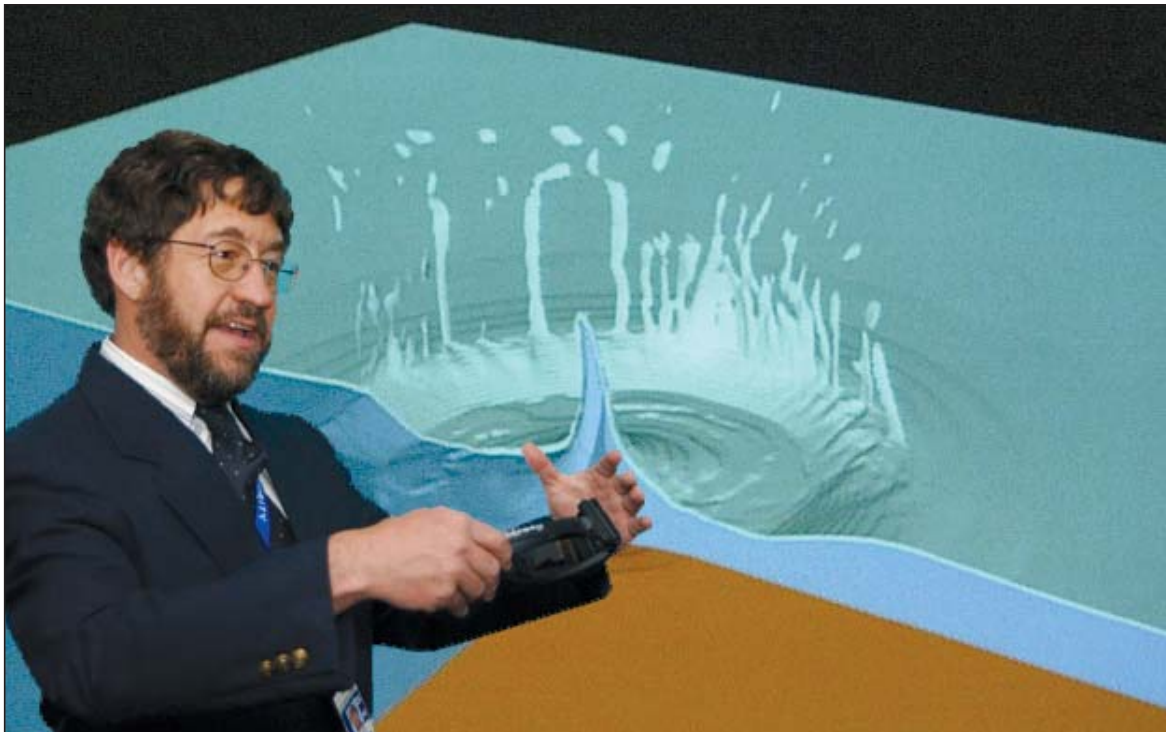
Los Alamos  
NATIONAL LABORATORY

# NewsLetter

Week of June 24, 2002

Vol. 3, No. 12

## New wave supercomputers catch big waves



Galen Gisler of Thermonuclear Applications (X-2) explains a simulation of an asteroid collision into water. Photo by James E. Rickman

by Jim Danneskiold

The new wave in computing — super-fast machines churning out three-dimensional models viewable in high-tech, immersive theaters — may teach us more about the big waves that sometimes threaten people who live near the seashore.

Although earthquakes cause most of these giant waves, called tsunamis, Los Alamos researchers recently completed the largest and most accurate simulation of tsunamis caused by asteroids. They presented the first data from that model at the American Astronomical Society meeting in Albuquerque earlier this month.

The scientists aren't working on a sequel to the Hollywood blockbusters "Deep Impact" or "Armageddon." They reason that because a large percentage of the world's population lives on islands, bays or coastlines, a better model could help predict how tsunamis behave, aiding emergency responders.

Most tsunamis often result when earthquakes send huge landslides tumbling into bays or oceans. Recent studies of a 30-foot-high tsunami that killed more than 2,100 people on Papua, New Guinea in July 1998 showed the cause was an underwater landslide more than 2,000 miles away.

A landslide in Lituya Bay, Alaska, in July 1958 inundated the shore of Gilbert Inlet nearly a third of a mile above the high-tide line, and its monster wave is the largest ever documented.

Computer scientists Galen Gisler and Bob Weaver of Thermonuclear Applications (X-2) and Michael Gittings of Science Applications International Corp. created simulations of six different asteroid scenarios, varying the size and composition of a space visitor hitting a three-mile-deep patch of ocean at a speed of 45,000 miles an hour. The Big Kahuna in their model was an iron asteroid one kilometer in diameter; they also looked at half-sized, or 500-meter, and quarter-sized variants; and

at asteroids made of stone, roughly 40 percent less dense than iron.

"We found that the one-kilometer iron asteroid struck with an impact equal to about 1.5 trillion tons of TNT and produced a jet of water more than 12 miles high," Gisler said.

The team's effort builds on the pioneering research of Chuck Mader of Detonation Theory and Application (T-14) and Dave Crawford of Sandia National Laboratories. More accurate models of tsunami behavior are now possible, thanks to recent improvements in high-performance computers and the codes that run on them funded by the National Nuclear Security Administration's Advanced Simulation and Computing program.

"Although this is important science and has potential value in predicting and planning emergency response, it's a great way to test and improve the code," Gisler said. "We can do the problem better now by simulating an entire tsunami event from beginning to end and bringing more computing power to bear on some of the key variables."

The code, called SAGE for SAIC's Adaptive Grid Eulerian, was developed by the Laboratory and SAIC. A majority of large simulations come in one of two flavors: Lagrange, in which a grid or mesh of mathematical points matches with and follows molecules or other physical variables through space or Eulerian, in which the mesh is fixed in space, thereby permitting researchers to follow fluids as they move from point to point.

SAGE's power lies in its flexibility. Scientists can continuously refine the mesh

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## Retention Incentive Program for nuclear materials workers begins July 1

by Jim Danneskiold

Beginning July 1, employees at Technical Area 55 and the Chemistry and Metallurgy Research Building who meet eligibility requirements can begin receiving additional pay as an incentive to keep skilled workers in those facilities.

According to a memo issued by Tim George, Nuclear Materials Technology (NMT) Division leader, the Laboratory and the Department of Energy have authorized a retention-incentive program because of the need for experienced nuclear materials workers in carrying out Los Alamos' national security mission.

"We're trying to stabilize our work force because of the mission-critical work that we do here," George said. "We need to have the

same people working on these activities day after day to build up expertise and continue to improve the quality of everything we do."

