

In addition to work on the Green River Formation, I am continuing to conduct research and/or supervise thesis projects on the paleoclimatic record of eolian dust in the Permian Phosphoria Formation, on synorogenic conglomerates in foothills of the Brooks Range, on the evolution of the East Java sedimentary basin, and on lacustrine sedimentary basins in China.

Chuck DeMets

The past year was hectic, with my time divided between teaching and managing five field projects in four countries. **Bill Unger** and **Neal Lord**, staff members in geophysics, invested many long hours working on these demanding field efforts, leaving me some free time to contemplate the meaning of the data they collected. Thanks to Bill and Neal, I also found time to make significant progress on a half-dozen modeling projects.

My most exciting new result, related to the present tectonics of Mexico, was done in collaboration with Prof. Bertha Marquez, a professor at the University of Guadalajara. Using geodetic data extending back to the early 1990s, we demonstrated that the Yucatan peninsula moves relative to the North American plate interior, contrary to geologic intuition. This surprising, but robust result will be published in 2003 as part of our unique view of the previously unknown neotectonic velocity field of the country of Mexico.

In the field, the highlight of my past year was a two-week trip to the remote and spectacular Mexican state of Oaxaca to build a new geodetic network. This project is a collaboration with Dr. Enrique Cabral and Francisco Correa-Mora, both at UNAM in Mexico City. Our long-term goal is to measure crustal deformation associated with subduction of the Cocos oceanic plate, with an emphasis on developing a better understanding of how strain accumulates and is released along the subduction fault. Our group not only installed and occupied 15 new GPS sites during

our two-week visit, but installed and equipped five continuously operating GPS sites during multiple additional visits.

I also began two new research efforts in 2002. One project, a collaboration with **Basil Tikoff** and others, combines geodetic, structural, and paleomagnetic measurements to better understand deformation flanking the creeping segment of the San Andreas fault of central California. A second is a collaboration with Dr. R. K. Drolia of the National Institute of Oceanography in India to initiate new studies of the marine geophysics of the seafloor spreading centers in the Indian Ocean.

Finally, I also continued ongoing measurements in the Mexican states of Jalisco and Colima, in Jamaica, and in Honduras. These projects are providing a continual stream of new data that should be excellent fodder for my new students. **Stuart Schmitt** recently joined my research group to work on subduction zone neotectonics. Stu was introduced to my line of work by spending an exciting summer in Sioux Falls, South Dakota learning the ins-and-outs of 3-D finite element modeling as an apprentice to my former post-doc **Tim Masterlark**, who works at the USGS EROS data center.

John Fournelle

A highlight of 2002 for the Fournelle-Munaker family was a 2 1/2 week June vacation to visit old friends across the North Atlantic and see cool sights (and many rock sites)—Iceland, southern England, Northern Ireland and Paris. In Iceland we had an opportunity to stand in a fissure in the valley where the mid-Atlantic Ridge comes up on land (see fig. 1, next page), as well as soak in the hot geothermal waters at Blue Lagoon (ah...). I had an opportunity to visit an outcrop of hyaloclastite—a welded volcanic sediment, formed by eruption under a glacier—which finally explains to me a similar rock I found in the Aleutians. On the eve of the summer solstice (unintentionally) we found ourselves at Stonehenge, and a few days later, at the magnificent Giant's Causeway in Northern Ireland (see fig. 2, next page). And much more. Back in Madison, **Ryan Jakubowski's** senior thesis on vapor deposition of Pinatubo anhydrite was published in the *American Mineralogist* in August. I spent a good amount of energy transferring my probe class teaching materials into PowerPoint (helped by **Stephanie Maes**), which now resides at <www.geology.wisc.edu/~johnf/g777>.

Dana Geary

2002 was a year for me to remember my two paleontological mentors. Erle Kauffman (my MS advisor in Colorado) formally retired and my entire family traveled to Bloomington to celebrate this event with many old colleagues and friends. Sadly, my PhD advisor Steve Gould passed away in the spring. I can't imagine a more dynamic, interesting, wonderful pair of mentors than Erle and Steve. I cherish my ongoing relationship with Erle. I will miss Steve.

Jim Freiheit finished his MS degree on strombid gastropods from the Miocene of the Dominican Republic. Jim's taxonomic problems led us to a collaboration with Stephen Schellenberg exploring stable isotope and trace element ratios in various strombid morphs. In addition to providing the information on growth rates that we were looking for, we think we are getting useful



Columnar basalts at Sheepeater Cliffs, Yellowstone National Park. These 500 ka lavas erupted after the massive, 1000 cubic kilometer Lava Creek tuff, which formed Yellowstone Caldera. Geology 916 students for scale, left to right: Aaron Cavosie, Cory Clechenko, Joyashish Thakurta, Beth Valaas, Melissa Harper, and Jade Star Lackey. (photo by John Valley)

paleoenvironmental signals as well. Jim is going to continue this paleobiological/ geochemical work for his PhD here.

