

with a lake-type boundary within the Laney Member. I'm also advising a senior thesis project by **Ashley Hubbard** that has expanded on the discovery by **Jeff Pietras** of a dramatic increase in  $^{87}\text{Sr}/^{86}\text{Sr}$  at the boundary between the Wilkins Peak and Laney Members (work being done in collaboration with **Clark Johnson** and **Brian Beard**). This sudden shift corresponds exactly to the reappearance of fish fossils, absent during Wilkins Peak deposition. Both of these geochemical changes appear to record major drainage-capture events that significantly altered the downstream depositional history of Lake Gosiute. These studies point to an important new use of lake deposits, as paleo-geomorphic archives within evolving orogenic systems.

**Justin Gosses** has begun a MS on Eocene caldera-lake deposits in Patagonia, which is co-advised by **Brad Singer** and involves collaborations with Peter Wilf at Penn State and two different groups in Argentina. In addition to the scientific benefits, I hope that this project will provide future opportunities to escape Wisconsin winters for a little southern-hemisphere fieldwork. Other highlights of 2004 include a trip to Baku (Azerbaijan) for the AAPG Hedberg conference on lacustrine sandstone reservoirs, and fieldwork in the East Java basin with Toni Simo and new MS student **Mei-mei Tang**. We expanded on our past work in Java to visit to the adjacent island of Madura, famed for its bull races.

## CHUCK DEMETS

My work in 2004 consisted of a satisfying blend of research, advising, teaching, and field work. I spent early 2004 working with Salvadoran seismologists to build a nationwide GPS network in El Salvador, where the volcanic arc is actively sliding along the trench in response to oblique subduction. Shortly after returning to Madison, my new graduate student **Francisco Correa** arrived from Mexico City to begin his PhD study of the earthquake cycle in the state of Oaxaca in Mexico.



*King of the hill at King City—one of Chuck DeMets's continuous GPS stations in California.*

In March, I traveled to Jamaica with fellow faculty member **Basil Tikoff** to introduce him to my long-term study of the island's neotectonics. The hard field days in Jamaica required lots of fuel, ingested in the form of Jamaican jerk, seafood, and of course, beer.

In May, I hosted a one-month visit by Indian scientist **Rajendra Drolia** to begin our collaborative study of the effects of a diffuse oceanic triple junction on the Central Indian Ridge. Drolia returned for another month in September, this time overlapping **Dr. Serguei Merkouriev**, a Russian scientist with whom I am studying the Carlsberg Ridge in the northern Indian Ocean. Keeping up with the collective demands of two foreign scientists while teaching and handling all of my regular duties proved to be a heavy load, one that was thankfully over in mid-October.

My scientific highlight of 2004 was a fruitful collaborative study of the creeping segment of the San Andreas fault, with Basil Tikoff and our co-advised student **Sarah Titus**. Results from that work will be published in *Geology* in early 2005. I also completed a decade-long capstone paper about my kinematic research into the movement of the Indian plate over the past 20 Ma, to appear in *Geophysical Journal International* in early 2005. Post-doc **Mike Brudzinski** and I made a great deal of progress on the hot new topic of transient surface deformation associated with deep aseismic fault slip beneath Mexico, which Mike presented at the fall AGU. My graduate students **Stuart Schmitt** and Francisco Correa-Mora continued their cutting-edge modeling of surface deformation along the seismically active Pacific coast of Mexico. These efforts collectively laid much of the groundwork for future papers about the earthquake cycle and subduction mechanics in much of southern Mexico.

*John Fournelle, left, has been busy applying Monte Carlo computer models to difficult problems in electron probe work. Here John and colleague, Xavier Llovet (U of Barcelona), work with PENELOPE at a November 2004 NIST conference in Gaithersburg MD.*