To be eligible, employees must have worked in radiological-controlled areas at TA-55 or CMR for at least a year and hold current Q clearances, Personnel Security Assurance Program (PSAP) certifications and Radiological Worker II qualifications. They also must have demonstrated satisfactory job performance with no disciplinary issues.

The incentive is being offered to all job classifications: technicians, technical staff members, specialist staff members and administrative support staff. Only University of California employees, including qualified students, are eligible. Managers

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### Lions and tigers and ... jaguars, oh my!

Technical staff member Laura Marsh of Ecology (RRES-ECO) is an ecologist

who works on projects such as quantitative habitat analysis and floodplains and wetlands compliance. But in her free time, her attention turns to jaguars. . . . . **Page 8**

## Los Alamos NewsLetter

The Los Alamos NewsLetter, the Laboratory bi-weekly publication for employees and retirees, is published by the Public Affairs Office in the Communications and External Relations (CER) Division. The staff is located in the IT Corp. Building at 135 B Central Park Square and can be reached by e-mail at [newsbulletin@lanl.gov](mailto:newsbulletin@lanl.gov), by fax at 5-5552, by regular Lab mail at Mail Stop C177 or by calling the individual telephone numbers listed below.

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Los Alamos National Laboratory is operated by the University of California for the National Nuclear Security Administration (NNSA) of the U.S. Department of Energy and works in partnership with NNSA's Sandia and Lawrence Livermore national laboratories to support NNSA in its mission.

Los Alamos enhances global security by ensuring safety and confidence in the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction and improving the environmental and nuclear materials legacy of the Cold War. Los Alamos' capabilities assist the nation in addressing energy, environment, infrastructure and biological security problems.



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# Strengthening and enhancing relationships through technical cooperation

by Laboratory Director John Browne

I was privileged recently to participate in a meeting between the directors of the three U.S. and three Russian nuclear weapons laboratories. This meeting marked the 10th anniversary of a continuing and historic relationship to pursue both a cooperative and constructive working relationship and specific technical collaborations between former adversaries.

The first, cautious meeting of the lab directors was held in 1992, and the success of the ensuing technical collaborations established a foundation for more formal government-sponsored programs. The initial laboratory-to-laboratory technical exchanges showed that a cooperative relationship that preserved each country's vital interests was not only possible, but also helped to build a path toward more formal cooperative programs.

Today, as the United States looks toward establishing a new strategic relationship with Russia, interactions with our counterparts at the Russian nuclear weapon laboratories again offer a chance to help strengthen and enhance that relationship through continued technical cooperation.

The official recognition of the importance of these lab-to-lab interactions was driven home by the participation of National Nuclear Security Administration Administrator John Gordon and his counterpart at Minatom, Deputy Minister Lev Ryabev. NNSA deputy administrators Linton Brooks and Everet Beckner also participated. This NNSA and Minatom presence added an important level of authority and seriousness to the discussions and ensured that we had governmental support for the ideas and plans developed during our discussions.

The sessions were open, collegial and productive. There was strong appreciation for the importance of our past collaborations in scientific and technical areas, along with a clear commitment to revitalize such joint efforts. Los Alamos staff members, in particular, can take pride in the roles they have played, providing leadership and technical support for a wide range of U.S.-Russian cooperative programs and for highly successful scientific collaborations in such areas as materials science and high-energy-density physics.

The lab directors also recognized opportunities for new collaborations. Specifically, the United States and Russia both have placed increased emphasis on responding to the threat of terrorism, where both U.S. and Russian laboratories have technical expertise to provide in support of national efforts. In particular, we may be able to collaborate on detection of nuclear materials and radiological sources, an area in which both nations' labs have strong technical expertise.

We anticipate additional communications between NNSA and Minatom to define more fully the range of possible future collaborations, including the possibility of a workshop later this year to identify specific details of joint technical work to combat nuclear terrorism.

Former Laboratory Director Sig Hecker and I recently participated in a special workshop in Moscow immediately following the Bush-Putin summit. This forum was hosted by the Nuclear Threat Initiative, a charitable organization established by Ted Turner and directed by former Sen. Sam Nunn, D-Ga. The workshop focused on creating a global coalition against terrorism and was attended by members of the U.S. Congress, including Sens. Domenici, R-N.M., and Bingaman, D-N.M., and members of the Russian Duma. This meeting, together with the recent summit, continues at the very highest levels the same heightened spirit of cooperation and common interest seen at the earlier meeting of NNSA and Minatom laboratory officials.

For Los Alamos, I believe these interactions are further evidence that we play a significant national and international role in ensuring security on a global scale. We can all take pride in this as we look toward another decade of focused collaboration and engagement.



Laboratory Director John Browne, center, meets with several Russian laboratory leaders recently in the University House. Russian and U.S. laboratory directors were at Los Alamos last month to discuss the status of cooperation between U.S. and Russian laboratories. Seated far left is Rady Ilkaev, director of the All Russian Scientific Research Institute of Experimental Physics (VNIIEF) in Sarov. Second from left is Vladimir Rogachev, international director of VNIIEF. At right in photo is Lev Ryabev, deputy minister of the Russian Ministry of Atomic Energy, while seated next to Browne is Natalya Klishina, also of the Russian Ministry of Atomic Energy. The laboratory directors heard presentations on collaborations for combating terrorism, materials science and high-energy-density physics. The lab directors also toured several Laboratory facilities. Photo by LeRoy N. Sanchez



# Department of Homeland Security

## Abraham/Gordon/Browne voice their support

### Energy Secretary Spencer Abraham:

Earlier this month, Department of Energy Secretary Spencer Abraham issued this statement regarding President George W. Bush's proposed Department of Homeland Security.

"President Bush announced last evening [June 6] that he would propose that Congress establish a Department of Homeland Security to counter the changing nature of the threats facing America. These new threats require a new government structure to protect against enemies that can strike with a variety of weapons. The president's proposal to create the Department of Homeland Security is the most significant transformation of the U.S. government in over a half-century.

"I applaud and fully support the steps President Bush has taken to protect the citizens of the United States and our way of life. The president's action will make Americans safer by realigning the current patchwork of government activities into a single department, whose primary mission is to protect our homeland. Some of the important work that the Energy Department of Energy oversees will be shifted under the authority of the Homeland Department. By doing so, we will not only improve security coordination, we will give America a unified and flexible resource to confront the war on terrorism and strengthen America against future terrorist threats.

