Greetings from the chair

Carl Jacobson

This has been a good year for the department. First of all, the Iowa economy finally seems to have stabilized, so for the first time in five years we have not been hit with a budget cut. This is welcome relief. During the four years of cuts we lost close to $200,000 in direct and indirect funding to the department. Let's hope those days don't return anytime soon.

One particularly exciting development is that we have recently been given permission to conduct a search for a faculty member in surface water hydrology. This represents a completely new line for the department. In the past, when a faculty member retired or resigned, the line stayed with the department. Beginning this year, the Dean of our college (Liberal Arts and Sciences) decided that all open faculty lines would revert to the college. The intent was to allow the college to reassign positions from one department to another based on various criteria. Adding faculty to programs of high student demand is probably the greatest consideration.

However, two faculty positions were allotted this year based on program excellence. Our new position is one of those.

The awarding of a new faculty line indicates that our department is viewed well by the administration. This support derives from the fact that our faculty are highly successful. As one example, in each of the last three years, the geology and meteorology faculty together have been awarded over $2 million of external grant funding. The geology program currently includes 10 tenured/tenure-track faculty, with five faculty lines in meteorology. Per-faculty levels of funding are quite comparable between the two groups; i.e., both programs are contributing substantially to the productivity of the department. In fact, this year we had the second-highest percentage of faculty with grant support within our college. We were beat out only by Chemistry, which has a higher national ranking than any other department on campus.

This year we are proud to announce the promotion and/or tenure of three of our faculty. Cinzia Cervato, who joined our department in the fall of 2001 was promoted to Associate Professor with tenure. In addition, Neal Iverson and Bill Simpkins, both of whom have been with us longer and were already tenured Associate Professors, were promoted to Full Professor. Congratulations to Cinzia, Neal, and Bill.

During the year, we had the opportunity to meet with alumni at a number of venues. The earliest in the year was the All-Alumni event at the National GSA meeting in Denver. In February, Carl Vondra and I escaped the Iowa winter for our annual alumni luncheon in Houston (see photo later in the Varve). We also enjoyed getting together for dinner with a few of you at the recent North-Central GSA meeting in Minneapolis (see photo). Unfortunately, although we reserved a space at the alumni reception at the Calgary AAPG meeting, last-minute conflicts prevented any of us from attending. We will, of course, reserve a spot at the alumni reception.
Greetings from the chair

Continued from page 1

at the GSA meeting this October in Salt Lake City and hope you will stop by to say hello. Carl and I will likewise plan to be in Houston again in the spring, and we will contact those of you in the area as soon as the date is set.

As always, there is much news to report about field camp, which is still in session as I write this in late June. This is the second year that Erik Kvale is flying solo as the Director of camp, having taken over the reins from Carl Vondra. We also have the largest group we’ve seen in a number of years – close to 30 students. There are eight of our own students, a dozen from Nebraska (our partner institution), and nine “outside” students from a variety of schools. Four of the outside students are from one institution, the University of North Carolina at Wilmington. We thank alumnus Jim Dockal on the faculty there for putting in the good word for us. The outside students have long been an important component of our enrollment, but we ran into a problem with this a few years ago. Basically, the Registrar had been letting us charge both ISU and outside students a reduced rate of tuition for the number of credits we offered. Four years ago, however, this subsidy was eliminated. In the two years ensuing, we ended up with a total of only one outside student. The camp just isn’t economically viable without the enrollment boost provided by the outside students. Last year and this year, we put in considerable effort to advertise around the country. As you can see from the numbers above, it seems to have paid off.

Coming back to the issue of tuition, it’s important to realize that not only do we now have to charge for more credits than in the past, but over the past four years, tuition per credit has gone up by nearly 60%. Combined with the fees for transportation, room, and board, not to mention reduced time to hold a summer job, attending camp truly has become a major financial burden. The Carolyn Jones-Eiler Summer Field Camp Scholarship and Peter Johnson Memorial Scholarship are two longstanding awards that provide financial assistance for two to four students attending field camp each year. This year we are extremely pleased to announce the awarding of the first Huedepohl Geology Field Camp Scholarship. Thanks so much to alumnus Brad Huedepohl for making this possible. The recipients of all three field camp awards are listed below.

In contrast to field courses like ours that work out of a base camp, there are various schools that run “roving” field camps. Over the years, we have provided room and board to a number of schools that have spent a few days to perhaps a week or so in the Bighorn Basin. This summer, we hosted several such groups, but we also had one that was a bit different. Specifically, Dr. Steve Pett, a faculty member in the English Department at ISU, brought out a contingent of nine undergraduate and graduate students for a course on writing and the environment. This offering relates to a plan on the part of English to implement a graduate program in environmental writing, and we hope that the foray this year marks the beginning of a long relationship.

Last year I reported the good news that we had switched over from the old water well on the camp property to the city water line (thanks again to Tom and Evonne Smith). I also noted our future plan to install a septic system and to replace the outhouses with flush toilets. This year, we have set our goal even higher. The ISU Foundation, which orchestrates fundraising for the university, is in the early stages of a multi-year fundraising campaign. Last fall, the Foundation announced a call for proposals in which any member of the university community could submit a proposal for a campaign priority area. Our department turned in several proposals, including one to upgrade the living quarters at camp. The exciting news is that, out of 132 proposals submitted to our college by individual departments or programs, eight were selected as campaign priorities, and our request for field-camp was among them. Unfortunately, this does NOT mean that we will have access to any central university pool of funds. What it does mean, however, is several things. First, like the new faculty position described above, it implies a strong vote of confidence for the department from the college. More tangibly, it means the assistance of staff from the Foundation. Our college has on the order of 70,000 living alumni. Obviously, the Foundation staff need to target carefully how they will spend their time. Having a departmental fundraising initiative chosen as a priority area ensures that we will be provided the assistance necessary to move forward with this effort. Our project is quite ambitious, although many details, including the cost, remain to be worked out. We will provide more information on this initiative in the future.

Let me finish by expanding my discussion of fundraising. As you can see from the list of contributors for the 2004 calendar year, we have wonderful support from our alumni, and we thank you so much. The list of funds and endowments on the next page also illustrates that you have many choices for your gifts. As always, donations to the Geology Development Fund provide us with the most flexibility. In addition, last year I emphasized two areas of top priority – field camp and graduate fellowships. As I’m sure you can gather from my preceding comments, field camp is now as timely an area of need as ever. However, I would like to emphasize that support for graduate students also remains high on our list. Assistance in this area can be provided through the John Lemish and Georgia and Carl Vondra funds. Finally, please note that you have several ways to make your gift to the department. One is to send it directly to the Department, this fee is avoided.

