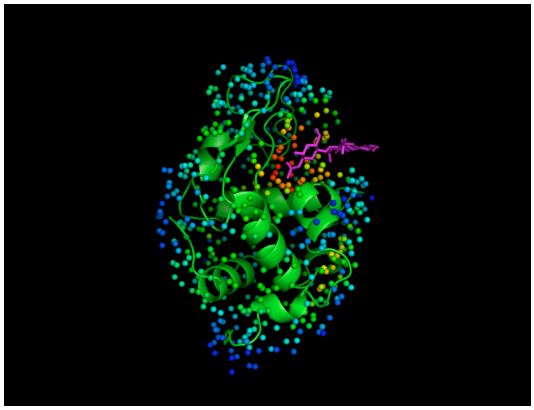
CCS News Bytes

LALP-06-059 **August-September 2006**



Vibrations of a protein (green ribbon) are simulated in the presence and absence of individual test points (small spheres) to discover locations where the protein is "ticklish" (warm-colored spheres). Michael Wall and his co-workers have shown that small molecules (magenta wireframe) tend to bind at such locations. This determination enabled them to develop a method to predict binding-sites. They are using the method to predict binding-sites for more-than 50,000 proteins.

Wall and Colleagues Are Modeling Key Protein Interactions

Proteins—complex organic compounds made of amino acids arranged in a chain—are responsible for facilitating many of the most important activities in cells, including: catalyzing chemical reactions, maintaining appropriate levels of molecules, and sensing and responding to environmental changes.

Because of the things proteins can do, scientists have made them a major target of research. If scientists want to alter a cellular process to cause an effect in the human body, for example, they must understand relevant proteins and the role they play.

The work of Michael Wall of the Modeling, Algorithms, and Informatics Group (CCS-3) focuses on computational structural biology and computational systems biology. He is primarily concerned with developing mathematical models that predict the behaviors of biological systems.

In a recent interview, Wall said, "We are interested in predicting aspects of protein interactions and understanding how protein activity is controlled by small molecules in the cell."

"Our interest is general," he added. He is developing methods and applying them to information from a comprehensive database of protein structures. He is especially focusing on developing methods to model and analyze protein structure and dynamics.

Wall explained that many laboratories around the world are engaged in structure determination for proteins. The primary repository for the information they obtain is the Protein Data Bank (or, as scientists call it, "the PDB"). It is managed by the Research Collaboratory for Structural Bioinformatics, a consortium of Rutgers, The State University of New Jersey; the San Diego Supercomputer Center at the University of California-San Diego; and the Center for Advanced Research in Biotechnology of the National Institute of Standards and Technology.

(Please see WALL, page 3.)

Past Few Decades Warmest in 400 Years

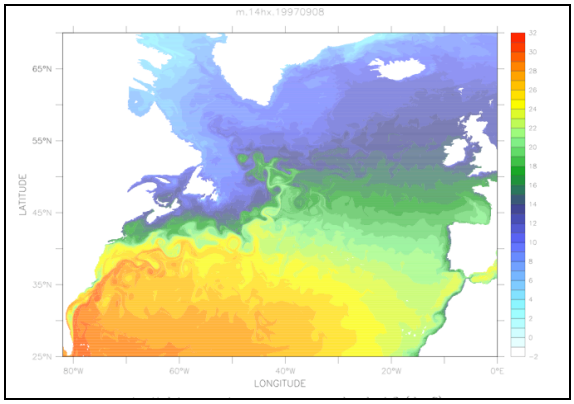
Matthew Hecht, who has been working in the field of ocean and climate modeling for 14 years, was asked recently (before the heavy summer rains started), "Is our current drought caused by global warming?"

Initially, the question stopped him cold. He admitted later, "…When lay people fire questions at me, I'm sometimes stopped dead in my tracks." But after pausing to consider, he gave this scientifically-correct response: "It could be."

He also drafted a column and sent it off to the Santa Fe New Mexican.

(Please see HECHT, page 2.)

HECHT (Cont'd from p.1.)



This simulation of the North Atlantic shows sea-surface temperatures. The temperatures indicated run from white/blue (cold) to yellow/red (warm).

The newspaper didn't publish the column, but it did print a series of questions and answers done via e-mail.