"As I've said before, I am extremely proud of this department's contribution to homeland security, never more so than in the aftermath of [Sept. 11, 2001]. We will continue to be at the forefront of this important mission, and one way we can accomplish this is by helping Homeland Security Director Tom Ridge and Congress make the president's vision a reality.

"[Following is a summary of] the Homeland Department's core mission which I hope you find helpful. As more details become available about the structure of the new department, I will keep you informed."

—Energy Secretary Spencer Abraham

### Department of Homeland Security

The president's most important job is to protect and defend the American people. Since Sept. 11, [2002,] all levels of government have cooperated like never before to strengthen aviation and border security, stockpile more medicines to defend against bioterrorism, improve information sharing among our intelligence agencies and deploy more resources and personnel to protect our critical infrastructure.

The changing nature of the threats facing America requires a new government structure to protect against invisible enemies that can strike with a wide variety of weapons. Today, no one single government agency has homeland security as its primary mission. In fact, responsibilities for homeland security are dispersed among more than 100 different government

organizations. America needs a single, unified homeland security structure that will improve protection against today's threats and be flexible enough to help meet the unknown threats of the future.

The president proposes to create a new Department of Homeland Security, the most significant transformation of the U.S. government in over a half-century by largely transforming and realigning the current confusing patchwork of government activities into a single department whose primary mission is to protect our homeland. The creation of a Department of Homeland Security is one more key step in the president's national strategy for homeland security.

Immediately after last fall's attack, the president took decisive steps to protect America — from hardening cockpits and stockpiling vaccines to tightening our borders. The president used his maximum legal authority to establish the White House

'Obviously, it is not yet clear what the impacts to Los Alamos will be. We will share information with you as it becomes available. ... I fully and enthusiastically share the views expressed by Gen. Gordon ... and agree with the description of the president's proposal as a bold action.'

— Laboratory Director John Browne  
all-employee memo, June 7, 2002

Office of Homeland Security and the Homeland Security Council to ensure that our federal response and protection efforts were coordinated and effective. The president also directed Homeland Security Advisor Tom Ridge to study the federal government as a whole to determine if the current structure allows us to meet the threats of today while anticipating the unknown threats of tomorrow. After careful study of the current structure — coupled with the experience gained since Sept. 11, 2001, and new information we have learned about our enemies while fighting a war — the president concluded that our nation needs a more unified homeland security structure. In designing the new Department, the Administration considered a number of homeland security organizational proposals



that have emerged from outside studies, commissions and members of Congress.

The Department of Homeland Security would make Americans safer because our nation would have

- One department whose primary mission is to protect the American homeland;
- One department to secure our borders, transportation sector, ports, and critical infrastructure;
- One department to synthesize and analyze homeland security intelligence from multiple sources;
- One department to coordinate communications with state and local governments, private industry, and the American people about threats and preparedness;
- One department to coordinate our efforts to protect the American people against bioterrorism and other weapons of mass destruction;
- One department to help train and equip for first responders;
- One department to manage federal emergency response activities, and
- More security officers in the field working to stop terrorists and fewer resources in Washington managing duplicative and redundant

activities that drain critical homeland security resources.

### The Organization of the Department of Homeland Security

The Department of Homeland Security would have a clear and efficient organizational structure with four divisions:

- Border and Transportation Security
- Emergency Preparedness and Response
- Chemical, Biological Radiological and Nuclear Countermeasures
- Information Analysis and Infrastructure Protection

**Editor's note:** To review the proposed legislation to create a Department of Homeland Security submitted to Congress by President Bush on June 18, go to <http://www.whitehouse.gov/news/releases/2002/06/20020618-5.html> online.

### NNSA Administrator John Gordon:

Last evening [June 6] the president made a bold proposal to improve the way in which the government responds to threats against the United States by creating a cabinet-level Department of Homeland Security. Centralizing homeland security responsibility in one department will improve our ability to respond to weapons of mass destruction by leveraging resources currently spread across the government.

Under the proposal, some NNSA programs, facilities and assets would be transferred to this new department.

The importance of this mission requires that we give the president our full support. NNSA's scientists, engineers and program managers have worked ably to support the fight against terrorism, both before [Sept. 11, 2001] and after. I am proud of our role and our accomplishments in this arena and fully expect that countering weapons of mass destruction and supporting homeland defense efforts will remain an important element of NNSA's mission. Significant details of what is to be transferred, and how future reporting channels will work, remain to be determined. We will try to keep you informed as this proposal and transition moves forward.

Thank you for your continued hard work in support of the nation's defense.







### Stop family friction before it starts

Stress resistance begins at home. What better way to help your family withstand the rapid change, constant disruptions and various surprises life dishes out than to establish a stable "base of operations" at home.

Psychologists and other mental health professionals have found that families who work and play together as a cohesive unit can survive a crisis like unemployment or illness better than those with poor coping skills.

Following are some guidelines for insulating your family against stress:

- Take time to talk things over and be good companions to one another.
- Hold regular family conferences or meetings. Use this time to set mutual goals, present grievances or discuss future plans. Take turns heading these meetings. Plan an agenda so everyone gets an opportunity to speak and so that important issues aren't overlooked.
- Teach the value of being a good listener. Pay attention to what others say. Learn to "hear between the lines." And ask questions if you don't understand what your spouse or children are trying to tell you.
- Establish family traditions tied to significant occasions, like birthdays or holidays, that can be celebrated together.
- Learn the value of compromise.
- Be flexible and shift gears if the situation calls for it. Flexibility is especially important if one parent goes back to work after managing the household full time or if one wage earner loses his or her job or gets sick.
- Allow for individual strengths and interests. Don't compare brothers and sisters to one another, and allow family members to have "their own space."
- Discourage competition between family members.
- Don't overemphasize academic and financial status.

Source: American Institute of Preventive Medicine

### Family Health Matters

The Wellness Center is offering a new four-week health incentive program for the whole family from July 15 through Aug. 11

Take advantage of having the kids home this summer to work as a family to improve health.

Commit to helping each family member improve

- fitness
- eating habits
- safety skills
- self-care abilities

Upon registration, each family will receive a participant booklet that contains the following program tools and components:

**Family First** — Short articles on why these wellness habits matter. Tips on starting and sticking with better health practices individually and as a family.

**Family Ties** — Activities to bring family members together for better health. Learn new ways to increase activity, eat better, practice safety skills and try self-care techniques.

**Family Scrapbook** — Map out a weekly strategy and record results for each health area on this family planner/log form.

**Family Assets** — Checklist for the wealth of options and commitments you have for family health, as well as resources for learning and doing more.

