

the locations of dozens of earthquake clusters associated with the 1995-96 eruption, showing an intense concentration of earthquake activity within a very small volume (less than 1 cubic km). Similar studies are underway for Redoubt volcano, Alaska, Mauna Loa volcano, Hawaii, and the Hengill area, Iceland. Former post-doc Charlotte Rowe and post-doc Shirley Baher worked on this project. I also obtained a new NSF grant to work on high-precision earthquake location in the New Zealand and Japan subduction zones. Post-doc Wayne Du and grad students **Xiaowei Yan** and **Haijiang Zhang** are working on this project. I continued my heavy involvement in managing the IRIS Consortium, including my final year of membership on the Executive Committee, Chair of the Nominating Committee, and as a regular member of the IRIS Board of Directors. I also finished my fourth year as an Associate Editor for JGR-Solid Earth. All this resulted in quite a bit of travel for me again this year, including three IRIS Executive Committee meetings and the annual IRIS workshop (for which I was the meeting co-organizer), two Department of Defense nuclear monitoring meetings, one trip to Parkfield, and a trip to the fall AGU meeting where my research group had six presentations.

### ***Basil Tikoff***

It is only when you look back, do you realize how crazy one really is. Let's see, what happened in 2002? Well, two theses, six classes, and fieldwork on four continents later, I seem to still be standing. Barely.

Major achievements include the successful defenses of **Eric Horsman** and **Sarah Titus**, who both now have Master's degrees. Eric worked on the internal fabrics of sills in the Henry Mountains of Utah. Sarah did a combined geological and geophysical study of the Johnson Granite porphyry, in the geological center of the universe—the Sierra Nevada mountains. **Karoun Charkoudian** and **Selena Mederos** (co-advised by **Alan Carroll**) continued working on their Masters dissertations, combining gravity data and geological mapping. **Cheryl Waters** continued to work on her study of deformation of mafic granulites in the lower crust, exposed in central Australia. She saw the first publication from this work come out and presented the work at the Geological Society of America and a special meeting of the Geological Society of London. Closer to home, **Scott Giorgis** continues to work in the Salmon River suture zone of western Idaho. Lately, he showed that one of my ideas about the regional tectonics was completely wrong (paleomagnetism is an incredibly useful technique—thanks to Paul Kelso of Lake Superior State University for working with us), which I thought was great. **Stephanie Maes** has started a PhD on layered mafic intrusions in South Africa, co-advised by **Phil Brown** and myself. The two post-doctoral fellows—**Eric Ferre** and **Sarah Tindall**—both landed tenure track jobs and have moved on (to Southern Illinois University and Kutztown University, respectively).

The year did take me to South Africa, for a great fieldtrip co-lead by **Phil Brown** (see report elsewhere). The fieldtrip consisted of both undergraduates and, mostly, graduate students. There is an unbelievable amount of incredible geology in South Africa, and in a relatively small area. I also attended a Penrose conference in Switzerland in August and then visited **Tom Lapen's** field area in Italy (with **Clark Johnson**, his advisor). I was interested to see this area because Clark informed me the area was beautiful, the geology was fascinating, and there were espresso huts everywhere. Well, I'll have to take Clark's word for it, because it decided to rain and snow for the entire week (In August! In Italy!). So despite the fact that we worked there anyway, I didn't get to see the southern Alps in their

full glory. The last major boondoggle was going to New Caledonia over the winter break, getting Sarah Titus set up to do her PhD work on the ultramafic rocks there.

