



Lee Powell (kneeling) and Cliff Thurber (standing) completing the installation of a temporary seismic station on the San Andreas fault near Parkfield, CA. This is one of about 50 such installations that were part of a detailed study of the fault zone structure at the proposed site for the San Andreas Fault Observatory at Depth (SAFOD). (photo by Steve Roecker, RPI)

paleoceanography of this important oil source rock. In Spain, I am advising a PhD student working on a recent delta, which is an aquifer with problems of salt intrusion. It is a very interesting project as we are applying reservoir characterization techniques in a reservoir that we have historical dates and we can model in great detail sedimentary processes. GPR and seismic imaging are on the horizon.

The teaching front has been dedicated to improve the new curriculum courses, Introduction to Geologic Structures, and Geologic Evolution of the Earth. I am co-teaching these courses with **Basil Tikoff** and we are trying to expose the freshman and juniors to geology in a dynamic way; hopefully they will be interested and become geology majors.

Brad Singer

2002 marked the publication of papers in the *Journal of Geophysical Research and Earth and Planetary Science Letters* addressing global paleomagnetic field behavior during the past one million years based on the first $^{40}\text{Ar}/^{39}\text{Ar}$ ages determined in the UW-Madison Rare Gas Geochronology Laboratory. Thus, the laboratory that I established in 2000 is on the map, with several papers on paleomagnetism, paleoclimate, stratigraphy, volcanic petrology and structural geology in the press. Some of this work was showcased in 4 presentations at the GSA meeting in Denver and four more at the fall AGU meeting in San Francisco.

Mike Smith defended his MS thesis on the geochronology of the Green River Formation in Wyoming (keep your eyes on GSA Bulletin for this work) and is now working on an NSF funded project on Eocene lacustrine basin evolution in Wyoming and Utah for his PhD with **Alan Carroll** and me. **Brian Jicha** completed his MS thesis using radiogenic isotopes to constrain the origin and timing of volcanism at three Aleutian Island arc volcanoes. This work reflects extensive collaboration with **Clark Johnson** and **Brian Beard**, particularly with Hf isotopes

measured on the new Multicollector ICP-MS. **Brian Jicha** submitted his thesis to the *Journal of Petrology* and began to focus on a PhD dissertation on the origin and time scales of volcanic and plutonic processes in the central Aleutian arc.

PhD student **Danny Douglass**, Weeks Post-doctoral Fellow **Mike Kaplan** and I traveled to southern Argentina twice in 2002 for our NSF funded project to establish a chronology and terrestrial paleoclimate record for Pleistocene glaciations of the Patagonian Andes using in situ cosmogenic nuclides. **Dave Mickelson** and **Jim Bockheim** (UW professor of Soils Science) joined us during the second field campaign. **Mike Kaplan** was awarded a prestigious Fellowship from the Royal Society of London and is now working at Edinburgh University, Scotland in collaboration with Danny and myself.

In July, **Dr. Kyle Min** joined the department as an Assistant Research Scientist and assumed responsibilities of managing the Rare Gas Geochronology Laboratory. This is no small feat because in addition to the PhD projects that **Mike Smith** and **Brian Jicha** are pursuing, **Miriam Barquero-Molina** and **Melissa Harper** are undertaking MS thesis projects on the chronology of Plio-Pleistocene volcanism in the Central and Southern Volcanic Zones of the Chilean Andes, **Lauren Chetel** is attempting to obtain a precise chronology for Ordovician bentonites and associated strata in the Upper Mississippi Valley in collaboration with myself and **Toni Simo**, and **John Hora** joined the group from UCLA with plans to explore for his PhD the chronology and time scales of subvolcanic magma differentiation within 70 km thick continental crust of northern Chile. The success of the Rare Gas Geochronology Laboratory is further reflected in the collaborative research projects underway with scientists and students at 10 institutions from coast to coast in the USA and in Italy, France, Germany, and Bulgaria. I am looking forward to a decision regarding my tenure and working together with everyone to carry forward the effort in geochronology during 2003.

Cliff Thurber

It is hard to imagine a more challenging and rewarding year than 2002 was for me. Drilling for the 2-km "San Andreas Fault Observatory at Depth" (SAFOD) Pilot Hole at Parkfield, CA, took place over the summer, aimed at setting the stage for drilling the main SAFOD fault-crossing hole (part of the EarthScope project). We finished off our seismic field project on the San Andreas Fault at Parkfield with a literal bang—with our collaborators at RPI, we carried out a major active-source seismic experiment in October, involving 16 shots of 100 to 500 lbs in size. We are in the process of refining our 3-D model of the seismic velocity structure around the SAFOD drill site, and are steadily improving the accuracy with which we can determine the locations of clusters of small earthquakes (magnitude about 2) that are the target for SAFOD drilling. **Lee Powell**, grad student **Kyle Roberts**, and post-doc **Shirley Baher** participated in this project. We continued work on a major nuclear explosion monitoring project, involving former post-doc **Charlotte Rowe**, new post-doc **Wayne Du**, grad student **Haijiang Zhang**, and Assistant Scientist **Bill Lutter**. This project involves the development of sophisticated tools for accurate real-time location of seismic events. My volcano seismology research continued along two fronts. Work on the deep structure of Kilauea volcano's East Rift Zone using seismic velocity and attenuation tomography was carried out by grad student **Samantha Hansen**, who defended her MS thesis in December. Our work on high-precision location of volcanic earthquakes at the Soufriere Hills volcano, Montserrat, has produced dramatic improvements in the determination of