Thanks once again and have a good year.
## Funds, Endowments and Contributions

### 2004 Contributions

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<tr>
<th>Scholarship/Endowment</th>
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### Funds and Endowments

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and beyond the stipend the student will already receive from a research or teaching assistantship.

### John Lemish Memorial Scholarship

Established by Dr. Ramon Bisque (Ph.D. 1959) in 1989 in honor of John Lemish (Professor Emeritus) and was called the John Lemish Award for Earth Science. It provided an award of $250 to an outstanding graduate student with demonstrated research ability.

### O’Brien-Lonsdale Endowment Fund

This fund will establish an endowed chair in geology.

### Peter R. Johnson Memorial Scholarship

Established in the memory of Peter R. Johnson (B.S. 1977) by his family, this fund provides a scholarship for an undergraduate student to attend the summer field camp.

### Quentin Schmidt Memorial Field Trip Fund

This fund furnishes financial support for class and departmental field trips.

### Rodney D. Gardner Memorial Scholarship

Established in 1995 by the children of Rodney D. Gardner (B.S. 1962), this fund furnishes a scholarship to an undergraduate student on the basis of scholarship and financial need.
Lynn Bachellor (B.A. 1995; labachellor@academicplanet.com) has just completed her 10th year of teaching in Aldine (Houston). The first four years were at the middle school and the last six were teaching 9th grade Integrated Physics and Chemistry, which is what some may know as Physical Science. Next year Lynn has decided to return to middle school since she misses teaching the Earth science component. Last fall she decided to further her own education and hopes to graduate in December 2006 with a Master's degree in Secondary Science Education. Going back to school has been a lot of fun for her and she realizes how much she misses ISU and the college life! Two years ago Lynn plunged into responsibility and purchased a house. She visits Iowa twice a year and wishes she could stay longer, especially during the summer!

Karen Bartels (B.S. 1985; K-Bartels@neiu.edu) is associate professor of Earth Science and Women's Studies at Northeastern Illinois University (NIU), in Chicago. This past spring semester she took 14 students on a two-week field trip to the North Island of New Zealand as part of an undergraduate course on volcanology. Entitled “Volcanism in the Ring of Fire,” it was sponsored by the International Programs office at NIU. The class visited the Auckland Volcanic Field, Tongariro National Park, Lake Taupo and the Okataina Volcanic Center, and White Island. It was a lot of work to plan, but it was a great trip, and she intends to repeat the course once every two years.

Karen Bartels at White Island, New Zealand

Jim Beer (B.S. 1984; james.j.beer@shell.com) and family took a giant leap of faith to remain as oil patch expats rather than to return to the U.S. during this past year. There were already indications that they were heading that direction as they are in their sixth year of what was meant to be a three-year posting to Shell Netherlands. The local international school in Assen (for sons Peter age 9 and Sam age 6), interesting North Sea geology, and their Dutch friends have made this a very rewarding experience for all of them. As much as they have come to consider the Netherlands “home,” earlier this year Jim decided to accept a job in Malaysia, so in July 2005 Jim and family will move to Miri (on the northern Borneo coast) where he will join a Shell Malaysia deepwater exploration team. It will be a chore to get used to all of that sun and driving on the wrong side of the road, but they are up for the challenge!

Ramón Bisque (Ph.D. 1959, M.S. 1956; ramon@bisque.com) was invited back to his alma mater, St. Norbert College, in April to visit with geology and chemistry students (there was no geology department there when he arrived in 1949 and so he ended up in chemistry). One evening he and his wife, Marie, attended an awards banquet and met the recipient of the geology award for 2005, Jackie Shumway (Neal Iverson’s new graduate student). They visited with her again at a field-trip-post-mortem session at a professor’s home.

Steve Carlson at work at Chroma Energy (Texas)

Steve Carlson (B.S. 1981; scarlson@chromaenergy.com) has been living in Houston with his wife Jenny Stadler (B.S., 1981) and four kids (7 to 17 years of age) since returning in 1998 from five years in Indonesia with Unocal. Steve left Unocal in
1999 (after 15 years) and is now senior geophysicist with Chroma Energy. Chroma is a small start-up E&P company with proprietary 3D seismic pattern recognition software. Chroma has been active primarily in the Gulf Coast. Steve spent the past two years working interpretation projects for PEMEX and is just starting one over the Cantarell Field, Mexico’s largest.

Bob Carson (B.S. 1974; racarson@springnet1.com), although not working as a geologist, has not completely lost touch with geology as he worked as a geotechnical engineer for awhile and in the environmental field for the last 20 years. Currently, Bob is head of a small group at the Illinois Environmental Protection Agency dealing with federal facility cleanups. His daughter, Emily, is studying accounting at Illinois State University. In his leisure time, Bob is involved with sailing and amateur radio. About 10 years ago he ran into Lyle Sendlein when working as a contractor on cleanup of the uranium enrichment facility in Paducah, Kentucky, and Lyle was running the organization doing the technical review of Bob’s investigation reports.

Jeff Dolan (left) returning from the Unocal Grayling Oil Platform in Cook Inlet in his new survival suit.

Jeff Dolan (B.S. 1970; eparjkd@sci.net) has had various positions with Unocal over the years, starting with coordinator of their seismic processing center in the early 80’s and finishing up as a reservoir engineering technician. Chevron is in the process of purchasing Unocal so Jeff is hoping for a “package out” and early retirement after 25 years with Unocal in Anchorage, Alaska. If all goes well, Jeff will be settling in the Guttenberg, IA area by the end of the year.

Brett Fishwild (M.S. 1998, B.S. 1995; fishwild@yahoo.com) has made what he hopes is his last career move for a while, as he has taken a project management job with CH2M Hill in Dayton, Ohio. Brett recently passed both ASBOG tests (both on the first try!) and received his RG in Nebraska and PG in Kansas. Brett will be joining Jill Rosenberg (M.S. 1998) for a trek through the Himalayas in Kashmir (India side of course). They will be gone the entire month of August.