In terms of teaching, I had a great, but busy, year. With a little arm twisting, I convinced **Bob Dott** to give a series of guest lectures for History of Geological Thought. In fact, Bob called me his TA, which was pretty appropriate and there is no one I would have rather been the TA for (having said that, I forgot how much work being the TA is). It was definitely a highlight of my fall. I co-taught a class with **David Alumbaugh** on Potential Field methods which was, well, a learning experience for all involved. Still, I enjoyed teaching with Dave, who is masquerading in the Civil Engineering department, although we know he really is a geophysicist. In addition, I co-taught our new Introduction to Geological Structures course with **Toni Simo**. This class includes the becoming-legendary fall trip to the Black Hills. I am still amazed how much students learn in one weekend in the field (with some topography); and if the teaching evaluations are correct, the students are also impressed. Although teaching last fall was a little too much overall, it did make me realize something: I really like the University of Wisconsin undergraduates. What a bunch of smart and interesting young people. They are not whiners (with a few notable exceptions) and they almost invariably rise to the occasion. In fact, I can't really imagine any other group of students I'd rather teach.

### ***John Valley***

Last year, I was heavily involved with a campus-wide effort to acquire an ion microprobe for the University of Wisconsin to be housed in Weeks Hall (see article elsewhere in the *Outcrop*). Our use of this instrument has continued to grow, both for stable isotope studies and geochronology.

Last summer, **Aaron Cavosie** and I traveled to Beijing to use the new Chinese ion microprobe. In the past two years, my students and I have also traveled to UCLA, Stanford, Ottawa and Edinburgh for beam time. In Beijing, Aaron and I dated detrital zircons from Western Australia, continuing work started with **William Peck** (PhD 2000). We found one crystal with a 4.33 Ga core, the third oldest known from Earth. After completing 125 hours of analysis, we traveled with Chinese and Australian colleagues to Inner Mongolia to collect granites from a poorly known



*Geology 916 students prepare to descend into the Yellowstone Mine, near Red Lodge Montana. From left to right: Cory Clechenko, Jade Star Lackey, Prof. CS Wei (University of Science and Technology, Hefei, China), unidentified platinum miner, Joyashish Thakurta, Aaron Cavosie, Melissa Harper, and Beth Valaas. (photo by John Valley)*

Cretaceous batholith the size of the Sierra Nevada. This was a many faceted adventure. In remote areas, restaurant owners would sometimes bring their children to meet us; the honesty of youth made clear how strange we look. Aaron is a vegetarian, but I had no such excuse the night they served dog. It's unremarkable.

The Geology 916 trip this year was a great success, but may have been the end of an era. Nine students and I took a full-size van with trailer (for camping gear and rocks) to Wyoming and Montana for two weeks in June. We visited the Laramie Range, Kelsey Lake (only operating diamond mine in the US), Leucite Hills, Atlantic City, Tetons, Yellowstone (picture elsewhere in the *Outcrop*), Beartooth Mts, Stillwater Mine (picture, preceding page), Powder River Basin, and the Black Hills. We had a pre-trip seminar and each student was the expert on one area. The courtyard is now graced with very large samples of clinker from the metamorphic aureole of a burned coal seam near Gillette, leucite, and Stillwater anorthosite. We returned just days before new university rules took effect for large vans that are caused by valid safety concerns, but will make trips like this will be more difficult in the future.

In August, graduate students **Cory Clechenko**, **Aaron Cavosie**, **Jade Star Lackey**, post-doc **Ilya Bindeman** and I traveled to Davos, Switzerland to speak at the Goldschmidt Conference. The geology at the meeting and in the mountains were equally exciting.

At the GSA meeting in Denver this fall, I had the honor of presenting the MSA Award to **John Eiler** (see "Professional Honors" elsewhere in the *Outcrop*). My students and I also presented 12 abstracts.