On Global Warming….

One of those Q & A's concerned the really big question the lay public has about climate studies: the state of the global-warming debate.

Hecht's answer was direct: "The argument over whether the planet is warming is pretty much settled," he said. "The past few decades have been warmer than any period within at least the past four centuries."

Subsequently, when he was asked about major misconceptions in the field of climate change, he said, "The biggest misconception about global warming is whether it even exists, whether the planet as a whole has warmed. It has."

He added, "Our burning of fossil fuels and the associated release of carbon dioxide is responsible for much of the recent warming."

And Droughts in the Southwest

His column dealt with the relationship of the New Mexico drought of early summer 2006 to global warming.

"Droughts are, of course, no stranger to the Southwest," he wrote. "A 2003 report in the Bulletin of the American Meteorological Society by Falko Fye and colleagues provided historical perspective on Southwestern regional drought in the 20th century based on tree-ring records. This current drought's impact, however, has been made more severe by the unusually warm temperatures experienced by our region (and the globe). Unusually warm temperatures have been recorded on our planet during the past decade or two. During this time, the idea of human-caused global warming has gone from being a piece of sound speculation to being the only convincingly supportable interpretation of the data….

"So, we really can't say then with absolute certainty that this drought has been triggered by global warming. But we *can* say it's been made worse by the warm conditions attributable, at least in a statistical sense, to human-caused global warming."

He also said that it *appears* (and he emphasized that word) "that droughts in the American Southwest will, with global warming, become more frequent…."

He explained: "First, La Niña conditions in an otherwise warmer Pacific appear to make for more frequent drought. And second, the impact of a drought is simply more severe in the face of warmer conditions, as we've seen through this episode of drought."

Modeling, Colleagues, and New Developments

Issues of drought and global warming form the larger context in which Hecht's day-to-day work exists. He is assigned in the Continuum Dynamics Group (CCS-2), and his real love is climate-related computer modeling.

The Climate, Ocean, and Sea Ice Modeling Team, on which he works, also includes staff members Beth Wingate, Scott Elliott, Sumner Dean, Balu Nadiga, and Wilbert Weijer, and postdoctoral researcher Mark Petersen, all of CCS-2. These people make up about half of the team. The remaining members come from the Fluid Dynamics Group (T-3), except for one person, who comes from the Earth and Environmental Sciences Division.

Climate models are growing increasingly large and sophisticated with a number of climate modeling groups developing interactive carbon cycle models, including the carbon level in the atmosphere, emissions, and the uptake of CO_2 in the oceans and on land. The Computer, Computational, and Statistical Sciences Division (CCS) participates extensively in international scientific discussions concerning climate. The division's work plays a prominent part in the work of the Intergovernmental Panel on Climate Changes—which will be releasing its fourth assessment of the Earth's climate in October.

"Our group does development of ocean and ice models and application of those models," Hecht said. "I do more of the applications, but I'm still involved in some of the model development."

(Please see MORE HECHT, Page 4.)

WALL (Cont'd from p.1)

A Little History

Turning to earlier work related to what he is doing today, Wall explained that in the 1960s, some scientists envisioned proteins as "little machines." They proposed that when a protein interacts with a "small" molecule (with a molecular weight less than about 1000 Daltons), the protein can change its configuration, leading to a change in its activity. Among the originators of this mechanistic viewpoint were Jacques Monod (a French biologist, a Nobel Prize Winner in 1965, and the author of "Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology"), and his colleagues Jeffries Wyman and Jean-Pierre Changeaux.

Wall said their view of the interaction of proteins and small molecules—which they named "allostery"—was "extremely useful," and provided the foundation of most modeling of regulation of protein activity.

Scientists know today that proteins are made up of various combinations of the 20 different amino acids. When a protein is created, a ribosome (a small, complex particle) shuttles along, picking up amino acids and stringing them together in accordance with the code specified in a strand of RNA. Think of the process as a very small assembly line producing a tiny machine.

Each different combination of amino acids yields a different kind of protein, and the amino acid sequence in a protein produces structures capable of certain actions.