**Family Portrait** — At the end of the program summarize your overall progress toward family health.

**Program Prizes** — Weekly drawings for Family Health Matters T-shirts and sweatshirts

To register, contact the Wellness Center at 7-7166. For program questions, contact Jessica Kisiel at 5-4368 or [jkisiel@lanl.gov](mailto:jkisiel@lanl.gov) by e-mail.

### New wave supercomputers ...

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and increase the level of detail the code provides about specific physical elements in the mesh. The new Los Alamos simulation uses realistic equations to represent the atmosphere, seawater and ocean crust.

To follow a tsunami from the point of splashdown to a city like Honolulu or Long Beach, Calif., Gisler and his colleagues needed to model in great detail the interactions between air and water and between water and the surface of an asteroid. Then they followed how the shock waves moved through the ocean and the seabed below and how water waves propagated through the water.

"We looked in some detail at a couple of the key variables, especially the heights of tsunamis as a function of their distance from the point of impact; we modeled the heights of individual waves and studied how densely spaced they would be at various distances," Gisler explained.

When the enormous simulation was done — more than a million hours of individual processor time, or three weeks on the Laboratory's Blue Mountain supercomputer and the ASCI White machine at Lawrence Livermore National Laboratory — the team found they had some good news and some bad news for coastal dwellers.

"The waves are nearly double the height predicted in the earlier simulation, that's the bad news. But they take about 25 percent longer to get to you, which could help more people get to higher ground if they had some warning," Gisler said.

The model predicts that wave velocities for the largest asteroid will be roughly 380 miles an hour, while the older model calculated their speed at close to 500 miles an hour. However, the initial tsunami waves are more than half a mile high, abating to about two-thirds of that height 40 miles in all directions from the point of impact.

The earlier model of asteroid-caused tsunamis actually was a patchwork of three different computer codes, Gisler said. The first code simulated the big splash and formation of the cavity, the second depicted how the water collapsed to create the tsunami and a final code followed the tsunami wave through the ocean.

"With the SAGE code, we were able to avoid a series of potential mistakes that happen when the model doesn't understand the conditions that you're passing on from each separate code," Gisler said.

In addition to learning more about how wave height and density vary with distance from the asteroid impact, the Laboratory team also improved the way the computer model represents the strength of materials, which can be applied to other codes with industrial, defense and scientific applications.

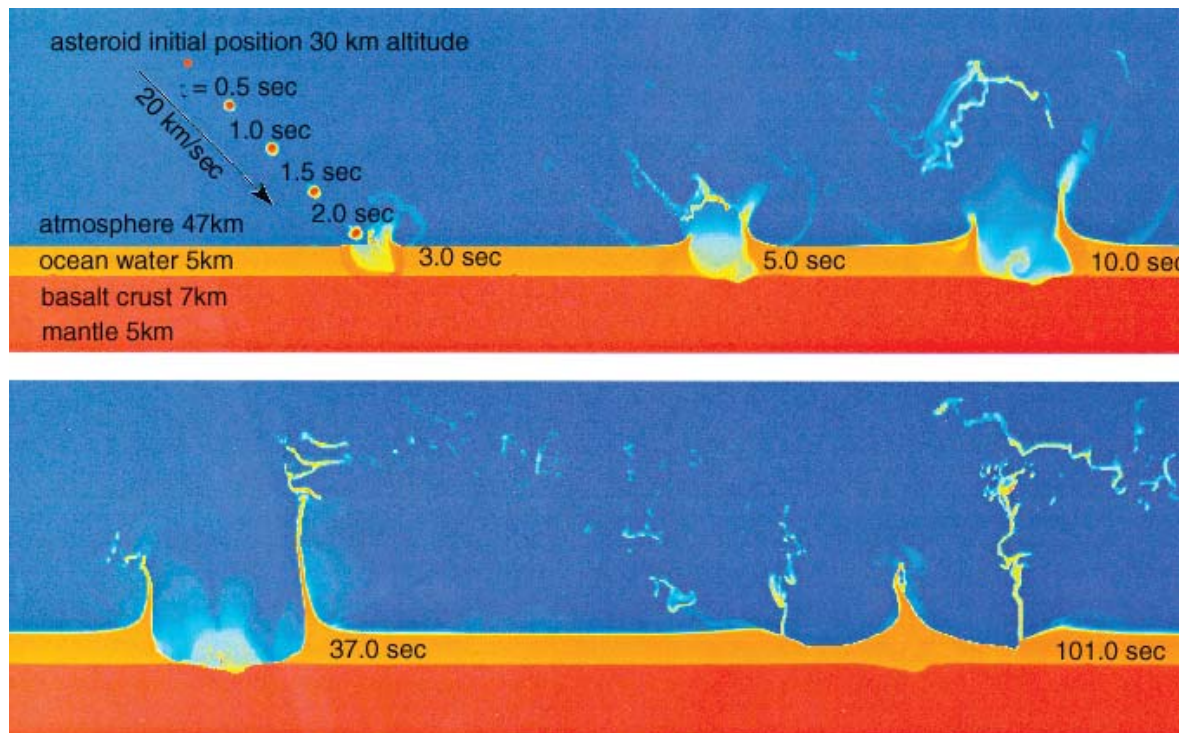
As the asteroid strikes the water, its overall density decreases rapidly. One challenge for the team was to model accurately how acoustic waves propagate through the asteroid as it vaporizes. Initially, that problem appeared insurmountable because both the earlier codes and SAGE showed the acoustic waves moving at physically impossible speeds through the highly mixed materials. By adjusting how the cells in the mesh represent those rapidly changing materials, the team was able to model the acoustic waves accurately.

Gisler said the team produced both two-dimensional and three-dimensional versions of the SAGE tsunami code. The 3-D code required more than 200 million separate cells and ran for three weeks on one-eighth of ASCI White. Clever code writing and the enormous computational power in the 3.1 teraOPS Blue Mountain and 12.1 teraOPS ASCI White weren't the only crucial factors in building the model.

"It's not all about better and better resolution," Gisler said. "You must have good visualization techniques, such as the three-dimensional power walls we use at Los Alamos, if you're going to make sense of the data from these huge calculations."

The modeling continues. Gisler, Weaver and Gittings next plan to study in three dimensions how an asteroid-induced tsunami will behave if the space rock strikes a glancing blow, 30 degrees from the horizontal, instead of the 45- and 90-degree angles they've already calculated.

A QuickTime video clip of the asteroid tsunami simulation is available online at <http://www.lanl.gov/worldview/news/tsunami.mov>.