Gwen Daley finished her time as a Weeks Postdoc here in August. Gwen has now moved on to a new job at Winthrop University in South Carolina. Spinoffs from Gwen's research on the paleoecology of Florida shell beds included undergrads **Summer Ostrowski, Holly Schultz, Martha Kutter,** and **Christine Pagelsdorf**, all of whom did a great job.

New grad **Erik Hoffmann** arrived in the fall. Erik will study species-level evolution in some brackish water gastropods from the Cenomanian-Turonian (Cretaceous) of Utah. I am particularly excited about this project, and about getting back in to the Western Interior Cretaceous after many years.

Hilary Sanders is still on her final approach to completing her PhD thesis. Hilary has been busy teaching: at Lawrence University during the spring, and at St. Norbert University this fall. In between all those lectures and labs, Hilary has managed to make progress on her congeriids from Lake Pannon. She vows to finish her PhD this spring.

I'm continuing my collaboration with former postdoc **Imre Magyar** on other aspects of Lake Pannon paleontology and paleoenvironments. Junior Summer Ostrowski is working on ostracodes from Lake Pannon deposits, and senior Holly Schultz is measuring cardiids.

On the teaching front, I converted all of my Evolution and Extinction lectures to PowerPoint in the spring semester, which was fun and rewarding, but incredibly time consuming (scanning literally thousands of images). I taught Invertebrate Paleo to a fun group of 17 students in the fall.

My favorite part of the year was a two-week family camping trip in the Black Hills and Colorado Rockies. We took the girls fossil hunting at various Cretaceous localities and they had a great time, although prairie dogs and water play seemed to be higher priorities for them.

Clark Johnson

Our group continued to expand in 2002, with addition of new post-docs **Kosei Yamaguchi** and **Rene Weisli**, as well as new graduate student **Rebecca Poulson**. Kosei came to Madison after completing a PhD with Hiroshi Ohmoto at Penn State. Kosei brings a strong background in Proterozoic and Archean sedimentary geochemistry, and his post-doc will concentrate on using Fe isotopes in clastic rocks and paleosols to constrain the evolution of the Precambrian atmosphere. René completed his PhD with Larry Taylor at the University of Tennessee prior to coming to Madison, and this work involved light stable isotope studies in John Valley's lab of eclogites. René is pursuing a mix of Fe isotope projects at Madison, including experimental calibration of Fe carbonate fractionation factors, as well as studies of lunar soils. Rebecca continued some of the work on Yellowstone that she began as a senior thesis, and also delved into Fe isotope exchange experiments using nanophase ferric oxyhydroxides. These additions expanded our work on Fe isotope geochemistry that continues to be a major focus for **Brian Beard, Sue Welch**, and me.

Nancy Mahlen completed her MS on the metasediments of the Zermatt-Saas ophiolite in the Western Alps, where, despite metamorphism to HP/UHP conditions, provenance constraints of the Jurassic basin that existed prior to Alpine metamorphism were still provided by REE and Nd isotope compositions. Nancy, showing her true metamorphic roots,



John Fournelle and family—Iceland.



John Fournelle—Giant's Causeway, Northern Ireland.

refused to title her thesis “ultradiagenesis of the Zermatt-Saas sediments”, despite our urging! PhD student **Tom Lapen**, in collaboration with Nancy Mahlen and Brian Beard, completed an initial Lu-Hf geochronological study of prograde metamorphism in the Western Alps, which is part of a broad project that also includes former UW-Madison Professor **Lukas Baumgartner**. In 2002 we saw the departure of **Garret Hart**, who completed his PhD on Cascade arc magmatism; Garret started the new year with a post-doc at UC-Berkeley. Students from **Brad Singer's** program continued to work in the lab (**Brian Jicha** and **Melissa Harper**), as well as from **Alan Carroll's** group (**Meredith Rhodes, Jeff Pietris, Brooke Swanson, and Ben Byrn**).

Also in 2002, I took over as Department Chair from **Mary Anderson** in July. This now gave me two offices to spread piles of paper around in, as well as a great deal of practice in writing memos and letters. My new duties also increased my “guilt factor” at missing submission deadlines for the *Outcrop* in many previous years, and this current write-up is the result of this heightened level of guilt!