Kent Gorham (B.S. 1979; kent.gorham@state.co.us) continues to work for the coal program in the Division of Minerals and Geology, Department of Natural Resources, State of Colorado. His activities include the permitting and environmental inspection of ten of the coal mines in the southern Colorado area. The mines are located in the Canon City coal field and the Raton Basin coal field. The Raton Basin is located near the Spanish Peaks, which are igneous intrusions of Miocene Age? (20-40 M.Y.). This regional intrusion resulted in numerous prominent dikes; the most recognized are the radial dikes surrounding the Spanish Peaks. Intermediate to felsic sills are common too, and were injected, preferentially along zones of weakness, many times on one or more of the many coal seams in the Raton Basin. The coal was coked in-place due to these intrusions. Many of these features are on private land and are relatively unexplored. The resistant sills not only cause problems for coal mining but control the erosion and cause waterfalls in drainages, prominent ridges, and interesting topographic features. Also common to the colluvial deposits is pedestaling caused by secondary erosion of the colluvium, mostly due to raindrop impact.

An uninvited guest of Kent Gorham at one of his inspection sites.

Richard Handy (Ph.D. 1956, M.S. 1953, B.S. 1951; rlhandy@iowatelecom.net) passed on this memorial note concerning Wayne W. Williams (M.S. 1953, B.S. 1951). Wayne was one of several geology graduate students at ISU who were directed by Dr. Donald Davidson in the Dept. of Civil Engineering. Following graduation, Wayne formed an exploration drilling company specializing in engineering soil borings and tests, at one time having 5 drilling machines in the field. A decade later Wayne changed careers by becoming a faculty member at Kansas State University. The teaching experience combined with a scientific background in geology led to frequent service as an expert witness in lawsuits, where his slow, methodical presentations could be very convincing to juries. Wayne died in May at the age of 83 from leukemia, leaving a wife, seven children and many grandchildren.
Richard “Dick” Iverson (B.S. 1977; riverson@usgs.gov) is employed by the U.S. Geological Survey Cascades Volcano Observatory, which has been an exciting place to be since Mount St. Helens has kindly supplied a very remarkable eruption for he and his colleagues to study during the past 8 months. This year Dick is the Richard H. Jahns Distinguished Lecturer for the Engineering Geology section of the Geological Society of America, and visited ISU in that capacity in April. Dick's professional activities can be viewed at http://vulcan.wr.usgs.gov/Projects/MassMovement.

William “Bill” Lenarz (B.S. 2003; wlenarz@hotmail.com) began working towards his Masters degree in geology at the University of North Dakota in Grand Forks, last fall. He was given a full ride and a TA position within the department. He represented ISU very well in earning top grades both semesters, as well as being elected to represent the graduate students in all faculty meetings within the department. This summer he will begin his research project on the Cheyenne River at a site south-west of Fargo. Bill was also hired by the North Dakota Geological Survey in the Oil and Gas Division to help interpret and catalog bedrock cores that are sent for storage at the Wilson Laird Core Library on the UND campus. Last, but of course not least, Bill got married on June 11, 2005 to Jess Campbell whom he met at ISU during his senior year. She will be teaching in the Mathematics Department at Concordia College in Moorhead, MN. They are both now living in Grand Forks and look forward to getting more elevation in their blood once Bill graduates from UND next year.

Brian Little and family

Brian Little (B.S. 1983; brian.b.little@bhpbilliton.com) is still in Houston working for BHBPilliton as a senior geophysicist doing seismic interpretation for Offshore Gulf of Mexico Deepwater and Shelf Oil & Gas Exploration & Development. Last year saw a nice shelf deep gas discovery and successful development oil drilling in a deepwater field. Brian is currently busy with three different wells drilling simultaneously this summer. He and his wife, Tina, celebrated the birth of their 4th child, Braden, in July, 2004, and their 17th wedding anniversary this year. She continues to be busy as a full-time research biochemist at the Texas Medical Center, as well as a full-time mom to four rambunctious kids. They get back to Iowa regularly since both their families live in and around Waterloo. Brian enjoyed visiting with Carl Vondra, Carl Jacobson, and local alumni when they were in Houston for their alumni visit/update meeting. Brian was glad to hear that alumnus Erik Kvale has taken over the reins at the ISU Field Camp. Brian and his daughter, Cille, really enjoyed the alumni reunion at the Field Camp in 2002. Brian will be participating in a field trip to Spitzbergen, Norway this summer to study turbidite outcrops analogous to Lower-Miocene reservoirs in the Gulf of Mexico. He will also be presenting a paper at this Fall’s SEG Convention in Houston and tells all alumni and faculty that if they are in town for the meeting, to look him up for a home-cooked meal or directions to the best Tex-Mex food in town. He says “hello” to all Class of ’83 vintage peers (Jane Dawson, Lee Ankeny, Neal Iverson, etc.)

Frank Reckendorf (M.S. 1963, B.S. 1961; recken@open.org) retired from the West National Technical Center (13 western states) of the Soil Conservation Service in 1994. Although his position had a different title, his job at retirement was as the “Regional Fluvial Geomorphologist.” Frank set up his own consulting business in 1994 doing mostly applied fluvial geomorphology assessment and training, along with assessment and design for stream rehabilitation. He has done assessment and designs on dozens of projects since retiring. One of the most recent projects was a stream channel meander reconstruction for three miles of Crab Creek on the Columbia National Wildlife Refuge in WA. Frank has continued to do workshops, write papers and make presentations at various society meetings. In 2003, he co-chaired the Northwest Cell of the Friends of the Pleistocene, meeting and tour, “Holocene Coastal Processes in the Columbia River Cell.” His wife, Elisa, and he find time for travel and most years spend about a month out of the country. Frank is having too much fun to slow down, although he is doing less active field work than in the past year.

Dan Sailsbury (B.S. 2000; dpsailsbury@yahoo.com) took a job with the Maryland Geological Survey after graduation, and moved to Baltimore, MD. Since then he has changed careers and made the jump into medicine. After a year and a half at the Survey, Dan went back to school for Nuclear Medicine Technology in Pittsburgh, PA. Upon completion of that program he landed a job at Regions Hospital in St. Paul, MN as a Nuclear Medicine Technologist. After about a year he was promoted to Clinical Operations Manager of the Radiology Department, and currently oversees the CT, Ultrasound, and Nuclear Medicine departments. As Dan puts it he essentially went from “rocks to docs.” He is enjoying Minnesota as he is still able to pursue geology as a hobby. Some of the doctors at the hospital joke about bringing him into surgery to identify stones they have pulled out of patients’ gall bladders. Dan has been able to spend some time in the Boundary Waters area, and has also been able to explore some of the mines in northern Minnesota. He recently went to the Duluth area to run in Grandma’s Marathon, and then head out into the Boundary Waters for a four day trip.