A time-sequence illustration shows the beginnings of a tsunami, or huge tidal wave. A one-kilometer-diameter asteroid approaches and then enters the ocean, creating a deep cavity and a huge splash, based on a new three-dimensional model developed by Los Alamos researchers Galen Gisler and Bob Weaver of Thermonuclear Applications (X-2) and Mike Gittings of Science Applications International Corp.



# Melting the way to environmental remediation

by John Bass

The Laboratory has begun the next phase of its Nontraditional In Situ Vitrification (NTISV) technology project, and the technology recently underwent a successful demonstration at Material Disposal Area V in Technical Area 21 at the east end of DP Road and Trinity Drive in Los Alamos.

The technology uses electrical energy to convert contaminated soil buried at the site into an inert, environmentally benign glass-like block.

The hot-test coring phase of the NTISV project involves sampling a section of an inactive absorption bed that was heated in April 2000 to vitrify — convert the soil to a glass-like substance — to demonstrate an innovative technology for potential use in cleaning up similar sites at the Laboratory. The vitrified mass has now cooled to approximately 100 degrees Fahrenheit, and the low-level radionuclides present in the soil demonstration section of the absorption bed are now expected to be immobilized within the vitrified mass in a nonleachable state.

During this phase, workers will collect and core samples of the vitrified mass and analyze them for their mineralogical and chemical constituents. The samples will be collected using a drilling rig.

The samples will be submitted to an off-site contract laboratory for analysis and the data will be used to verify the effectiveness of the NTSIV technology.

Nontraditional In Situ Vitrification differs from traditional in situ vitrification tech-



Drilling rigs were set up at Technical Area 21 to be used in the Nontraditional In Situ Vitrification technology project. The technology uses electrical energy to convert contaminated soil into an inert, environmentally benign glass-like block. Inset photo below: a core sample from the “glass block” was created when the ground was melted. Numerous core samples were drilled to verify the consistency of the technology. Photos courtesy of Becky Coel-Roback, Remediation (RRES-R)



nology in that it melts material from the bottom up instead of the top down. In situ vitrification technology has successfully been used at a number of contaminated sites over the past 20 years to stabilize a broad range of contaminants in various soil conditions.

The site once served as a disposal area for a now-closed facility that laundered radionuclide-contaminated garments. The facility had three discharge-absorption beds that accepted about 40 million gallons of waste from 1945 to 1961. The waste contained inorganic compounds and radionuclides, including americium, plutonium, uranium, strontium and tritium. The area was selected for the demonstration because of its variety of contaminants. The

central section of the northernmost absorption bed is an area roughly 20-feet long, 30-feet wide and 22-feet deep.

This demonstration is being conducted in accordance with the Laboratory's Resource Conservation and Recovery Act corrective action program that is regulated by the New Mexico Environment Department.

The Lab's Environmental Restoration (RRES-ER) Project prepared and submitted an interim measures plan to NMED in February 2000; the state agency approved the interim measures plan in April 2000.

## Retention Incentive ...

continued from Page 1

from deputy group leader and above, as well as contract personnel, aren't eligible.

George said the retention incentive won't be added to employees' base salary, so it won't follow an employee who takes another job outside TA-55 or CMR, and it won't be included in calculating retirement benefits.

The amount an employee will receive is based on years of experience working in TA-55 or CMR radiological-controlled areas, as follows:

- after the first year of eligibility, \$200/month;
- after the second year of eligibility, \$400/month; and
- after the third year of eligibility and beyond, \$500/month.

Employees from other divisions who work in the two facilities, such as Materials Science and Technology (MST); Chemistry (C); Engineering Sciences and Applications (ESA); Health, Safety and Radiation Protection (HSR); or other divisions, are eligible for the incentive, with approval from their managers and NMT Division management.

In three years, division management will perform a comprehensive review of how effective the incentive program has been in recruiting and retaining skilled workers, followed by a recommendation on whether the incentives should continue, George said.

More information about the incentive program is available in a set of frequently asked questions at [http://www.lanl.gov/orgs/pa/newsbulletin/2002/06/13/HR-WEM\\_FAQ%27s\\_6\\_11.pdf](http://www.lanl.gov/orgs/pa/newsbulletin/2002/06/13/HR-WEM_FAQ%27s_6_11.pdf) online.

## Nominees sought for Distinguished Student Performance Awards

by Michael Carlson

Nominations for the second annual distinguished student performance awards are currently being accepted by the Student Programs Advisory Council until July 15. Recipients will be announced at the Student Symposium July 30 at the Los Alamos Research Park.

Students also have an opportunity this year to nominate mentors for distinguished performance awards, which also will be presented at the Student Symposium.

Students may nominate a mentor by submitting a brief essay explaining why their mentor deserves to be recognized.

A mentor must nominate a student by writing a brief essay about why a student should be recognized for distinguished performance. Students will be judged in either a technical or an administrative category, said SPAC Chairman Dave Hobart of Actinide Analytical Chemistry (C-AAC).

Winners will share a cash-prize fund provided by the Laboratory.

"We gave out four awards last year. We expect to give out as many this year, including four mentor awards," Hobart said.

Did YOU Know?

### Good to the last drop

An extra cup of coffee every other day for the average adult New Mexican — all 1.3 million of them? It's possible, thanks to just one of the water-conservation programs under way at the Laboratory. Initiated by Steve Francis and Stephen Mee of Facilities and Waste Operations, this program, at Technical Area-54, holds down dust on an unpaved road by using a harmless salt-based formulation instead of the 7 million gallons of drinkable water the Lab previously used each year. Another benefit: The road is expected to last longer, too, now that it's not sprayed with water every day.







## Former Lab director elected fellow of American Academy of Arts and Sciences

Siegfried Hecker of Materials Science and Technology (MST-DO) is a recently elected fellow of the American Academy of Arts and Sciences. Hecker's election on April 23 is a result of a highly competitive selection process that recognizes his outstanding professional contributions.

Hecker was director of the Laboratory for nearly 12 years. He first came to Los Alamos as a graduate summer student and later as a postdoctoral appointee in the mid 1960s. He is a Laboratory Senior Fellow and has a joint appointment with the Materials Science Technology (MST) and Nuclear Materials Technology (NMT) division offices. He is now primarily engaged in plutonium research and in working with the Russians on nuclear materials security and management.

"It's a great honor to be elected to such a distinguished academy, especially one that is dedicated to promoting the arts and sciences," Hecker said.

Bill Press, deputy Laboratory director for science and technology and a member of the academy since 1993, said, "Sig Hecker's election is a well-deserved recognition of his significant contributions, both as a research scientist and as a statesman in international affairs."