More recent viewpoints, however, hold that the Monod-Wyman-Changeaux vision was too static. These viewpoints consider the fact that the atoms in a protein don't just sit in place, but, instead, are subject to random motions. The structure is continually changing in response to repeated kicks from the environment. In fact, Wall said, the protein's state is "thermodynamic."

In 1972, Wall added, Gregorio Weber at the University of Illinois said that the static picture should be altered. He realized that to understand allostery, it is necessary to consider the whole conformational distribution of the protein rather than representative structures. He recognized that small-molecule binding does not just "switch" the protein between representative structures, but can more generally alter the entire protein conformational distribution.

Musing on this viewpoint, Wall recalled a comment made by Richard Feynman, well-known Manhattan Project physicist, many years ago: "…everything that living things do can be understood in terms of the jiggling and wiggling of atoms."

Wall's Own Work

Wall said that he is "trying to quantify Weber's perspective and apply it to…(understand) the consequences of considering the full conformational distribution in modeling protein regulation."

For now, he said, there are two aspects to this work—foundational and practical. He has achieved some theoretical advances in quantifying changes in protein conformational distributions (foundational findings), and he is using these advances, most recently, to predict where small molecules might bind on the surface of proteins (practical findings).

Asked to comment on how his work might affect the future "far down the road," Wall said it could have applications in medicine and all aspects of protein biology. His work is fundamental to understanding how cells control protein activity: The cell must control the activities of proteins to maintain homeostasis and respond to the environment, he said. Someday, his work could be useful in applications valuable to the Department of Energy (DOE), such as engineering bacteria for the production of biofuels and for environmental remediation.

At present, Wall's work is funded solely by Laboratory-Directed Research and Development (LDRD) money. In the future, however, it might be of interest to the Department of Homeland Security (DHS). Someday it could be useful, perhaps, in determining whether proteins detected in the environment indicate the presence of a previously unseen pathogen.

The Formal Definition

In his technical summary for LDRD this year, he expressed his work and his goals in a nutshell. He said, in part:

"The purpose of this project is to use information from genetic sequences, protein structures and biological databases to computationally predict and understand the mechanisms of the functions of proteins and protein networks. The methods will support genome-wide analysis of the functions of proteins and protein networks and will enable predictions of the capabilities of emerging pathogens.

"We are developing methods to understand the capabilities of microbes of interest to DOE and DHS. Our methods will be useful for developing

(Please see STILL MORE WALL, page 5.)

MORE HECHT (Cont'd from p. 2)

Right now, Hecht is making heavy use of a new institutional computer, Coyote. The team is working toward configuring the existing ocean model to achieve a factor-of-10 increase in resolution within a global climate simulation.

The improved climate model will include so-called mesoscale eddies for the first time. Hecht noted that, "In the atmosphere, you have storm systems that are big—the size of Texas." In the ocean, the analogous features—mesoscale eddies—are small but important. In most climate models that are used today, however, oceanic eddies are essentially absent. Their effects are "parameterized"—calculated from resolved features. "It's as though you had to do weather prediction when you couldn't really resolve the storms."

Hecht predicted that once eddies are in the model, "We'll see something new."

Bringing a little historical perspective to the discussion, Hecht noted that, as a matter of philosophy, CCS members of the team are involved both in developing and applying tools. This practice follows the original vision of Bob Malone, founder of the team, Hecht said. The Los Alamos Parallel Ocean Program (POP) exists as a widely used ocean model because of Malone, a now-retired CCS-2 deputy group leader who saw an opportunity to take the best ocean model that existed at the time and make it work on massively parallel computers.

The group's specialty, from the very beginning, has been large computing problems, Hecht said. "It really helps having ongoing experience with these simulations," he said, because simulations of this size are "so expensive that you have to have a very good idea how to set it up the first time."

Much of Hecht's work has involved modeling of the North Atlantic. Currently, he is collaborating with Mathew Maltrud of T-3, one of the leaders of global modeling at high resolution. The "two Matthews" have been joined by Elizabeth Hunke, also of T-3. "The Holy Grail of what we're doing," Hecht said, "is to improve our understanding of the stability of world ocean circulation relative to climate change."