Michael Seale (M.S. 1996; michael_seale@yahoo.com) has for the last 18 months been on active duty as part of Operation Enduring Freedom. He is 1st Lieutenant and Platoon Leader of C/3 Task Force 168, US Army Infantry. His primary area of deployment has been Khandahar Afghanistan.
Lyle Sendlien (Ph.D. 1964; sendlye@bellsouth.net) is a former faculty member of the department where he taught between 1960 and 1977. He has many fond memories of the students and the faculty members he worked with. In those days, Chalmer Roy was the chairman and Leo (Tony) Thomas, Donald Biggs, Keith Hussey and John Lemish constituted the faculty. Carl Vondra, Karl Seifert, Bob Palmquist, Bob Cody and Fred DeLuca were added to the faculty in geology during his tenure there. Geographers and meteorologists were added and the department went from a geology department to an Earth science department. Bert Nordlie joined the faculty as chairman a few years before he left. The growing pains and excitement of expansion was common for that time in universities around the country. For most of his years at ISU the Department was confined to the basement of the Science Building and Building “M”, an old WWII barracks located behind the Science Building. As the number of faculty members increased the department obtained laboratory space in other buildings close to the Science I and started teaching large lecture sections of Geology 100 in other buildings with large lecture halls. Prior to setting up the large lecture class for Geology 100, every faculty member had to teach a section, sometimes two, every quarter. After he left ISU, Lyle headed up a coal research center at Southern Illinois University at Carbondale for five years and then went to the University of Kentucky where he headed up a mining and minerals research institute for ten years and then a water research institute for the last six years before retiring in 1998. While at the University of Kentucky his half-time appointment in the Geological Sciences Department allowed him to conduct research with graduate students and staff members in the Geological Survey. He directed as many graduate students at UK as he did when he was at ISU. Lyle did a turn as chairman of the department. His wife, Louise, and he are now in the retirement phase of their lives and enjoying it very much. They are both cancer survivors. Louise is cancer free but Lyle’s cancer is in remission. They bought a house in the Florida Keys in 1988 and moved to the Keys permanently in 1995. They have a stilt house sitting on a small wetland that borders the Florida Bay. Their house backs up to a woodland so they are able to enjoy the wildlife found in the Keys, especially the many water birds. Lyle is able to photograph them from his son Erik’s front porch, which is adjacent to their house. Lyle and Louise keep busy with volunteering activities for a local hospital (a 42 bed hospital). Louise is the president of the hospital auxiliary and keeps them very involved in their small community. Louise and Erik have beautiful gardens with many different plant species and numerous orchids. Their lily ponds are spectacular and the frogs, birds and raccoons love them. Lyle has been practicing Tai Chi for about seven years and has been teaching it for the last two years. He gets much enjoyment from teaching it and believes practicing it on a daily basis has been beneficial to his health. Lyle tells us there is a life beyond a professional career.

Shawn Blaesing-Thompson (B.S. 1997; sblaesing@gmail.com) continues to work for the Washington State Department of Transportation as the lead for the statewide GIS training program. Shawn gave birth to daughter Abigail in December of 2003. Her little redhead Abby has a fiery determination and never ceases to amaze her parents. (Daddy is Joe Thompson, UNL ’98, Field Camp ’96.) Shawn was recently published in the Journal of Soil and Water Conservation, July 2004, on her agricultural wind erosion research done while obtaining her M.S. in Soil Science at Washington State University in 2000. She is active in her local chapter of the Association for Women Geoscientists (www.awg-ps.org), and is always looking for opportunities to combine Earth Science with GIS.

Mike Steenhoek (M.S. 1996, B.S. 1993) is back into economic geology after spending several years working in central Iowa with environmental companies. Mike is currently working at Green’s Creek, a large massive sulfide deposit near Juneau, Alaska, where he is joyfully logging core and avoiding bears.

David Wonder (M.S. 1987, B.S. 1983; wonder@netins.net) has been scratching out an existence in the environmental consulting business since leaving ISU in 1987. Unfortunately, he doesn’t cross paths with geology very often. He is currently working for Shaw Environmental (subsidiary of The Shaw Group, a big diverse company) from his home in Indiana, Iowa. David’s wife, Vickie, works for MidAmerican Energy, where she has worked continuously since he was a graduate student. Their older daughter, Erin, who is a Geology student. Their younger daughter, Emily, has just finished 9th grade and has more of a proclivity for science and math than her older sister. As his kids get older and more independent, David is looking forward to having a little more free time for golf and maybe a geology field trip someday.

Meaghan Zeiner (nee McLoughlin) (B.S. 2002; mmcloughlin@yahoo.com) moved to northern Illinois in January and is working for the Abbey Resort on Lake Geneva as a landscape construction foreman. She got married in May to Chris Zeiner.
Alumni meetings

The department held several alumni meetings this past year including a Houston alumni luncheon Feb. 11 (left). Pictured from the left are, Don Henkel, Brian Little, Lee Backsen, Howard White, Carl Vondra, Dan Hansen (behind Dick Fox), Dick Fox.

A alumni dinner was also held in Minneapolis (top) at the North-Central Geological Society of America meeting. Among those attending are, left to right, Beth Johnson, Jason Thomason, Jim Eidem, Matt Graesch, Carl Shaw and Bill Simpkins.

Student Awards

The department honored undergraduate and graduate students with honors at the 2005 spring banquet. Recipients included:

UNDERGRADUATE AWARDS

Hueepohl Field Camp Award
Jonathon Carter

Carolyn Jones-Eiler Summer Field Camp Scholarship
Elisha Evers

Peter Johnson Memorial Scholarship
Samantha Owens
Jonathan Reis

Outstanding Undergraduate Award
Sarah White

Rodney Gardner Memorial Scholarship
Robert White

Outstanding Senior
Jonathon Carter

GRADUATE AWARDS

Pick-of-the-Year
Cammy Bright

Outstanding Teaching Assistant
Cammy Bright

John Lemish Award
Matt Dvorak

Ames Rock & Mineral Club Award
Matt Graesch

Graduate Student Seminar Top Papers
Adrian Heimann
Peter Moore

Graduate Student Seminar Runners-up
Matt Graesch
Jason Thomason

Outstanding Contributions
Peter Moore
Manesh Sharma

GRADUATING STUDENTS

Summer 2004
Stacy Weems (BS – Geology)

Fall 2004
Craig Beyer (BS – Geology)
Patrick Hook (MS – Geology)
TC Loving (MS – Geology)
Weihong Wang (MS – Geology)
Alessandro Zanazzi (MS – Geology)

Spring 2005
Sarah White (BA – Earth Science)
Nicki Shea (BS – Geology)
Olivia Chan (MS – Geology)
Graduate research projects

**Bright, Cammy** - Faunal and Stable Isotope Study of Late Glacial and Holocene Abrupt Climate Changes in the Mediterranean Sea (Cervato); Ph.D.