The American Academy of Arts and Sciences was established in 1780 by American founding fathers John Adams, James Bowdoin, John Hancock, Samuel Adams and other scholar patriots. Its current membership includes 168 Nobel Prize laureates and 58 Pulitzer Prize winners.

The Academy also awards the Emerson-Thoreau Prize in literature, the Rumford Prize in physical sciences and the Francis Amory Prize in reproductive biology.

Hecker will be formally inducted into the Academy on Oct. 5 in a ceremony at its headquarters in Cambridge, Mass.

For more information about the American Academy of Arts and Sciences, see its Web site at [www.amacad.org](http://www.amacad.org) online.

## Lab engineer receives D. Peter Lund award

Jane Lataille of Fire Protection (FWO-Fire) is the recipient of the D. Peter Lund award from the Society of Fire Protection Engineers. The Lund award, established in 1997, recognizes significant contributions to the advancement of the professional recognition of the fire-protection engineer.

Lataille served for many years as the chair of the SFPE Engineering Licensing Committee. She compiled and edited the first edition of the SFPE Reference Manual for the P.E. Exam in Fire Protection Engineering and is a major advocate for enhancing the quality of SFPE's publications. She serves on the editorial advisory board for Fire Protection Engineering magazine. Lataille also is a licensed professional engineer in five states.

According to Lataille, "Helping to start Fire Protection Engineering magazine was both daunting and exciting. The magazine's excellent reception by fire-protection engineers has been the best reward I can imagine."

Lataille is the past president of the Connecticut Valley Chapter of SFPE; the recipient of the SFPE Hat's Off, President's Award; and designated fellow awards.

Lataille has a bachelor's degree in physics from Worcester Polytechnic Institute, a master's degree in electrical engineering from Rensselaer Polytechnic Institute and an associate in risk management from the Insurance Institute of America.



Jane Lataille



Gary Geernaert

## New director named for Laboratory's IGPP

Gary Geernaert is the new director of Los Alamos' branch of the Institute of Geophysics and Planetary Physics (IGPP).

Before working at the Lab Geernaert was the director of the Department of Atmospheric Environment at the National Environmental Research Institute, Denmark. He also is the author of more than 80 scientific publications and four books. His expertise includes the fields of meteorology, air pollution, air-sea interactions, remote sensing and policy analysis.

"I think one of my greatest strengths will be my long-time connection to science in the

University of California system as well as experience with both national laboratories and federal agencies. I believe these connections will help me to better understand and address many of the important University of California issues the IGPP faces today," Geernaert said.

Geernaert received his bachelor's degree from the University of California, Davis, in 1977. He went on to earn his doctorate in atmospheric sciences from the University of Washington in 1983.

## Lab team recognized at White House ceremony

A team that devised a unique way to eliminate acid waste at the Laboratory's plutonium facility has received a White House award for its work.

Team members Aquilino Valdez, Ronald Chavez, Benjie T. Martinez and Don Mullins, all of Actinide Process Chemistry (NMT-2), traveled to Washington, D.C., to pick up a 2002 White House Closing the Circle Award in the Recycling category for their work.

A common chemical process at Technical Area 55 is purifying plutonium by dissolving it in nitric acid. In the past, the dissolved solution passed through a series of columns, and most of the plutonium was recovered from the solution. Then the liquid waste, contaminated with nitrates, was piped to the Radioactive Liquid Waste Treatment Facility at TA-50 and condensed. There the acid was neutralized, and the plutonium stabilized for eventual shipment to the Waste Isolation Pilot Plant.

Faced with increasingly stringent regulations governing discharges of nitrates from TA-50, the Laboratory needed to drastically reduce the waste stream from the nitric acid dissolution process.

The team's solution was simple: eliminate nearly all the nitrate discharges to the treatment plant. Beginning last April, the Nitric Acid Recovery System almost eliminated nitrates in the waste stream and reduced the nitric acid used in processing operations to about 20 percent of the historic usage. The wastewater stream is now 99.98 percent pure water, with no measurable plutonium.

The system recovers nitric acid through fractional distillation, which separates chemicals with different boiling points. Water boils at a lower temperature than nitric acid, so almost pure water is removed from the top of the distillation column, while the reconcentrated nitric acid from the bottom of the column is reused.

The work, which took nearly four years to develop, also captured a Department of Energy 2002 Pollution Prevention Award.

The award ceremony took place June 11 in the auditorium of the Eisenhower Executive Office Building.







## June service anniversaries



### 35 years

James King, DX-3  
Robert MacFarlane, T-16  
Karl Melendez, CCN-7  
Dennis Mingo, FWO-CFS

### 30 years

Robert Bollman, NIS-4  
John Brownell, X-DO  
Jeffrey Casados, LANSCE-2  
Harold Corn, DX-7  
Edward Harvey, ESA-TSE  
Dennis Vasilik, HSR-4  
David Vieira, C-INC

### 25 years

Henry Anaya Jr., ESA-WER  
Henry Atencio, NMT-8  
Yvonne Armijo, D-1  
Cecil Brown Jr., NMT-2  
Joseph Brown, S-7  
Lee Collins, T-4  
Cynthia Gallegos, BUS-5  
Bobby Gonzales, NMT-16  
Francisco Guerra, ESA-WR  
Richard Hoover, MST-8  
Robert Kain, NMT-2  
Phillip Lang, S-7  
Margie Moore, NMT-3  
Harry Otway, DIR  
Edward Roemer, DX-2  
David Schmitt, DX-6  
Howard Stacy, DX-1  
David Stahl, DX-1  
Joseph Stone, P-22  
James Straight, DX-5  
Lorenzo Trujillo, NMT-7  
Brenda Valdez, IM-5

### 20 years

Fernando Algarra, ESA-WMM  
Lawrence Auer, X-3  
Michael Barnes, S-8  
Michelle Brewer, ESA-WER  
Louis Carrillo, NIS-5  
Marion Cohen, FWO-IIM  
Wayne Danen, DX-DO  
Dennis Derkacs, HSR-DO  
Catherine Hammock, DX-DO  
James Herring, BUS-DO  
Olaf Lubeck, B-1  
Sylvia Maestas, HSR-1  
Mathew Maltrud, T-3  
Benjie Martinez, NMT-2

Clifford Oliver, DX-7  
Denise Pelowitz, D-10  
E. Duane Verley, FWO-SEM  
Edwin Vigil, CER-20

