

The Java project (in collaboration with **Prof Alan Carroll**) is “maturing” nicely as both **Essam Sharaf** and **Martin Shields** have completed their PhD theses. Manuscripts have been submitted and accepted; check the AAPG Bulletin and Stratigraphy journals. **Mei-mei Tang** has joined the group and will work the details of the Miocene mixed system with important tectonic implications. Our work has established the stratigraphic architecture of the basin, which appears to challenge the tectonic concepts of the island of Java.

In collaboration with **Prof Brad Singer**, **Lauren Chetel** has completed her MS degree on the geochronology and provenance of Ordovician K-bentonites. She has established the ages for three K-bentonites at the base, middle and top of the local Galena Formation providing temporal constraints in sedimentation rates and processes on epeiric seas. A surprising result is that some of the previously identified K-bentonites have K-feldspars that are much older (3.1 Ga to 850 Ma) than the encasing Ordovician rocks suggesting a detrital origin rather than Ordovician-age ash deposits.

Mechanical stratigraphy continues to be important in my research. Fieldwork in the Pyrenees with **Prof. Michele Cooke** and student and in Tunisia with **Chris Gordon** has emphasized the importance of fractures in carbonates and especially fluid flow through the fractures during and after fracture formation. The fracture mapping and fold reconstruction is in collaboration with **Prof. Basil Tikoff** who will be doing gravimetry study over an anticline that is suspected of being cored by salt. Ongoing research includes work in the Guadalupe Mountains in collaboration with **Jana**

van Alstine, University of Barcelona researcher specialist in diagenesis and fluid flow, and researchers from ENI and Norsk Hydro.

Ground Penetrating Radar (GPR) in carbonates has been one of the main areas of research as many companies have shown great interest in our method and results. Following field campaigns in the Hueco and Guadalupe Mountains, **Neal Lord**, **Leonardo Piccoli**, **Preeya Jirutthitijaroen** and I did a field work in the Pyrenees. The novelty is the integration between GPR lines, geologic outcrop mapping and laser scanning of the outcrop that allow quantification and interpretation of depositional geometries in 3D. Much of this work is directly applied to reservoir architecture and seismic interpretation.

BRAD SINGER

January found students **Danny Douglass**, **Richard Becker**, and **Brad Sleeth** along with **Dave Mickelson**, **Jim Bockheim** (professor in Soils Science), visiting professor **Jorge Rabassa** and I in southern Argentina and Chile for several weeks as we continue to document the history of the Patagonian ice cap during the Late Pleistocene and Holocene via mapping glacial deposits and dating them using cosmogenic nuclides. Results on the timing of ice advances during the last glaciation maximum published in the GSA Bulletin in May by former Weeks Post-Doc **Mike Kaplan**, **Danny Douglass**, and I caught the attention of *Science* magazine as an editor’s choice (see “Moving in synchrony,” *Science*, v. 304, p. 491).

I spent 10 days in May aboard the U.S. Fish and Wildlife Service ship *R/V Tiglax* which provided student **Brian Jicha** and I access for the first time, via the Bering Sea, to the rugged northern coastline of Seguam Island, an active volcano in the central Aleutian Island arc. We have now mapped and dated using $^{40}\text{Ar}/^{39}\text{Ar}$ methods virtually the entire volcanic history of this island. A GSA Bulletin article on this unique volcanic record is on the horizon.

Working with **Brian Beard**, **Clark Johnson**, and I, Brian Jicha also obtained the first UW-Madison U-Th isotope disequilibria results, from magmas erupted at Seguam. These data surprisingly show that magma may be stored shallowly in the arc crust for >100,000 years prior to



John Hora (center, facing camera) explains his $^{40}\text{Ar}/^{39}\text{Ar}$ dating results from 6348 meter high Parinacota volcano in northernmost Chile to a group of 35 volcanologists from around the world. This stop occurred on a week-long field trip associated with the general assembly of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) in Chile last November. Hora's PhD dissertation focuses on the eruptive and magmatic evolution of this large stratovolcano and is being done under the supervision of Brad Singer.

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.