**Brooks, Bjorn** - CHRONOS and the Cambrian Explosion: Chronostratigraphy and Paleontology of the Globally Distributed Soft Bodied Fauna in the Cambrian; (Cervato); Ph.D.

**Chan, Olivia** - Membrane Fatty Acids of Deep-Sea Piezophillic Bacteria (Fang); M.S.

**Cheng, Cheng** – An Evaluation of the Bear Creek Riparian Buffer Strip (Simpkins); M.S.

**Cheng, Mike** – The Effectiveness of Riparian Forest Buffers in Head-Water Watersheds of the Western Corn Belt (Simpkins); M.S.

**Dvorak, Matt** - The Effects of Land-Use Changes on the Health of Coastal Environments (Mora); M.S.

**Graesch, Matt** – Interpreting the Origin of the Madison Drumlin Field using the Magnetic Properties of Till (Iverson); M.S.

**Heimann, Adriana** - The Origin and Exploration Significance of Garnet and Gahnite to Broken Hill-Type Lead-Zinc-Silver Deposits in the Curnamona Province, Australia (Spry); Ph.D.

**Hook, Patrick** - Reduction of Concrete Deterioration by Ettringite Using Crystal Growth Inhibition Techniques (Spry); M.S.

**Huang, Xianyi** - Using WEPP, an Erosion Computer-Model, and VR to Visualize the Effect of Long-Term (10+ year) what-if Scenarios for Erosion in Iowa (Harding); M.S.

**Iassonov, Pavel** - Enhancing Fluid Flow in Porous Media by Applications of Sonic Vibrations (Beresnev); Ph.D.

**Loving, Theresa** - Teaching the Relationship between Land-Use and Flooding (Windom); M.S.

**Macalister, Lucie** – Evaluation of Conservative Practices using conjunctive Groundwater. Surface Water Modeling in Two Agricultural Water Sheds (Simpkins); M.S.

**Mann, Janet** - Experimental Study of Debris Flow Mobilization (Iverson); M.S.

**Sharma, Maneesh** – Effective Placement of Riparian Buffer Strips using GIS and Hydrological Investigations in the Bear Creek Watershed (Simpkins); M.S.

**Thimmesch, Carrie** - Spatial and Temporal Variability in Groundwater Quality at Riparian Buffers on Bear Creek, 1996 to 2002 (Simpkins); M.S.

**Thomason, Jason** - Experimental and Field Studies of Clast Plowing and Till Deformation Beneath Past Ice Sheets (Iverson); Ph.D.

**Wang Weihong** - Using Stable Isotopes to Distinguish Root Respiration from Microbial Soil Respiration (Mora); M.S.

**Zanazzi, Alessandro** - Assessment of Weather Patterns in the Great Lakes Region for the Last 400 Years (Mora); M.S.

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**Journey to Wisconsin**

Carl Jacobson and Jane Dawson led the structural geology class on a field trip to Baraboo, Wisconsin, in mid-April.
Faculty and Student Publications

Journal Articles/Chapters in Books


New Research Grants in 2004

Beresnev, I.A. Nonlinear interaction between land vibrator baseplate and ground surface – Supplement. Western Geco. $53,192


Cervato, C. Collaborative Research: Chronos Network for Earth System History: development of integrated databases and toolkits accessible through a common portal – Supplement. National Science Foundation. $559,810.
Cervato, C. Humanizing science to improve the teaching and learning of science content. ISU Miller Grant. $24,606.

Fang, J.S. Stable carbon isotope fractionation in fatty acid biosynthesis of piezophilic bacteria and implications to paleoenvironmetal reconstruction Center for Global & Regional Environmental Research. $20,000.


Mora, G.M. Distinguishing root from soil contributions to soil respiration: exploration of a new approach. National Science Foundation. $400,000.


Simpkins, W.W. Investigation of mineralogical and redox controls on the occurrence of phosphorus in groundwater. ISU Department of Agronomy. $31,775.

Simpkins, W.W. The latter was displaced by water to leave some residual which pore channels and bodies were etched that were experiment verified. Specifically, the latter was a glass plate on the theoretical mechanism, we have made predictions that the specially designed laboratory apparatus. Based on the observation of the effect of elastic waves and vibrations on Agronomy finalized a two-year NSF project on explanation and Meteorology 432 “Instrumentation & Measurements” in Spring 2005. I should tell you, when you teach two full classes in one semester, there is not much time to do anything else. The enjoyable thing about these classes is that they have kept enrolling a significant number of students, which is stimulating for every instructor.

Looking back to major developments on the research front, two particular areas come to mind. A few months ago, the group that involves my ISU Chemical Engineering partner Dennis Vigil, our two Ph. D. students Wenqing Li and Pavel Iassonov, and research scientist Robert Ewing from ISU Department of Agronomy finalized a two-year NSF project on explanation and observation of the effect of elastic waves and vibrations on “unplugging” residual oil in geologic formations. I believe we have achieved an elegant explanation of the wave-mobilization effect at the pore scale and have actually observed it in a specially designed laboratory apparatus. Based on the theoretical mechanism, we have made predictions that the experiment verified. Specifically, the latter was a glass plate on which pore channels and bodies were etched that were subsequently saturated with a non-wetting organic fluid; the latter was displaced by water to leave some residual concentration of entrapped oil ganglia. The ganglia were dyed while the glass and water remained transparent, enabling us to monitor the organic-fluid movement with digital photography. We then vibrated the sample and observed the mobilization of ganglia in accordance with the theoretical predictions based on capillarity. The whole story has been summarized in an article that will soon be published in Geophysical Research Letters; two others have also been accepted for publication in the Journal of Colloid and Interface Science and Geophysics. This line of research (especially its theoretical and numerical-modeling sides) is basis for my Ph. D. student Pavel Iassonov’s dissertation. He is expected to graduate in December 2005.