### 15 years

Denise Bjarke, CER-20  
Becky Cordova, NIS-4  
J.T. Fabryka-Martin, EES-6  
Eduardo Garcia, NMT-2  
Brett Kettering, CCN-8  
Jody Martinez, NIS-18  
Loretta Martinez, HR-WDA  
Terence Mitchell, MST-8  
Pamela Reass, NIS-5  
Thomas Ricketts, NMT-4  
Lawrence Rybarczyk, LANSCE-1  
Michel Sukalski, CCS-1  
Milton Wyrick, LC

### 10 years

Elizabeth Abeyta, IM-2  
James Albright, BUS-4  
Kenneth Alvar, NIS-5  
Henry Alvestad Jr., LANSCE-2  
Monica Andersen, DX-3  
Cheryl Atencio, IM-1  
Linda Baker, B-3  
Rose Baltrusaitis, ADWP  
Kenneth Collins, S-DO  
Thomas Cook, NIS-IT  
Nyree Cox, MST-OPS  
Jean Dawson, AA-2  
Nina Gallegos, HSR-3  
Pamela Garcia, BUS-5  
Alan Gurevitch, NMT-11  
Larry Hill, DX-1  
Elizabeth Holmsten, ADO  
Christopher James, NMT-15  
James Kamm, CCS-2  
Kathryn Karns, ESA-FM-ESH  
John Kennison, MST-STC  
Suzanne Kitten, ESA-TSE  
Frances Knudson, STB-RL  
Huijou Kung, MST-DO  
Kingshi Kung, RRES-SA  
David Langlois, MST-7  
Diana Lovato, FWO-IIM  
Douglas Mayo, NIS-5  
Evelyn Mullen, NIS-DO  
Donna Osborn, BUS-7  
Sam Padilla, HSR-4  
Lori Primas, DX-3

Michael Roth, LC  
Deborah Roybal, IBD  
Robin Roybal, RRES-DO  
Louie Salazar, C-INC  
William Schueler, NMT-7  
Billie Shull, P-FM  
Alice Skehan, PM-4  
Garrick Snider, BUS-2  
Tonya Suazo, B-DO  
Gary Sundby, NIS-6  
Marilynn Thullen, HSR-2  
Timothy Wallstrom, T-13

### 5 years

Julio Aguilar-Chang, EES-11  
Jennifer Alwin, NMT-2  
Rose Andrade, NMT-DO  
Jonathan Betts, MST-NHMFL  
Paul Brown III, FWO-IIM  
Rebecca Burnell, EES-DO  
Lawrence Castellano, ESA-WR  
Robert Clanton, NIS-4  
Catherine Cleland, B-1  
Fawn Coriz, NMT-2  
Janet Danis, NMT-5  
Manvendra Dubey, EES-6  
Mitchell Frank, NMT-4  
Brian Gaschen, T-10  
Jobie Gerken, ESA-WR  
Chris Gossein, DX-3  
David Gubernatis, NMT-5  
Carol Haertling, MST-6  
John Hartin, ESA-WR  
Stacy Howze, MST-OPS  
Michael James, D-10  
Angela Jaramillo, HR-1-CB  
Andrew Koehler, D-7  
Gina Lujan, NIS-2  
Marcelina Martinez, ESA-WSE  
Peter Moller, T-16  
Murray Moore, HSR-4  
Anthony Nelson, NIS-4  
Donna O'Donnell, PM-PPC  
Elisha Peña, NMT-3  
Alicia Pope, RRES-AT  
Gustavo Reyes, S-4  
Joseph Richardson, DX-2  
Peter Roberts, EES-11  
Karen Rodney, CCN-2  
Lupe Romero, NIS-4  
Roberta Salazar, NIS-4  
Robert Steiner, C-INC  
Valentin Tcharnotskaia, LANSCE-3  
Holly Trelue, D-10  
David Webster, PS-DO

## This month in history ...

### June

**1294** — Roger Bacon dies on June 11; he was so worried about the dangers of gunpowder that he recorded its formula in almost indecipherable anagrams and included the warning, "And so thou wilt call up thunder and destruction if thou know'st the art of making gunpowder."

**1623** — Blaise Pascal born on June 19. Pascal, French writer, religious philosopher and physicist, was also a prominent mathematician who invented a calculating device that relied on a series of wheels divided into 10 parts each, representing the integers 0-9. The wheels, which were connected by gears and turned by a stylus, kept track of sums as numbers were added and subtracted.

**1781** — Jack Jouett made a historic 45-mile ride on horseback during the night of June 3-4 to warn Virginia Governor Thomas Jefferson and the legislature that the British were coming.

**1876** — A mere 83 hours after leaving New York City, the Transcontinental Express train arrives in San Francisco.

**1910** — The Wireless Ship Act of 1910 required all American ships carrying more than 50 people to be equipped with radios. Radio distress signals had been used since 1903, and an international distress signal was established in 1904.

**1912** — Alan Turing dies June 23; British mathematician and computer-science pioneer suggested a theoretical calculating device that could carry out step-by-step mathematical operations based on a program.

**1940** — Edwin M. McMillian and Philip Alberson announce the discovery of neptunium.

**1947** — First report of sighting of flying saucers, near Mt. Rainier by Kenneth Arnold of Boise, Idaho.

**1950** — Sen. Joseph McCarthy (R-Wis) charges that communists have infiltrated the Central Intelligence Agency and the atomic weapons industry.

**1950** — Supermarket opens in White Rock.

**1956** — The first atomic reactor built for private research begins operation in Chicago.

**1981** — Xerox introduces PC Xerox became the first office products company to enter the personal computer market when it introduced the Xerox 820.

**1989** — FBI raids Rocky Flats (ends production).

## UC Regents approve new domestic partner retirement benefits

The University of California Board of Regents voted last month to extend to eligible UC employees with domestic partners a set of retirement benefits mirroring those now offered to married UC employees.

Employees who are members of the UC Retirement Plan (UCRP) and their qualified domestic partners and/or family members will now be able to receive two types of death-related retirement benefits:

(1) Pre-retirement survivor income — income paid to an eligible domestic partner, eligible child(ren) or eligible parent if the UCRP member dies while employed at UC and (2) post-retirement survivor continuance — income paid to an eligible domestic partner, eligible child(ren) or eligible parent if the UCRP member dies after leaving UC.

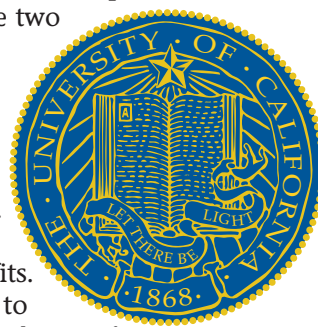
Before these actions, only UCRP members with spouses and/or dependent children or dependent parents could qualify for these benefits.

