the exact places to extract samples for AMS dating. Three weeks later the results came back. The interval of low ash tree pollen came in a thousand years younger than originally thought. Its calibrated C-14 age matches the time of the Younger Dryas cold period in the GISP2 ice core from Greenland, and it now is the most convincing Younger Dryas record in the Upper Midwest. Interestingly, Devils Lake does not seem to have any record of a climate fluctuation that correlates with the glacial readvance that preserved Wisconsin's Two Creeks Forest Bed. I am a little disappointed to find a record of the globally recognized Younger Dryas interval but none of my favorite local Wisconsin readvance.

My web site *Geology by Lightplane* **http://www.geology.wisc.edu/~maher/air.html**, that I set up in January, recorded 12,000 hits by the end of the year. Alumnus Kent Kirkby at the University of Minnesota kindly produced a batch of CDs for me at cost, and I was able to distribute disks like reprints at the GSA meeting in Boston and the Midwest Friends of the Pleistocene meeting in Thunder Bay. The web site requires a very fast connection to work well. With the CD you can put it in your computer's CD reader and get very fast transfer. As I said, the CDs are like reprints; if you want a free copy simply write and ask.

❖ Dave Mickelson

The year 2001 was as busy as usual. The Quats changed quite a bit because Jeff Munroe finished his PhD, Kelly LaBlanc and Scott Brown finished their MS theses, providing me lots of evening reading! Our Laurentide Ice Sheet project with Pat Colgan rolls along, although Paul Cutler's departure for a job with the National Academy of Science has slowed the modeling aspect down somewhat. As I write this, a new postdoc, Andreas Bauder, is sitting downstairs. He will continue the modeling begun by Paul. Ben Laabs (BS, 1999) returned with an MS from Northern Arizona and has been working on the same project. I represented the department and the GLE program at a Chair's conference hosted by Exxon-Mobil In Houston. I was pleased to find that Mike Trygesstad, a recent Geophysics student was my host.

In June, Vin and I traveled to Germany, where we had a meeting of our Scandinavian Ice Sheet project. Cornelia Winguth, who is doing the modeling for that project met us there as did several others from Norway (including Eiliv Larsen, who many alumni know) and Sweden. A new student, Jessica Darter, is working on the geologic aspects of the flow lines. After a pleasant stay with Juergen Ehlers and family Vin and I drove to Poland for a conference and field trip (**http://www.geology.wisc.edu/~davem/Poland_Images_Home.html**). We then took a week to drive south to Slovakia and the Czech Republic. Our Uinta project continued, and I visited Eric Carson's field area in July with Jim Knox. Vin and I also spent time on the Lake Superior shoreline with Tuncer Edil and students Leslie Pearson and Lindsay Anderson.

The Sheboygan County project is nearing completion as Anders Carlson finished mapping there in August. Door County is finished, but maps and report remain to be done. A highlight of the fall was attending Pat Colgan's Boston Harbor GSA field trip and having dinner with about ten former "Quats" (photos, preceding page). I hope to see many of you at GSA in Denver next fall and I hope we can find a time to have dinner together! We never got our holiday cards written, so a late "best wishes" to all of you for the no longer New Year!

❖ Nita Sahai

My research program has grown nicely since the last time I wrote an update for this publication. Three papers in peer-reviewed journals and four invited oral presentations at conventions have resulted from my recent work. I now have a PhD candidate student, Katya Delak, and a MS candidate student, Katie Thornberg. Using ^{29}Si NMR and microcalorimetry supported by my theoretical calculations, Katya is studying the nature of interactions between silica and small organic compounds called amines, in both the aqueous and the solid phase. Her work has implications for how diatoms produce biogenic opal (amorphous silica) tests from sea-water, for biomimetic silica synthesis, and for the nature of biomembrane-mineral surface interactions. We are collaborating with Profs. Bob Hamers and Bob West and with Dr. Charlie Frye in the Chemistry Department on this project.

The nature of biomembrane-mineral interactions is relevant to geomicrobiology in cases where bacterial and fungal cells are in contact with mineral surfaces, and for medical applications such as understanding the etiology of silicosis. This is a respiratory disorder caused by the inhalation and retention in the lung of fine quartz (_-SiO_2) dusts. Intriguingly, dusts of stishovite (six-fold coordinated SiO_2) and of other oxides such as rutile (TiO_2), corundum (Al_2O_3) and hematite (Fe_2O_3) are benign.