The other principal theme has been continuation of our work with WesternGeco, which has already been funded by them for the three past years, on the specific open questions in their understanding of how the seismic performance of Vibroseis sources could be optimized. The main contributor here is Andrey Lebedev, a research scientist on leave from the Institute of Applied Physics in Nizhniy Novgorod, Russia, who stayed with us for about two years in total and worked with me side-by-side on this project. The main questions we have addressed so far are the theoretical description of how contact nonlinearity under the baseplate affects the properties of downgoing radiation, and how the baseplate’s flexural vibrations can (or cannot) “mess-up” the seismic measurements in the far field (the common wisdom here is that the plate does not flex, which of course is not completely true). The relevant models, estimates, and recommendations have been submitted to the sponsor to their satisfaction, we hope, and also published with the sponsor’s kind permission. The “nonlinearity” paper came out in Geophysics in the July/August 2004 issue, and the “flexure” one will appear in Geophysical Prospecting in July 2005. This work has been enjoyable and hopefully useful, as it is always gratifying to
know that someone actually wants your results (and I assume they do, as the industry is willing to support this work. I am looking forward to the upcoming Alumni Days and hope to meet as many of you then as possible.

Cinzia Cervato, Associate Professor

Another (academic) year is almost over, my fourth one at ISU. The big news is that I was promoted to Associate Professor with tenure. I owe a big thank you to the tenure committee, my mentor Bill Gutowski, and Carl Jacobson for their support throughout the process.

It has been another busy year. I did not teach in the fall semester thanks to a ‘deal’ between NSF and the College that allowed me to work on the proposal for the renewal of the CHRONOS project. It took me five months to write it, almost one month only to set up budgets, prepare paperwork to coordinate the ten subcontracts, and finally submit it at the beginning of February. I have not heard back from NSF yet, which is not surprising given the size and scope of the project.

The CHRONOS team at ISU is expanding; last July Xiaoyun Tang, MS in computer science at ISU, joined us as systems analyst and has been working on our TIS (Timescale Information System) interface, Ben Bryan (junior in pre-business with a background in computer science) and Brice Lambi (senior in computer science) have been working on the website and portal development. Josh Reed graduated in May with a BS in computer engineering and is going to start in the fall a MS in Human Computer Interaction under my supervision. He is working on a core-logging tool that will be tested by the ANDRILL project during their first season in Antarctica in October 2006 when they will drill the Antarctic shelf through the Miocene. It looks like Josh will be ANDRILL’s IT expert “on the ice.” Tom Parham, sophomore in geology and education at the University of Iowa but from Ames, is spending the summer working in our lab. Two of the projects he is working on are the analysis of data from the class assessment of the virtual tornado project and on the initial results of an online questionnaire on geologic time for grade 6-12 teachers and students that can be found on the CHRONOS site. Doug Fils is very busy coordinating all the IT activities of CHRONOS while learning the fundamentals of geology, sedimentology, stratigraphy, and paleobiology, traveling to meetings and giving presentations, helping other cyberinfrastructure projects network with CHRONOS or develop their own strategy.

The CHRONOS staff included also this year two part-time administrative assistants, Karen Hart and Sara Lundvall. They are both on maternity leave after the birth of Stirling in February and Julianne in April, respectively. We are looking forward to Sara’s return this fall! To be able to accommodate the working space for all these people, we have added to the CHRONOS lab an office suite located on the second floor of Science I that used to be occupied by Microbiology. I moved into one of the new offices and the new working space is really great.

PhD candidate Bjorn Brooks has been at MIT since last February. He is being trained as a geochronologist in Sam Bowring’s lab (uranium/lead) in view of analyzing zircons from ash beds from the middle Cambrian of a type section in China for his thesis. Hopefully he will have all his results by the time he returns to Ames in August but I am sure he will welcome the more ‘relaxed’ working pace of Ames compared to what he has been involved in while at MIT!

PhD candidate Cammy Bright is making progress on her study, collecting stable isotope data from foraminifera from the Tyrrhenian Sea and analyzing clay minerals. Eman Mahgoub, senior at Ames High, is helping her this summer thanks to a scholarship from the Academy of Applied Science. In addition, Anna Maria Porcu, PhD candidate at the University of Cagliari, Italy, is spending the summer working in my micropaleontology lab to separate benthic foraminifera from a Holocene core from the Gulf of Cagliari.

My travels this year took me to California, Washington DC, Boston, Florida, Vienna, Denver, San Antonio, Dallas, Chicago, New York – and I am sure I am forgetting some of the destinations – for GSA, AGU, other conferences, CHRONOS workshops, presentations at NSF and to the Iowa Congressional Delegation. The most recent trip was a Memorial Day retreat for teaching faculty on the shores of Lake Michigan. The Wakonse conference (wakonse is a Lakota word that means ‘to teach’, ‘to inspire’) was a wonderful, stimulating, regenerating, and life-changing experience and I can’t wait to try in the fall what I have learned about teaching and learning!

Francesca completed 1st grade at St. Cecilia. She had a great year and her reading and writing skills have improved dramatically. She is now enjoying the Camp Exploration program at ISU VetMed childcare and is looking forward to an upcoming trip to Europe. We were in Italy and Austria for the Christmas break and spent Christmas in Vienna, enjoying the sights and the excellent Viennese cuisine and wines.

Please make sure to stop by and visit the new CHRONOS facilities when you are in Ames or at the CHRONOS booth in the exhibits area of GSA and Fall AGU meetings.

Jane Pedrick Dawson, Lecturer

This past year, I taught Geology 100 during both fall and spring semesters. Enrollment in the class has been good, with a full house of 500 students spring semester. I continue to teach the structural geology lab in the spring, and this year Carl Jacobson, my husband Bob Dawson, and I took the class on a field trip to Baraboo, WI. The doubly plunging syncline in Proterozoic Baraboo quartzite is a classic field locality visited by many Midwestern universities. We were fortunate to have Basil Tikoff from the University of Wisconsin as a field guide. Students saw examples of cleavage development, complex ductile deformation, and ripple marks on a slightly overturned fold limb.

Over the semester break, Carl Jacobson and I began field work on a new project in California and Arizona. We are examining the timing relationships between Cordilleran Cretaceous arc magmatism, foreland shortening, and the
exhumation of the Maria fold and thrust belt. I am spending the summer in the geochemistry lab separating zircons, K-feldspar, hornblende, and micas for geochronology work in support of this project.

Outside of work, I have been involved with the National Governors Association Conference, which is being hosted by Iowa this summer. The host state always gives each governor and their family a gift, and the Iowa First Lady decided she wanted to give quilts made by Iowa quilters as gifts. I volunteered to help organize this project and am working with quilters from around the state to make this happen.

Bob is a geologist with the Iowa Department of Transportation and is in the field about 25% of his time during the summer months. After 20-plus years of burning wood, Bob finally bought a wood splitter! Now, it only takes us a weekend to split a month's supply of wood. With all that extra time on his hands, Bob has taken up home brewing as a hobby. Please stop by if you're in the area and enjoy a cold one with us!