The combined benefits approved will require a total one-time cost to the UC Retirement Plan of approximately \$139 million and an annual cost of \$7 million. These costs will be covered by the assets of the retirement plan.

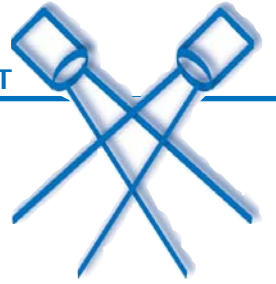
The new benefits will be effective July 1, 2002, for eligible UCRP members and will not apply to UCRP retired members with retirement dates of June 30, 2002, or earlier. Where appropriate, these benefits are subject to collective-bargaining agreements.

UC currently also provides health benefits to employees with same-sex domestic partners health benefits. As of Oct. 31, 2001, there were approximately 950 employees with same-sex domestic partners participating in UC medical, vision and dental plans.

**Editor's note:** *The Lab's diversity working group whose mission statement encompasses these and similar issues has changed its name to the Lesbian, Gay, Bisexual, Transgender and Intersex Diversity Working Group. For more information, contact Jack Harris of Desktop (CCN-2) at 5-4036.*







# Lion and tigers and ... jaguars, oh my!



Laura Marsh

by Lecole Trujillo

Technical staff member Laura Marsh of Ecology (RRES-ECO) is an ecologist who works on projects such as quantitative habitat analysis and floodplains and wetlands compliance, science programs for the Department of Energy's Atmospheric Radiation Measurement (ARM) education program, and she currently is the chair of the integrated Lab committee called the Wetlands Working Group.

But in her free time, her attention turns to jaguars, and she works with the International Jaguar Project organized by Wildlife Conservation Society in New York.

The Jaguar Project covers many issues including population status and distribution surveys, establishment of long-term ecological studies in various habitats, a range of human impacts, jaguar-livestock conflicts, rancher outreach, population monitoring, health, genetics and education and policy initiatives. Marsh's participation in the project so far has been in Belize, Central America, where she returns annually. Marsh said, "This year in Belize we were working on methodologies for surveying and monitoring jaguar populations within the Cockscomb Basin Wildlife Sanctuary. We only had two weeks, but we accomplished a tremendous amount in that time."

On this trip, the group set up 22 camera stations over 140-square kilometers, with two cameras in each station. Establishing these stations resulted in a lot of hard work. "My team spent five straight days backpacking 60 pounds of equipment each up over two mountain ranges in the rain! It was challenging but worth it once the cameras were completely deployed and we had reached out proposed goals," said Marsh.

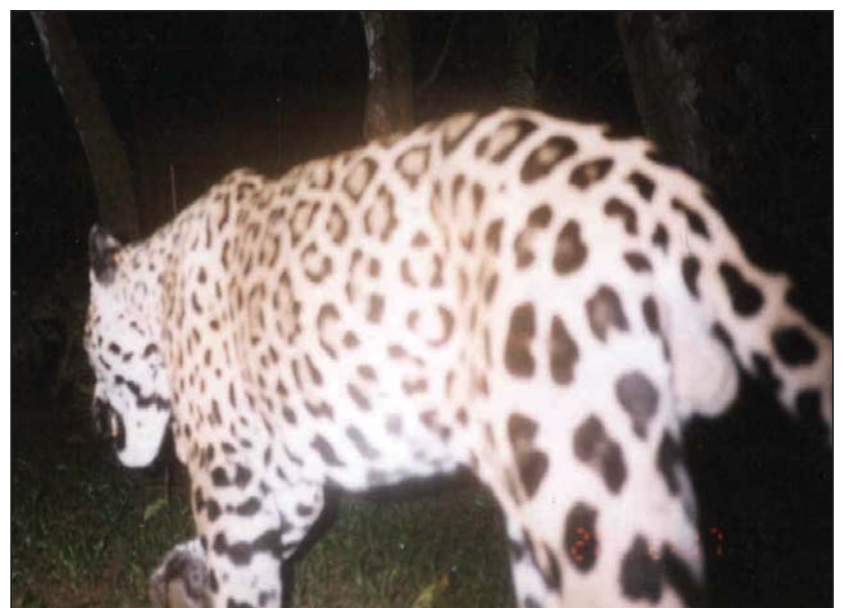
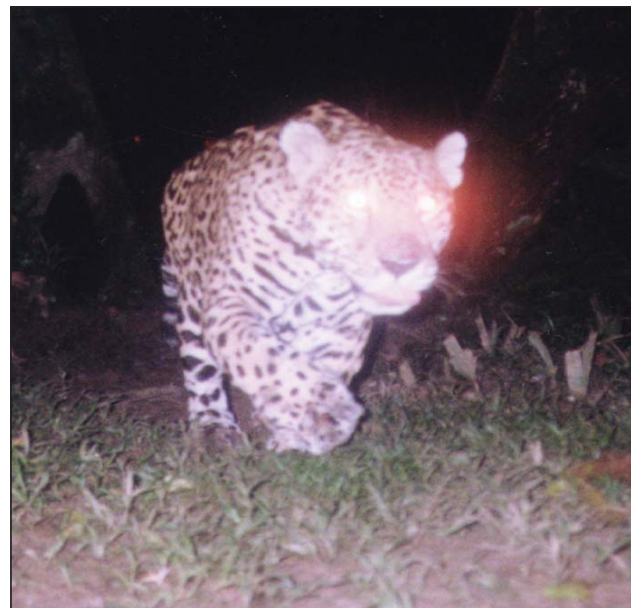
Most of the skills learned while on her expeditions can be applied to her work at the Lab, notes Marsh. She plans to use camera traps and track analysis for puma and bear. "One of the greatest things about collaborating with the WCS is the potential to conduct studies here at the Laboratory, both for management and compliance issues and for comparison to similar tropical species."

Her most recent project was to study primates in Ecuador. Marsh was invited to survey a research site called Tiputini Biodiversity Station in the Amazonian region near Yasuni National Park. She took data on nine of the 10-to-13 possible species reported for the area. This is very high primate diversity and many questions need to be addressed. "I am looking forward to making Tiputini a site I frequent to help with primate research for Ecuadorian and United States graduate students,"

Marsh explained. She also is planning on organizing a collaborative effort with WCS to do a mammal survey of the site. Her expertise in this area will benefit the Laboratory by improving mammal work done at the Lab as well as in Ecuador.



Jaguar, front/hind foot overlap



Photos courtesy of Laura Marsh, Ecology (RRES-ECO)

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