

investigating crustal seismic anisotropy in southern California, supported by NSF's Geophysics Program. In addition we are also working on continuing NSF projects in New Zealand, British Columbia, and the western U.S. along a transect extending from Wyoming to New Mexico.

This fall I taught Geology 100 and a graduate seminar on seismic anisotropy. I am looking forward to working with Brad Singer next fall in offering a new course "Physics and Chemistry of the Earth's Interior," which will be part of our new undergraduate curriculum.

In addition to research and teaching, I have been busy working on many committees and continuing as associate editor of the *Journal of Geophysical Research*. Travel this past year included presenting invited papers at a lithoprobe workshop in Banff and an International Symposium on Deep Seismic Profiling of the Continents in Ulvik, Norway.

David Hart joined our research group last summer as a post-doctoral research assistant. He received his PhD under Herb Wang in spring 2000. Dave has been selected to participate in Ocean Drilling Program Leg 195 as a physical properties specialist. This Leg will investigate serpentine mud volcanoes on the forearc of the Mariana subduction system. Matt Salisbury, one of my former students, will be co-chief scientist on the Leg, which occurs March and April, 2001.

#### ❖ Chuck DeMets

My research program had a great start to the new millennium, with notable progress in the three field areas where I am now working (Jamaica, Honduras and Jalisco) and initial planning for new field areas in Oaxaca, Mexico and southern California. The goal in each of these areas is to study zones of active faulting, with a goal of better understanding the mechanics and kinematics of active crustal deformation. My first PhD student Wallis Hutton completed her dissertation in mid-June and has moved on to a post-doctoral position in Mexico, where her dissertation work was focused. Recent UW PhD Tim Masterlark is now working as my post-doctoral researcher modeling post-seismic poroelastic and viscoelastic deformation in western Mexico. I also spent three months with my family doing sabbatical research in the French Riviera, including no small measure of fine wine and cheese. This was a very welcome break from the professional demands at UW, which often leave me feeling spread as thin as plastic wrap. I can only hope that 2001 is as good as was 2000.

#### ❖ John Fournelle

We formally dedicated the Eugene N. Cameron Electron Microprobe Laboratory on September 21, 2000. (*See a lab dedication article on page 32.*) This coincided (with an open house formally introducing the new Rare Gas Geochronology Lab and the expansion of the Radiogenic Isotope Lab. Gene's former grad student Harry Abendroth (MA '53) unveiled the new plaque gracing the door of Room 306.

In 2000, 15 people from Geology and Geophysics and 15 from Materials Science and Engineering, as well as researchers from Dairy Science and Chemistry utilized the SX51 microprobe in their research (that white stuff on your cheese may be apatite crystals). With the assistance of Bill Barker (now L&S Assistant Dean Barker), we switched our scheduling system to an on-line calendar, which is very useful.

During the year I was busy on a variety of fronts. In January I interviewed Emeritus Professor Bob Gates as part of a department oral history project. The three-hour interview has been also added to the university's oral history collection (#541). ([www.library.wisc.edu/libraries/Archives/oral/oral.htm](http://www.library.wisc.edu/libraries/Archives/oral/oral.htm)). (*See story on page 43.*) In March I began collaborating with Ilya Bindeman and John Valley on a study of  $\delta^{18}\text{O}$  of samples from Fisher Caldera, the largest caldera in the Aleutian Islands. Samples I had collected there in 1989 as well as ones collected earlier on the slopes of adjacent Shishaldin Volcano, and samples Tina Dochat, Eric Carson and I had collected on the lower Alaskan Peninsula between 1995-97, showed that the magma erupted in the ~9100 y BP climactic eruption was depleted in  $\delta^{18}\text{O}$ . The suggested model is that the meteoric water input into the magma came about in stages, with an earlier unrecognized caldera event providing the fracturing of country rock that could undergo oxygen exchange by hydrothermal circulation prior to magmatic assimilation.

I also was busy showing it is feasible to do x-ray mapping of trace elements (e.g. Y, U, Th, REE) in mineral separates mounted in epoxy with the electron microprobe at high beam currents ("polygonal" mapping software); results of mapping Yellowstone zircons (from the study of Bindeman and Valley) were presented at the AGU meeting in early June. In July, my family and I flew to Hawaii where we vacationed briefly on Maui before attending an international microscopy and microanalysis conference in Kona. There I presented the results of several years collaboration with MS&E Professor John Perepezko, showing that it is possible to accurately and precisely analyze boron in Mo-Si-B compositions (something never done before). The day before the conference, I joined 20 other adventuresome microscopists and microprobers

for an all-day hike on hours-old lava flows from the currently active Kilauea East Rift—in places the radiant heat was almost overwhelming. One participant's shoe caught on fire. In December, I presented the Fisher Caldera story at the AGU meeting.