"Our climate system is *not* in a steady state right now," Hecht said. "Global warming is occurring, and it looks like it can be expected to continue. Fresh water input into the oceans is changing also. The question is: How much does it take to change the mode of circulation in the Atlantic Ocean from the deep, vigorous circulation that it has now to a shallower mode of circulation?"

This shallower mode of circulation—caused by climate change—could, in turn, cause *more* climate change, as has happened in the past, with particularly large consequences for Europe. Hecht explained that, "In order to understand *past* climate changes better, this (modeling) may be useful. This is important in understanding more accurately how the climate works."

He noted that high-resolution models cannot be allowed to run too long on large Laboratory computers because such runs are so expensive. But, he said, they may not need to run long to greatly improve understanding of threshold behavior level.

Hecht asked, rhetorically, "Can you effectively model the crossing of a tipping point with a good guess as to the initial state and forcing? My suspicion is that the mesoscale eddy aspect in modeling may be important to the determination of the conditions which give rise to a tipping point, and the eddies may also be important in determining the climate state which exists on the far side of that tipping point."

Coming Attractions

Hecht and several other CCS-2 team members are preparing now to attend the October 24-27 Rapid Climate Change International Science Conference in Birmingham, England. Hecht said they hope to improve their understanding in several important areas and share their own work with others. Hecht will be doing a poster and an oral presentation at Imperial College in London before the conference. His topic will be "The Northwest Corner of the Atlantic and Rapid Climate Change."

He has also been selected as lead editor of a book on eddy-resolving ocean modeling. Twenty-four authors have been confirmed. Hecht's co-editor will be Hiroyasu Hasumi of the Center for Climate System Research at the University of Tokyo.

Asked how he came to be selected as editor, Hecht said he organized a special session on eddy-resolving ocean modeling within the Ocean Sciences Conference in Honolulu last February. The principal sponsor of the conference was the American Geophysical Union (AGU). The AGU contacted him after the conference and asked him to edit the book, which will be part of the AGU's Geophysical Monograph Series. Hasumi had been one of Hecht's co-convenors at the special session in Hawaii.

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STILL MORE WALL (From p. 3)

engineered microbes to increase energy and environment security by producing biofuels or degrading environmental waste, and for predicting the capabilities of emerging pathogens in Threat Reduction."

Wall and His Colleagues

Wall is not working alone. Dengming Ming, a CCS-3 postdoctoral researcher, is working with him. In fact, Wall said, "I have a small team here—the Computational Biology and Bioinformatics Team." Ilya Nemenman, a CCS-3 staff member who is well-known for his work in entropy estimation, is involved in closely related research relevant for calculation of protein free-energies.

Wall has collaborators in the Bioscience Division. One of them is Judith Cohn, who is involved in informatics work. Wall said, "We've *demonstrated* that the algorithm for predicting where small molecules bind works. She's now running this algorithm on a set of protein structures—more than 50,000." Another of Wall's collaborators is Charles Strauss, a co-developer of Rosetta, which is the best current software for *de novo* protein structure prediction. Together, Wall and Strauss are developing a capability for high-resolution, *de novo* protein structure prediction at Los Alamos.

In addition, several more scientists in the Computer, Computational, and Statistical Sciences Division (CCS) are involved in aspects of protein-function work other than allostery. Among them are: James Howse, Cliff Joslyn, Susan Mniszewski, and Karin Verspoor, all of CCS-3.

Wall and Ming are also collaborating with Kevin Sanbonmatsu of Theoretical Biology and Biophysics (T-10), who was chosen recently as one of 56 people nationwide to receive the 2005 Presidential Early Career Awards for Scientists and Engineers. Their team is modeling a key protein involved in RNA interference, a newly discovered means by which cells control protein expression. RNA interference has already had many applications in genetics by making it possible to turn off genes *in vivo*; it also holds promise as a way to fight disease through gene therapy. The protein is called "Argonaute," and is responsible for orchestrating the destruction of specified target mRNAs, preventing them from being translated into proteins. Wall, Sanbonmatsu and Ming are using normal mode analysis to yield insight into how Argonaute recognizes and destroys target mRNAs.