Jiasong Fang, Assistant Professor

I am writing this report in my room on board Yokosuka, mothership of submersible Shikai 6500, in the Western Pacific Ocean. I am with an international team of microbiologists, marine biologists, geologists, and chemists on a cruise to Nankai Trough. In the sea bottom of Nankai Trough, there are abundant gas hydrates (ice-like crystalline inclusions of predominantly methane) which fuel widely-distributed chemosynthetic communities (clams, tubeworms, etc.). Immense volume of hydrate deposits in the ocean makes it a strong candidate as a cleaner energy resource. It has been claimed that methane-laced ice crystals on the seafloor store more energy than all the world's fossil fuel reserves combined. In the next ten days, we are going to dive to the bottom of the ocean (600 – 4,000 m) to take sediment and water samples and sample microbial mats and chemosynthetic communities. The objectives of this cruise are comparative genome analysis of the Calyptogena symbionts from different depths and study of biological diversity of Nankai Trough or Nankai Bio-Symbiont Cruise (NaBiSC).

My research still focuses on two areas: marine organic geochemistry and environmental biogeochemistry. One of my major objectives of the current cruise is to look for real examples of sedimentary fatty acids produced by piezophilic bacteria which exhibit progressively depleted carbon isotope ratios with depth. We are going to take sediment samples at various depths up to about 4,000 m. Our recent laboratory experiments revealed that carbon isotope fractionation in fatty acid biosynthesis of piezophilic bacteria is pressure-dependent and piezophilic bacteria fractionate carbon isotopes significantly more than surface bacteria. This finding has important implications for marine biogeochemistry. Apparently one cannot use theories and principles of stable carbon isotope biogeochemistry derived from surface bacteria to solve marine biogeochemical problems. I am hoping that the field data of stable carbon isotope ratios of sedimentary fatty acids will support and validate our lab results. Olivia Chan successfully completed her M.S. thesis and graduated in this past May. I am glad to have Shamik Dasgupta to join our group this fall.

I just learned that NSF is going to fund our “buckyball” project. The increasing uses of nanomaterials in commercial products and environmental applications and prudent management of the associated risks require an understanding of nanoparticle ecotoxicology. In collaboration with researchers at Rice University, we are going to examine the ecotoxicity and environmental impact of nanomaterial fullerenes. Specifically, we are going to examine the oxidative stress and membrane lipid changes in Gram-positive and -negative bacteria grown on C_{60} fullerenes. The proposed work will be a first step towards characterizing potential micro-ecotoxicological impacts and delineating the applicability and limitations of nanomaterials and the environmental consequences.

On the teaching side, I tried to improve my classes by continually refining course content. In Contaminant Hydrogeology for example, I added an expanded chapter Subsurface Microbiology and Biodegradation of Organic Contaminants which is deficient in the textbook. Students responded positively to the addition. This fall I am going to teach a new course. It is an introductory oceanography class. It has been a few years since I taught a similar class last time. It should be fun.

DeAnn Frisk, Secretary

I know that I just finished writing last year’s item for the Varve so it’s hard to believe it’s already time to work on another issue of the Varve and get it mailed off.

The basic office operations remain the same, always plenty to do and not enough time to get everything done. Of course, I do like the variety and challenges that go with the position along with the interaction with students, faculty and alumni as well as the university community.

Steve and I have taken a couple of shorter trips this year. We spent Memorial Day weekend at a great bed and breakfast we found in Dubuque a few years ago. The people that run it are fantastic and it’s like going home for a visit. I can’t wait until I can schedule another long weekend there. We also went to Branson, Missouri, over spring break for a few days. We had been there 25 years ago and we were surprised by all the changes. I was glad it was the “off-season” and not so crowded because it was busy enough the way it was. Hopefully we can get a longer trip scheduled for later this year but we’ll have to see how it works in our schedules.

We continue to be very busy with our grandkids and their activities. We have to limit ourselves as to how many of their events to attend because we’d never be home or get anything else done if we followed everything. Again, I am so glad they all live close and we can be a part of their lives on a very regular basis. I’m looking forward to the Alumni Days events planned for September. Hopefully I’ll be around this time to see all of you that make to Ames for the event. Even if you are in town at another time, please stop by and see me and see who is around. It’s always great to see friends and former students of the department.

Varve 13
Chris Harding, Assistant Professor

This is my second year as part of the department and I continue to have many different irons in the fire. Besides having Geological and Atmospheric Sciences as my home department I am also affiliated with the so-called the Human-Computer-Interaction (HCI) program, which now includes a graduate degree program (M.S. and Ph.D.). The HCI program grew from efforts to develop 3D computer graphics and “Virtual Reality” (VR) technology for the engineering disciplines. Against the backdrop of increasing pervasiveness of computers in our society, the HCI program aims to rethink and reinvent the ways that humans interact with computers. As part of this general HCI research effort, I work on improving the way that geoscientists use computers to better understand geoscience data. Sometimes this involves the application of already well established technology, such as Geographic Information Systems, which has formed the mainstay of my teaching activities last year. However, I like to look 5-10 years into the future and to work on systems that go beyond what is used today. Besides the stereoscopic 3D graphics displays (such as the ISU’s C6 CAVE system), which have already become ubiquitous for us VR people, I’ve concentrated on two VR technologies that are still rarely employed for interaction with geoscience data – the sense of touch (haptics) and the use of sound-streams to transmit scientific data (sonification).

Two graduate students support my research: Xianyi (Henry) Huang, who co-majors in geology and HCI and Matt Newcomb, who comes from computer engineering and majors in HCI. Both started their graduate studies last year. Henry has a geoscience background and is interested in using WEPP, an erosion computer-model, and VR to visualize the effect of long-term (10+ year) what-if scenarios for erosion in Iowa. Matt is involved in creating a 3D GIS planning system that supports touch and sound, about which I was able to publish preliminary findings at a VR conferences (HAVE ‘04) in Ottawa last October.

Together with another HCI hire, Dirk Reiners from Computer Science, I supervise Andy Menz’ thesis work that deals with visualizing large amounts of 3D volume data on a PC graphics cluster. This work is supported by an ISU University Research Grant and may result in further research for the visualization of seismic data. In January I was given the chance to take part in several training courses for software packages provided by our alumnus Tom Smith and his company Seismic Micro Technology (SMT), situated in Houston. We have recently received copies of the newest version of this subsurface modeling system and are investigation how to include parts of it into our curriculum. Together with Cinzia Cervato, Ken Windom and Jane Dawson, I am developing new ways to use 3D computer graphics to improve the way that non-science majors learn about relative geologic time in geology intro classes. For this we were fortunate to receive a Miller educational grant this spring, we plan to present the results of this 1-year project at next year’s GSA meeting.

