

Postdoc Heather DeShon, and engineer Lee Powell, in Parkfield California for Cliff Thurber. The SAFOD drill rig is in the background. See more about their work on page 6.



explosive eruption and were presented at the general assembly of the International Association of Volcanology and Chemistry of Earth's Interior (IAVCEI) in beautiful Pucon, Chile in November.

The IAVCEI meeting was easily the highlight of the year. PhD student **John Hora** and I participated in a week-long pre-meeting field trip to Parinacota Volcano in northernmost Chile, where John's dissertation focuses on the chronology and origin of its lavas. John, Brian Jicha, **Melissa Harper**, and I presented papers at the meeting after which I headed to Argentina with Melissa to study the Holocene ash falls from Puyehue volcano as part of an NSF-funded project on timescales of arc magmatic processes.

I continued to participate in the NSF-sponsored "Earthtime" initiative at a weekend meeting of 50 geochronologists at MIT in October. The $^{40}\text{Ar}/^{39}\text{Ar}$ results from several standards that I presented as part of a multi-laboratory intercalibration exercise were measured by **Mike Smith** as part of his dissertation on the chronology of Eocene tuffs in the Rocky Mountains. The year ended in a flurry with no fewer than 11 presentations of geochronologic results from the argon and cosmogenic labs at the fall AGU meeting in San Francisco. I am looking forward to my sabbatical next year!

CLIFFORD THURBER

Without doubt this past year will go down as one of the most exciting and productive years of my career. Two of the biggest highlights were the initiation of the drilling for the San Andreas Fault Observatory at Depth (SAFOD—see feature article, p. 6) and the completion of the inverse theory textbook authored by **Richard Aster** (UW G&G MS 1986), Brian Borchers, and myself. For SAFOD, major challenges lie ahead as our group

works to help define the drilling trajectory to aim the SAFOD borehole at a fault patch where magnitude 2 earthquakes occur repeatedly, about 3 km below the Earth's surface (the proverbial needle in the haystack). Once drilling is complete in 2007, SAFOD will open up a new window into our understanding of faults and earthquakes. Completion of "the book" is the realization of a career-long dream. I am already enjoying teaching from the new book in my inverse theory course this semester. 2004 also saw a few changes in my research group. New grad students **Jemery Pesicek** and **Nate Meyer** joined the group in September, and **Xiaowei Yan** defended her MS thesis in December. Post-doc **Heather DeShon** joined the group, while post-doc **Wayne Du** moved on to a new career. **Dr. Haijiang Zhang** (UW G&G PhD 2003) moved into an Assistant Scientist position, and **Mike Brudzinski** completed his term as a Weeks Postdoctoral Fellow but happily stayed on as a post-doc to continue his seismic and GPS subduction zone studies.

BASIL TIKOFF

I have been waiting for 2004 for a long time: The elusive dream has finally come true —SABBATICAL!! Of course, every time I see **Herb Wang** in the hall, he points out how little time I have left. I guess there have to be some disadvantages to having a geoscientist for a dean.

This has been a good year for employment. **Scott Giorgis** ('03) wound up getting his PhD, an academic job offer, and getting married in about six months. He is currently an assistant professor at SUNY-Geneseo and seems quite happy. **Cheryl Waters** ('04) not only graduated this year, but managed to get a job in her home state of North Carolina (assistant professor at Western Carolina University). I'm not sure if finishing her degree was harder on her or me, but suffice it to say that I'm very pleased with the result (and she is still talking to me). **Selena Mederos** ('03) started working in



Dave Hart, Kurt Zeiler, and Basil Tikoff at GSA.



Professor John Valley, Andrée Valley, and BOV Vice-Chair, Tom Johnson, at a gathering for the UW Foundation's Create the Future Campaign. Donations to the campaign will benefit the Geology Museum.