Wall followed a rather unusual path to the study of proteins. He holds a Ph.D. in physics from Princeton University—but his first postdoctoral research was in biochemistry, cell biology, and computational biology at Rice University. His second postdoctoral post was at Los Alamos National Laboratory, where he started in the Chemistry Division, moved to the newly created Bioscience Division, and then switched to CCS and became a staff member in 2001. Shortly thereafter, he became co-principal investigator with Thomas Terwilliger in the Bioscience Division on a structural bioinformatics project—research that led to his present work.

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Ladders and hanging wires characterize an Access Grid® "node" under construction at the Institute for Multiscale Materials Studies.

Access Grid® Becomes Worldwide Phenomenon

In five years, Access Grid® has grown from a good idea to a worldwide phenomenon.

In fiscal year 2005, the grid—an Internet-based conferencing system supporting real time, multipoint, group-to-group communication and collaboration—made it possible for numerous organizations and individuals, scattered around the globe, to hold "meetings" without paying for travel and attend "classes" without leaving their home communities.

Access Grid® opened up worlds of learning and participation to people who could never have spared the time and money to travel to the originating sites.

Access Grid® has now issued more than 3,400 certificates to users in 47 countries. Each participating institution has one or more Access Grid® "nodes" or "designed spaces" with the high-end audio and visual technology needed to provide a quality user experience.

(Please see SIEVERS, page 6.)

SIEVERS (Cont'd from p.5)

Asked how Access Grid® had performed in FY2005, Cindy Sievers, leader of the project, didn't mince words. "It's been an awesome year," she said—and then she explained why.

"We built a new Access Grid® node in the Research Park for IMMS, the Institute for Multiscale Materials Studies, a joint effort between Los Alamos National Laboratory (LANL) and the University of California-Santa Barbara (UCSB)," she said.

"We are working with the CTN-4 VTC team and the Research Library to build a state-of-the art, integrated facility which will incorporate conventional videoteleconferencing as well as Access Grid® technologies."

In addition, she was the general producer of SC Global Showcase, the portion of the annual SC|05 supercomputing conference held last November that linked geographically diverse communities from around the world and allowed them to showcase the latest in high-end collaborative technologies. Access Grid® made it possible for many people to participate in SC|05 via SC Desktop without going to Seattle—and she has agreed to head up SC Global again for SC|06.

She was the remote sites manager for SIGGRAPH, the 32nd International Conference on Computer Graphics and Interactive Techniques, last July 31 through August 4. Access Grid® made its SIGGRAPH debut as a featured emerging technology, supporting a global collaborative performance piece, international art panels, and multisite community interactions.

She has facilitated use of the Access Grid® by the LANL Climate, Ocean, and Sea Modeling Project (COSIM).

She demonstrated Access Grid® to the staff of the San Francisco Exploratorium and was subsequently invited to discuss possible uses of the grid there.

She demonstrated grid possibilities to scientists from Eli Lily and the National Center for Supercomputing Applications.

She coordinated use of the grid for the Fifth Virtual Conference on Genomics and Bioinformatics.

And she has been working with Northern New Mexico Native American tribes to assist them in exploiting Access Grid® technology.

The Defense Advanced Research Projects Agency (DARPA) High Productivity Computing Systems program is developing a new generation of commercially viable, "high productivity" computing systems to meet U.S. government computing needs, and, in conjunction with this effort, during the course of the year, the Access Grid® helped LANL scientists fully participate with scientists from DARPA, the Department of Energy Office of Science, the University of Southern California/Intelligent Systems Division, Argonne National Laboratory Math and Computer Science Division, MITRE Corporation, Cray Inc., IBM Corporation, Sun Microsystems, Inc., Lawrence Livermore National Laboratory, Pacific Northwest National Laboratory, the National Aeronautics and Space Administration/Ames, and the University of Texas-Austin—all without spending a dime on travel.

In her interview, Sievers spoke about the success of Access Grid®—not her own success. But a review of documents about the grid revealed that because of her enthusiastic and successful advocacy of Access Grid®, Sievers was nominated for a LANL Distinguished Performance Award. She didn't get the award, but the documents sent in to support the nomination are prizes in themselves.