#### ❖ Clark Johnson

The dust finally settled (literally) in 2000, when the renovation project for the Radiogenic Isotope Lab was complete. (*See a lab dedication article on page 33.*) Funding for this nearly \$1M project was supplied by the National Science Foundation (\$250K), NASA (\$250K), the UW-Madison Graduate School (\$200K), the department's Lewis G. Weeks fund (\$170K), the UW Department of Engineering (\$75K), and the College of Letters and Science (\$25K). The new facilities include a new mass spectrometer that will greatly expand the range of elements that may be studied for isotopic variations, as well as an expansion of the original clean chemistry lab. In March, the new mass spectrometer lab (room 372 Weeks Hall) was completed, and installation of the new instrument, as well as re-installation of the original instrument (purchased in 1988), was complete by early summer. In early fall, expansion of the original clean chemistry lab (room 375 Weeks Hall, built in 1988) into the former mass spectrometer lab was complete, which provided new areas for working in a non-metal environment. The new lab places the UW-Madison facility at the top in the world in terms of intermediate- to heavy-mass isotope geochemistry. New projects using the new capabilities are already underway, including Fe isotope work, a collaborative tectonic-provenance project with Prof. Basil Tikoff, and new projects are planned with Prof. Brad Singer. You can check out the new labs and the renovations at the Radiogenic Isotope Lab web site at: <http://www.geology.wisc.edu/~unstable/>.

Y2K also marked the arrival of new faces in the group, as well as continuation of existing work. Dr. Brian Beard played a major role in the new lab design and equipment installation, and continues to be the primary reason why the place keeps going. Post-doc Joe Skulan continued his work on Fe isotope geochemistry, as part of our work with the NASA Astrobiology Institute, with the goal of developing Fe isotope geochemistry as a “biosignature” for early life on Earth or other planets. Graduate students Tim Zeichert and Garret Hart continued their work on the Cascade volcanic arc, with Garret's focus on Os isotopes, and Tim's effort aimed at “finishing that old thesis”. Two graduate students working with Alan Carroll on the Green River basin, Meredith Rhodes and Jeff Pietras, continued. New faces included post-doc Kent Ratajeski,

who is working with Johnson and Tikoff on the “Baja-BC” controversy, where large-scale terrane translation has been proposed off the western margin on North America in the late Cretaceous to early Cenozoic. New graduate students Tom Lapen and Nancy Mahlen joined the group to work on the ultra-high-pressure terranes of the western Alps, in collaboration with Johnson and former UW-Madison faculty member Lukas Baumgartner. Liz King joined the lab crew for a short time, doing Sr isotopes as part of her thesis with Prof. Valley. Departures included Dr. Ron Schott, who left to take a teaching position at Western Kentucky University.

#### ❖ Louis J. Maher

I taught Geology 101 (General Geology) and 722 (Quaternary Pollen Analysis) during the spring term and took a couple of school buses of students on the Baraboo field trip. One bus's brakes were found faulty at the lunch stop in Baraboo, so 64 of us got on the remaining bus for a careful drive to Ableman's Gorge. It was so crowded the students said it was fun. A replacement bus arrived before we had finished at Rock Springs.

The rest of the year was delightfully occupied with a combination of a state-funded sabbatical and a Weeks Leave. I spent some time in the Colorado Rockies. Jane and I camped on a drive around Lake Superior. During the fall we flew to England for a week before going on to France for three weeks. We arrived in England just at the close of their petrol strike; the one in France had been settled before we got there. We had an excellent time in the Lot and Dordogne River valleys, and I visited a couple of caves with prehistoric art.

During the summer I was able to create a computer program that allows a pollen analyst to compare his/her own pollen site with a library of modern pollen records that are on file in the North American Pollen Database at the National Geophysical Data Center in Boulder, Colorado. I selected 1924 sites from the eastern lowlands of North America and made them into modules for convenient use in finding modern analogs to the fossil spectra. I gave a presentation about the program at the Annual Meeting of the GSA in Reno in November. The program is called MODPOL.EXE, and it is available over the Internet at <http://www.geology.wisc.edu/~maher/>. You can pick up a self-expanding Zipped version of the whole package as MODPOLZ.EXE or you can read an illustrated article about it in the file named MODPOL.HTML.

After twenty years it became necessary to renovate AB20, the Laudon Lecture Hall. I assembled bids for putting in a new carpet, re-doing the sound absorbing panels on the north wall, and upholstering the seats.