evaluate hydrologic and geochemical factors that may be responsible for degradation of this wetland plant community.

Continuing the tradition of hydrogeology field trips, I traveled to Yellowstone last summer with graduate students who had participated in a spring semester seminar on groundwater heat transport. I also made several trips to Florida as part of my participation in a National Research Council committee reviewing scientific aspects of a major restoration plan for the Everglades. I chaired a subcommittee that focussed on the proposed use of "Aquifers Storage and Recovery" as one of the major storage options in the plan. The report summarizing conclusions from our October workshop on this topic is scheduled for publication by the National Academy Press.

❖ J.F. Banfield

2000 was a busy and productive year for our research group. It was also a year of many changes. Bill Barker accepted a new position as an assistant dean in the College of Letters and Sciences, Phil Bond left for a faculty position at the University of East Anglia, Dave Fowle accepted a position as an assistant professor at the Great Lakes Institute for Environmental Research at the University of Windsor, and Anne Taunton departed for a PhD program in Idaho. Brett Baker, Clara Chan, and John Moreau began their PhD programs and Forrest Huang and Jenn Macalady joined our group as postdoctoral scientists. I spent six months in Brisbane trying (unsuccessfully) to improve my children's pronunciation (Os-tray lya, not Orse tralya; Meblun, not Mel borne, etc.) catching up with old friends and relatives, and pretending to be molecular biology PhD student for a while.

Our research group redirected a lot of energy this year to work on a new geomicrobiology field site associated with the flooded, underground Tennyson mine in SW Wisconsin. The samples collected by our SCUBA diver collaborator, Tami Thomsen Ebert, have been subjected to all sorts of microbiology (Matthias Labrenz, Anne Skatvold, Clara Chan), mineralogy (Sue Welch, Clara Chan, John Moreau, me!), and geochemistry (Greg Druschel) tests, and a picture of active biomineralization of iron oxides and zinc sulfides has emerged. We hope to explore the relevance of these processes to ore formation and groundwater remediation. (*See a research article on page 27.*)

Our work on the geomicrobiology and geochemistry of acid mine drainage (Greg Druschel, Brett Baker, Phil Bond, Steve Smriga, and Michelle Lutz) has continued at Iron Mountain Mine, in Northern CA. In a related project, Yohey Suzuki is exploring the ways in which microbes in sediments impact the form and bioavailability of uranium at an abandoned uranium mine site. Thus, a significant fraction of our research group is working on microbial contributions to cycling of metals in environments impacted by mining.

I am becoming increasingly interested in the detailed mechanisms by which microbes impact mineral dissolution and mineral precipitation reactions. Our ability to work on this topic received a major boost with the selection of the Iron Mt. acidophile, *Ferroplasma acidarmanus*, for genomic analysis. This project promises to keep us busy in 2001.

Tom Gihring developed an interesting project involving the role of thermophilic microorganisms in arsenic geochemistry, with a field site at Yellowstone National Park. Sue Welch, Anne Taunton, and more recently, Jenn Macalady continue to explore the impact of microbes on the bioavailability of phosphate in apatite and secondary phosphate phases. Masha Nesterova is spear heading the effort to understand biomineralization of polymers and Jeffrey Brownson is working on clay formation and microbial contributions to mineral weathering.

In parallel with the biogeochemistry/ geomicrobiology work, Hengzhong Zhang, Forrest Huang, and Michael Finnegan are exploring the fundamental size-dependent properties and behavior of nanophase materials (nano-scale minerals are products of biomineralization and weathering reactions). This work now involves collaboration with UW Physics professor and synchrotron X-ray microscope expert Pupa De Stasio and post doc Ben Gilbert.

In 2000, our group gave approximately 25 talks at scientific meetings and published 17 papers (including one by Scott Sitzman, MS 1995), four of which appeared in *Science* (including 2 covers!)—a testament to the talent and hard work of the people whose names you see above, as well as prior students (Katrina Edwards, Lee Penn, and collaborators).

This will probably be my last UW newsletter contribution. I have decided to accept a faculty position at UC Berkeley. These have been good, productive years and, in many ways, I will be sad to leave (however, eleven winters is enough). I have especially enjoyed my interactions with many of you who are now our alumni. I wish you all well.

❖ Charles W. Byers

The biggest deal of 2000 for me was being honored by the UW for my teaching. I was one of the recipients of the Underkofler Award for Excellence in Teaching. My thanks to my faculty colleagues who nominated me and to former students who wrote letters of support.