Katie is involved in a problem of local interest to Wisconsonians, the natural occurrence of arsenic contamination in groundwater—in collaboration with Prof. Toni Simo of this department and Dr. Madeline Gotkowitz of the Wisconsin Geological and Natural History Survey. We will characterize the mineralogy and chemistry of the pertinent arsenic-bearing phases using HRTEM and determine the leaching rates of arsenic from each phase. Both Katya and Katie are bright, motivated students and it is a pleasure to work with them.

I am also continuing my research on the catalytic

Professor Nita Sahai with students and staff after a Friday Weeks Lecture.

effect of bioceramic surfaces for apatite (bone and teeth) growth on prosthetic orthopedic and dental implants. I have expanded this research to include the effects of major cations Mg^{2+} and H^{+} present in blood from which apatite precipitates. Interestingly, the fundamental chemical reactions are very similar to authigenic apatite formation from sea-water in sediment pore-spaces during early diagenesis. In collaboration with Dr. Melvin Glimcher and Dr. Jerry Ackerman at Harvard Medical School, another project involves experimental measurement and theoretical calculation of ^{31}P NMR shifts for phosphorylated amino-acids bound to calcium. Such amino-acids are believed to be involved in the nucleation of apatite on protein surfaces in the vertebrate body. The calculations will help identify the reactions involved in the very first stages of bone-growth, and could lead to development of drugs for treatment of osteoporosis, rickets, osteomalacia, etc.

In my four semesters at this department I have taught the following courses: Introductory Geochemistry, Crystal Chemistry, Fluids and Sedimentary Processes, Geochemistry of the Mineral/Water Interface, Biominerals, Environmental Geochemistry. Thus, in addition to courses relating to my research, I have taught courses that are somewhat outside my areas of expertise. I have served the department's needs, while trying to keep alive the needs of my research group. Developing six courses without repeating a single one in such a short time (four semesters) has taken a lot of time and energy.

Since starting at our department in fall 2000, it has been a period of adjustment to my new roles as faculty, advisor, teacher and resident in the Midwest. So I can honestly say that I have grown a lot in the past two years. In the past year, I have continued the learning process of how to advise students, how to tailor classes based on feedback from undergraduate students, and how to grow with the department through service on committees and through discussions with colleagues. I am glad to belong to a department where the opinions of untenured faculty are taken seriously and where we are given the chance to affect the course the department takes by serving on committees. One of the more gratifying jobs I have is Undergraduate Student Adviser, where I can interact with geology majors students. I was also invited to present my research work and teaching philosophy at Conferences of Societies that I would not ordinarily have thought of attending. I thus had many opportunities to meet with diverse researchers and educators with whom I was able to exchange ideas and develop new ways of thinking.

On a more personal note, being in Madison and the Midwest made me realize for the first time in my twelve years in America that I am a "minority". It was an uncomfortable realization. To deal with this, I have been participating in a year-long seminar course called Seeking Educational Equity and Diversity (SEED). This seminar has been very useful to me in exploring the ways in which we discriminate against different minorities, consciously and unconsciously. Also, ways to deal with such behavior and active steps to bring about change are discussed in the seminar. So, the past year has provided lots of opportunities for professional and personal growth.

❖ Toni Simo

"Between two worlds," summarizes 2001 very well for me. A special arrangement allowed me to split my time in equal proportions between Barcelona and Madison. Approximately every one and a half month I translated myself and office to one of the two locations. In Spain, I enjoyed staying with my family and the challenge of teaching and doing research in an engineering department. The host university was the Universitat Politecnica de Catalunya (the Spanish MIT) and I worked with engineers modeling and applying statistics to sedimentary successions. It is fair to say that we are still finding a common language (from equations to arm waving), but participating in classes has been excellent in setting the starting positions. I will continue collaborating with them in the near future integrating geoarcheology and modeling of sedimentary processes to reconstruct 3D sedimentary packages. In Madison I truly enjoyed the company of a great group of graduate (Norlene Emerson, Liz Leslie, Leonardo Piccoli, Kate McColgin, Essam Sharaf, Nancy Slatter, Michelle Stoklosa, and Blair Tormey) and undergraduate students (Jana Van Alstine), postdoc (Olga Rey), and colleagues.

As always the carbonate research group is spread throughout the geologic time scale and in five continents.