Houston at BP, and her husband **Leo (Piccoli)** will eventually join her then when **Toni Simo** lets him. **Carrie Larson** ('04) and **Jon van Alstine** ('04) both finished senior honors projects in structural geology, and both did an excellent job. Carrie is engaged in volunteer activities in Haiti and Jon is in graduate school at University of Minnesota-Duluth.

Everyone else seems to be plugging along. **Sarah Titus**, **Eric Horsman**, **Stephanie Maes** (co-advised by **Phil Brown**), **Skylar Primm**, and **Caroline Webber** are all making "timely progress." Undergraduates **Angela Hull**, and **Martha Gilbert** keep the lab functional and moving forward- we'd be lost without them.

This year's fieldtrip was a joint structural geology/geophysics trip run with **Richard Allen** to the San Andreas fault. It was great! The fieldtrip started in southernmost California, near the Salton Sea, and went north to San Francisco. We saw awesome field geology: Durmid Hill, Painted Canyon, the Punchbowl fault, Tejon Pass, Wallace Creek, both Neenach and Pinnacles, the offset sidewalks of Hollister, the Sur-Nacimiento fault. The real bonus was visiting urban hazards in various neighborhoods of greater Los Angeles, seismic networks (Cal Tech and USGS in Menlo Park), and the instrumentation in Parkfield (about five months before the earthquake finally happened). The banana slugs in Santa Cruz were also big hit. Richard's coffee habit made sure that we were all stimulated for most of the trip. **Andy Snyder** (USGS-Parkfield) and **Casey Moore** (UC-Santa Cruz) were our guides for particular days and we appreciate their willingness to show us around.

An unexpected pleasure was working with the Delta group at the University of Wisconsin, which is an NSF-sponsored program for improvement of undergraduate science teaching. This whole idea was masterminded by Eric Horsman, Sarah

Titus, and Scott Giorgis (Where those three go, trouble is not far behind. Let me tell you about the time they loaded my backpack with about 30 pounds of rocks without telling me...). For the record, I was the victim of a bait and switch for this Delta activity. I had originally said I didn't want to participate because I was co-teaching four classes and one seminar in spring semester, but it turns out they needed a faculty "supervisor." So, what's one more class? I have to admit that the experience was great and it changed my attitude about teaching. Here are my two big insights: 1) Assessment is extremely useful. I thought that tests were an accurate measure of student learning and I was dead wrong. There are lots of ways of

assessing student knowledge that have nothing to do with traditional tests or assignments. They can make learning both less stressful and more efficient. 2) The general problem of teaching abstract three-dimensional visualization (like stereonet analysis) is actually a series of recognizable limitations, which can be individually addressed and overcome.

Ok, that's about it. Although I'm on sabbatical, I have to get back to work so I have something to say to Herb next time I see him.

JOHN VALLEY

For the first 11 months of 2004, I eagerly received progress reports and sometimes pictures of our new ion microprobe as it was being built at the CAMECA factory in Paris. Finally, in December, **Noriko Kita**, **Neal Lord**, and I went to see it and try it out. It's fantastic! We commissioned the first IMS-1280. There are many advantages over earlier ion probes. The instrument is scheduled for delivery in March and will be on display at the Alumni Reunion in May.

We had three additions to the group this year. Noriko Kita moved to Madison from the Geological Survey of Japan to be the Director of the Ion Microprobe Laboratory (see p. 25). **Bin Fu** joined us from Australia. Bin has extensive stable isotope experience with metamorphic rocks. He is an Assistant Scientist working on many ion microprobe projects. **Jacque Kelly** started an MS studying quartz overgrowths in the St. Peter sandstone. She and Bin will use the ion probe to contour oxygen isotope temperatures in overgrowths from across SW Wisconsin and test the hypothesis that quartz overgrowths record the history of Illinois basin brines that migrated through sandstone aquifers and formed Mississippi Valley type Pb-Zn deposits when they encountered Ordovician carbonates.

Sarah Henry will complete her MS this term on andalusite-quartz veins from the Black Hills. The results from these beautiful rocks are verifying predictions for a refractory accessory mineral (RAM) by providing unusually accurate and