In the spring I was appointed to serve on a multi-departmental search committee to hire professors in the new field of Science Studies, the investigation of how science itself is conducted. The field is mostly the province of sociologists, historians, philosophers, anthropologists, and journalists. As the only natural scientist on the committee, I got a quick and fascinating education in how our humanities colleagues view us (they agonize over theories of knowledge that we don't even know exist) and in what constitutes meritorious work in various disciplines. In the end the committee picked three new profs, who will be the nucleation point for science studies on the Madison campus.

On the research front, I'm back in the bone business, with two students working on dinosaurs. Chris Ott is conducting a Master's thesis on taphonomy of dino bone beds in the Interior Cretaceous. Lisa Buckley is studying theropod tooth structure, again from Cretaceous rocks. Lisa is a senior; she won a Hilldale Fellowship in the spring to support her research. I am also continuing our Ordovician stratigraphic project. Norlene Emerson's PhD project (principal advisor Toni Simo) has demonstrated a new sequence stratigraphic interpretation for the well-known carbonate-to-shale facies transition in the Decorah Formation.

At home, Becky and I are continually amazed at the size, growth rate, and food-consumption ability of the kids. We live in a maelstrom of sports, pizza, loud TV, video games, and thug-like adolescent apparitions. And nobody is even in high school yet. Now I know what the Romans felt like when the Huns appeared at the gates.

❖ Alan Carroll

Jeff Pietras and **Meredith Rhodes** completed most of their fieldwork on the Green River Formation, based out of scenic Rock Springs and assisted by undergraduates **Reuben Johnson** and **Jana Van Alstine**. They are completing the first detailed basin-scale stratigraphic cross-sections of the Green River Formation, as part of a project to document the relationship between nonmarine sedimentation and Laramide tectonics (supported by Conoco and Texaco). They also continued working in the Radiogenic Isotopes Laboratory with **Clark Johnson** and **Brian Beard**, and have recognized systematic trends in $^{87}Sr/^{86}Sr$ ratios in lacustrine carbonate facies that are related to weathering and drainage patterns in the area surrounding Eocene Lake Gosiute. **Mike Smith** and **Brad Singer** also joined us in the field to sample tuffs for and NSF-supported project to establish a high-resolution radioisotopic geochronology of the Green River Formation. Mike and his undergraduate field assistant, **Nick Delebo**, took an early break from fieldwork to drive their $400 Subaru to Seattle to hear a concert that Mike thought was scheduled for June 31 (*Mike: "30 days have September…"*). They returned several days later, wiser for the experience.

Colin Walling achieved a major milestone by completing his MS thesis on the Permian Phosphoria Formation, and began his PhD on the same subject. Colin is looking at the origin of windblown dust (silt) deposited in offshore areas of the Phosphoria sea, and is getting some very interesting oxygen isotopic results in collaboration with **John Valley** and **Mike Spicuzza**. A new PhD student, **Martin Shields**, joined our group with plans to work on an extensive subsurface data set from the Java basin. Martin spent approximately 18 years in industry and has expertise in 3-D seismic interpretation and structural geology. He is currently helping us to get our Sedimentary Basin Visualization Laboratory up and running (with assistance from ExxonMobil and BP-Amoco).

Perhaps the highlight of last summer was two weeks of reconnaissance-level fieldwork in southern Alaska with **Marwan Wartes**, who was investigating possible PhD projects involving the Neogene uplift of the Chugach-St. Elias range and derivative deep marine sedimentary units. This was primarily a feasibility study, during which we learned several things: 1) there are plenty of really spectacular exposures that are virtually impossible to reach, 2) it is possible to walk hundreds of yards through dense alder without ever actually touching the ground, and 3) it rains a lot in southern Alaska. The low point came when our food box became contaminated with Coleman fuel, forcing us to beg at a nearby logging camp. We had briefly considered turning our 357-magnums on the local shore birds, but thought better of it. Fortunately, Marwan was able to develop an alternate project on the Fortress Mountain Formation in the much drier northern Brooks Range, to be supported in full by Anadarko Petroleum.

❖ Nik Christensen

This past year I began work on a new five-year NSF Continental Dynamics sponsored interdisciplinary study of an exposed crustal section of an early Jurassic island arc in South Central Alaska. The Talkeetna arc is one of only a few examples of exposed arc crustal sections. In the same way that ophiolite studies have provided an ideal counterpoint to both marine geophysics and analysis of mid-ocean ridge rocks in developing a complete picture of crustal accretion at oceanic spreading ridges, this geochemical and geophysical study of the Talkeetna arc will provide critical information on arc magmatism and crustal genesis.

I'm also involved in a new research program