The nominating essay said: "Cindy Sievers has single-handedly brought the Access Grid® to LANL, making it widely available as a piece of the lab infrastructure in 2005. This has enhanced collaborations involving Laboratory scientists and significantly enabled the Laboratory's programmatic and scientific efforts in a fundamentally new way. She has also provided internationally recognized leadership to the global Access Grid® community in 2005. This leadership has increased the Laboratory's status in the scientific community at large. In accomplishing this, she has consistently demonstrated an unusually high degree of dedication, drive, and creativity and has performed at a level substantially beyond that which is normally expected in her job."

Curtis V. Canada, now with the Applied Electromagnetics Group (IAT-2), Sievers' former boss in the Advanced Computing Laboratory (CCS-1), noted that he brought her to CCS-1 in mid-2000 with the goal of having her participate in the development of what became the grid and was pleased to see her go from participant to leader in the project. He commented, "…I was blown away with her work over 2005." He said she impressed him "with her dedication, creativity, and energy in helping a vast number of newcomers to understand the

(Please see MORE SIEVERS, page 7.)

MORE SIEVERS (Cont'd from p.6)

Access Grid® and … how it might be used in their specific environments."

A letter from UCSB said the Laboratory "has a strong presence in the Access Grid® community, and Cindy Sievers has been the face of this presence. Her untiring assistance and helpful attitude have really helped make our facility (at LANL) a success…."

And a letter from IMMS said, "At the IMMS location in the Research Park, Cindy Sievers guided us in exactly which components we needed to purchase, from whom, and the cost. Cindy built the grid entirely by herself, spending many hours. Her guidance was invaluable. Cindy Sievers also trained IMMS staff to use the grid independently, continuing to help with updates…."

And the future? Part of it may be in Russia.

IMMS recently received a letter from Kevin Holsapple, executive director of the Los Alamos Commerce and Development Corporation, that said, "I would like to pursue the potential of use of your video telecon capability by Los Alamos-Sarov Sister City Initiative. This is the kind of thing that will contribute to satisfying the UCSB community commitment that was made in conjunction with the Research Park…. There are a variety of exchange activities including youth, medical professionals, emergency management professionals, educators, and business people…. It would seem like the first step would be to get technical people who understand the respective video telecon capabilities to correspond with each other to determine compatibility of systems…."

Sievers is already talking to the Russians in Sarov about establishing a node there.

Here's the completed node at the IMMS in the Research Park.

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Security Tip

Employees who work outside TA-3 might not be informed as yet that there have been *major* changes in the admission system for TA-3 gates.

The main gate just north of the old Administration Building is now unmanned. It still has a system requiring badge swipe, hand recognition, and turnstile entry.

The back gate (southwest of the old Administration Building) now has a system making use of badge swipe, entry of a pin number, and opening of a heavy gate.

The backdoor to Building 200 (near Building 508) uses a badge- and hand-recognition system, as do the entry points in T Division.

The "palm gate" southeast of the old Administration Building still uses a badge- and hand-recognition system.

The "Chicken Shack," which provides the most direct entry to the Laboratory Data Communications Center (LDCC), has both a badge- and hand-recognition system, and one of the new badge-and-pin systems.

When you come to TA-3, be prepared—and that means having a pin number *registered* and *memorized*.

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In Case You Missed It….

The job ad, posted on September 8, was interesting: Continuum Dynamics (CCS-2) was looking for a new deputy group leader. Subsequently, **Jim Sicilian**, the current deputy group leader, sent out a message to all CCS employees. "CCS-2 has posted an ad (#213561) for a deputy group leader in anticipation of my retirement next year," he said. "I encourage all to consider applying and recommending the position to others. I have enjoyed working closely with (Group Leader) John Turner, and I'm sure it will prove to be a rewarding job for my successor." So what does "next year" mean? In a brief telephone interview, Sicilian said, "probably by the end of May." He explained, "We wanted to have an opportunity to train a new deputy" if necessary, so the announcement went out early. Sicilian, who has been here since 1976, said he plans to stay in town and "pursue other interests—more theater, more outdoor exercise."

(Please see IN CASE, page 8.)