### Herb Wang

This year I expanded my involvement in teaching Environmental Justice (EJ). In the spring I hosted the campus visit of 1999 MacArthur Fellow, Wilma Subra, who has helped minority communities in Louisiana's "Cancer Alley" deal with environmental pollution. In the fall I taught a first-year interest group (FIG), which is a program for new freshmen in which they take three courses together as a cohort. In my FIG, my 19 students took large lecture courses in sociology (Racial and Ethnic Minorities in the U.S.) and general chemistry together with my freshman seminar on EJ, which was the so-called "linking" course. The students were in the same discussion section in the other two classes and most lived in the southeast dorms. For their term project several students visited a southeast Chicago Housing Authority community called Altgeld Gardens and invited a community leader, Cheryl Johnson, to be a speaker at an evening teach-in on EJ. Other students helped me develop a proposal for a summer field course in EJ, which was funded by the Provost's office from a bequest by Ira and Ineva Reilly Baldwin. This course will be offered this summer in which day-long trips will go to landfills, sewage treatment plants, and communities in Chicago and Milwaukee that are affected by pollution. It is hoped that a third of the class will be K-12 school teachers who will then develop curricular materials on environmental issues as they relate to health and social justice. I would be interested in hearing from alumni, particularly in the Chicago, Milwaukee, or Fox River Valley areas, who might be interested in being a local resource for some of these field trip stops.

I have been the group leader for rock mechanics in developing a project plan for NSF that is being called EarthLab, an underground research laboratory for earth sciences that is a part of a neutrino laboratory for physics. In June, Rosemary and I visited the Soudan mine, which is a state park in Minnesota, where you get to go down 2300 feet to visit both the mine and the physics lab. We took in the views of the

taconite mines while we were up in Iron Country. For a change of scenery, we went to France in August where my student **Tyson Strand** and I presented papers at a poroelasticity conference in Grenoble. Rosemary and I visited Lyon and Annecy on either side of the conference.

During the fall semester I was a faculty discussion group leader for the new International Learning Community, which is a group of 50 students living in the lakeshore residence halls. Every other week there was a dinner featuring a speaker with a topic touching on a theme such as "language and identity." At the end of the semester, Rosemary and I attended a luncheon at UW-Eau Claire to see former PhD student **Tim Masterlark** honored as a distinguished young alumnus. Congratulations, Tim!

### Klaus Westphal

Besides planing and managing the museum exhibit and the educational outreach programs, I taught the introductory course "Life of the Past," which every semester acquaints about 45, mostly non-science maors, with the history of life on earth. See also the Museum's Annual Report on elsewhere in the *Outcrop*.

## FACULTY PUBLICATIONS

Please see individual faculty web pages for listings of faculty publications for 2002 at <http://www.geology.wisc.edu/people/faculty.html>.

## EMERITUS FACULTY NEWS

### C.R. Bentley

The biggest news this year was the launch, finally, of ICESat, carrying the GLAS laser altimeter. (I started work on this project about 15 years ago, so you will forgive me for reporting the launch in this Newsletter, even though it didn't actually take place until Jan 12, 2003.). Spacecraft and instrument commissioning will take a couple of months, after which real data should start to become available. **Ben Smith**, now at the University of Washington, will be looking for early signs of height changes on the West Antarctic ice sheet.

Ice Coring and Drilling Services (ICDS) continues to be my main activity.

1. Work is still progressing on the development of the "Enhanced Hot Water Drill" (EHWD) for the IceCube project at South Pole; but the actual emplacement of the neutrino detectors in the ice there will not begin before the austral summer of 2004-05.
2. This past season (2002-03) we supported Paul Mayewski's fourth season of ITASE traversing and drilling on a route from Byrd Station to the Pole.
3. An ICDS crew completed two one-foot-wide, 300-m deep holes into which the new South Pole seismograph system was emplaced. The deep ice several kilometers from the station and its noise should provide a superbly quiet site for the seismometers.
4. The new air-driven shot-hole drill worked like a charm at OnsetD camp in West Antarctica, thanks to some expert tweaking by the ICDS crew. Some 200 60-m shot holes were drilled for **Sridhar Anandakrishnan** in just a couple of weeks! He reports outstanding seismograms from shots in those deep holes.
5. Finally, we continue slowly but surely to design a new deep coring drill; our aim is to be able to core 3000 m in two seasons. The diameter of