IN CASE (Cont'd from p.7)

Karen Taylor, a Tulane University researcher, spoke at the Laboratory August 2 on the importance of social networking to decision-making as New Orleans residents decided whether to evacuate. She based her talk, in part, on a survey of 116 evacuees questioned two months after the hurricane. But she had a local partner for the presentation: **Benjamin Sims** of Statistical Sciences (CCS-6) discussed the emergency response of the New Orleans Police Department. He said the damage to the city's infrastructure—such things as media, technology, communication, transportation, buildings, and power—put limitations on police officers' abilities to communicate and respond. Officers were not able to make sense of their surroundings because of the extreme situation. Since officers were required to live within the city limits, they experienced the same psychological stresses as other hurricane victims, Sims said. Both talks were part of the CCS-6 seminar series.

John Middleditch said in an interview run in the June-July issue of News Bytes that it appeared, based on seven years of observations, that in the case of at least one pulsar—PSR J0537-6910—it might be possible to predict "starquakes." Each such "glitch," it seems is preceded by a series of small "jitters." Middleditch predicted that the pulsar's next glitch would occur on August 7, give or take a few days. So what happened? A small glitch occurred at about that time, but it wasn't the large one he had expected. On September 11, Middleditch said, "The period following the small glitch is now far too long, but it has shown jittery behavior since August 21 and may portend the expected large glitch." Middleditch plans to keep pursuing his research.

A photo and caption on the last page of the April-May issue of News Bytes reported that ATC Associates Inc., a company with headquarters in Boston, Massachusetts, was replacing the entire roof on leaky Building 200. Building Superintendent Richard Strong reported recently, however, that **ATC is expected to return** before the end of September. The company will be coming back "to cover skylights above Room 212 to stop the last of the leaks."

Darlene Olivia McElroy, a web developer in the Advanced Information and Business Application Development Group (IST-AUBAD), has been an important force behind the scenes for the last two years, posting information on the Computer, Computational, and Statistical Sciences (CCS) division and group websites. She also created the covers for several CCS Division Review books. Her knowledge and artistic ability were very much on display recently when, for the second year in a row, she won a ribbon for "Best Mixed Media Artwork" at the Contemporary Hispanic Market in Santa Fe. Her work as an artist involves collage and assemblage.

Supercomputing 2006 (**SC|06**) will be held November 11 through 17 in Tampa, Florida. **Mike K. Lang** of Modeling, Algorithms, and Informatics (CCS-3) will be handling arrangements for the Los Alamos National Laboratory (LANL) booth this year. In a recent e-mail, he commented, "We would like a broad participation, so please reply if you are interesting in displaying your work this year. Please start thinking about your displays (posters, demos, and requirements: space, network, and power). This is a highly visible event and a great way to show how you are utilizing the high-performance-computing clusters at LANL." Lang is also open to suggestions about potential changes to the booth design. The conference link is http://sc06.supercomputing.org/ . Lang can be reached at mlang@lanl.gov, or 665-5756.

The 14th Joint Laboratory Biennial Nuclear Explosives Code Developers' Conference (**NECDC|06**) will be held October 23 through 27 at Los Alamos National Laboratory. **George Hrbek**, Mail Stop F699, phone 667-6898, hrbek@lanl.gov, of the Applied Physics Division (X Division), is the Los Alamos co-chairman. This year's theme is "From Serendipity to Insight." The program will feature contributed papers and posters, invited speakers, panels, and special interest groups. All technical sessions will be held in the National Security Sciences Building and the Strategic Computing Complex. Most of the conference activities will be restricted to Q-cleared people, but there will be an unclassified session. Carl Ludwig of Blue Sky Studios will be the banquet speaker.

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News Bytes Says Goodbye

This is the 10th and last issue of CCS News Bytes—at least under the present editor.

For budgetary reasons, I will be returning to my home group, Communication Arts and Services (IRM-CAS), on October 2.

When the first issue of News Bytes appeared in February 2005, I wrote, "The newsletter will be bringing you interviews with new people in the division, stories about CCS activities that affect us all, and at least one story per issue explaining (in simple, non-technical language) the work of one interesting CCS employee or team." My intent was to help the division's people—located in many different buildings—to get to know each other and to learn more about some of the interesting and extremely varied work in progress. I hope that this little publication has achieved its goal.

I have enjoyed learning about CCS, its people, and its work. I will miss all of you, and I wish you well.

Charmian Schaller

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