On the service side I’ve been busy organizing this year’s Tristate Geologic field conference which will be held September 23-24, right after this year’s Alumni days and to which you are cordially invited. After not having used a rock hammer for 15 years I was given the opportunity to do so when I visited the ISU field camp in Wyoming for two weeks this summer to explore the possibility to integrate GIS into the course and possibly include a segment on running a fictitious bentonite mining operation (possibly called “World’s Finest Kitty Litter, Inc.”). Although my stay cannot compare to the 6-week course, I was glad to be able to share some of the experiences many of you have gone through in the past (except, maybe, the original toilet arrangements, which, sadly enough, have now given way to port-a-potties). Best wishes to all of you, if you’re around, please feel free to set-up a visit to the VR lab.

Neal Iverson, Professor

My research activities this year have, as usual, focused on glaciers and their geomorphic impacts. I continue to work closely with Tom Hooyer (Ph.D., 1999) of the Wisconsin Geological Survey and ISU affiliate faculty member Denis Cohen. One of the satisfactions of glaciology and geomorphology is that many processes of interest occur sufficiently rapidly that hypotheses can be tested with experiments conducted in real time. With this approach we have learned a lot about glacier flow and its effect on bed erosion. Results of two sets of field experiments beneath the Svaltischen Ice Cap in Norway indicate that the fault where a glacier slides over its bed is mechanically more like a crustal fault than expected, with friction between debris-laden basal ice and the rock bed dominating slip resistance. We have also learned that glacier ice can entrain sediment by regelating into a till bed (melting and refreezing past individual grains). We have built from first principles a theory that predicts the rate of sediment erosion by this mechanism. Also, bedrock erosion beneath the ice cap has been measured using a custom instrument inserted at the glacier bed. This instrument consists of a granite step; stresses on the step are measured as the glacier slides over it, and crack growth within it is recorded with acoustic-emission sensors. Our results indicate that fracture and erosion of rock can occur in just a few days as a result of water-pressure fluctuations at the glacier sole that cause large stress differences in the rock. This summer, as part of the same project, we’ll be going to the Canadian Rockies to study fracture patterns in recently deglaciated bedrock near the Columbia Icefield in northern Banff National Park.

Much of my effort this year has been spent writing proposals to the National Science Foundation, which are in various stages of submittal and review. One of these has been funded to study microstructural characteristics of basal tills of the Laurentide Ice Sheet in Illinois and Wisconsin. Ph.D. candidate Jason Thomason and M.S. candidate Matt Graesch are working on this project and did the laboratory experiments necessary to leverage the money from NSF. A new graduate student, Jackie Shumway, will join the project this fall. Peter
with the opening of the Gulf of Mexico. Our results indicate that much of the formation is Late Cretaceous in age, which favors the former interpretation. Our original work concentrated on the type section in the McCoy Mountains, which lie north of I-10 a short distance west of the Arizona border. More recently, we’ve been applying the same methods to the eastern parts of the McCoy basin in the Dome Rock Mountains, Livingston Hills, and Plomosa Mountains of Arizona and to similar-aged units to the north in the Las Vegas area and to the south around Caborca, Mexico.

Besides the McCoy project, we continue our detrital zircon studies of the Cretaceous to Paleogene sediments of both the forearc basin and Franciscan complex of western California. These studies are helping to constrain the timing and location of flat subduction related to the Laramide orogeny and also address models which call upon large strike-slip motion along the margin at this time (the “Baja-British Columbia” hypothesis). Our data are inconsistent with the Baja-BC concept. Also begun recently is an Ar/Ar study of the Mule Mountains “thrust” system, which is exposed in about the same region as the McCoy Mountains Formation. This fault is generally considered to represent a late stage in the contractional history of the McCoy basin, but an alternate possibility is that it is a low-angle normal fault of either Late Cretaceous or Miocene age.

Our older son, Mark, just finished his fourth year at ISU as a zoology major. Because he changed majors a couple of time he will need an extra year to finish his B.S. He’s now trying to decide whether the next step should be grad school in the life sciences or an MBA program. David is two years behind Mark and is majoring in aerospace engineering. He’s yet to decide what he wants to do after that. Carol is now in the same position she’s had for roughly the last five years. She runs a company of about 15 employees that creates interactive media for the pharmaceutical industry, mainly for teaching sales reps and physicians about new drugs. They’re a subsidiary of a much larger company in New York City and she travels extensively to the home office, as well as to the various drug companies that comprise their clients, most of which are located in New Jersey, Pennsylvania, and North Carolina.

**Germán Mora, Assistant Professor**

This past year was full of accomplishments for my research group. Shikha Sharma, who became the de facto “lab manager” of my group, completed her research on the use of carbon isotope ratios of peat deposits to assess past changes in hydrological conditions. Shikha studied a sequence of peat deposits from Lake Superior accumulated during the last 4,000 years, identifying two dramatic dry periods preceded by two wet events. A paper discussing her findings was recently published in Quaternary Science Reviews. After the completion of this project, Shikha embarked on a new adventure. She accepted an offer to become the Director of the new Stable Isotope Facility at the University of Wyoming. Shikha and her family moved out west this past Spring.

Two of my graduate students also completed their research projects and moved down south to pursue their doctorates at the University of South Carolina. One of them is Alessandro Zanazzi, who worked on the oxygen isotope systematics of temperate mosses for his M.S. thesis. Alessandro presented part of his results at the GSA meeting last year, showing that...
the oxygen isotope ratios of moss cellulose reflect that of rainwater. This finding is significant because it allows us to employ peat cellulose to unravel past climate changes through changes in its oxygen isotope ratios. A paper describing Alessandro’s findings was submitted this past Spring, and we hope it will get published at some point next year.

Weihong Wang was the other student completing a M.S. last year. She was working on understanding the factors that control the oxygen isotopic composition of carbon dioxide emitted from soils. Weihong found that the diffusion of carbon dioxide out of the soil column changes the ratio of oxygen isotopes in the carbon dioxide. More importantly, she discovered that this effect is not constant, but rather variable through time. Although the reasons for this variability are still unknown, her findings is important because a number of regional and global models that attempt to quantify the exchange of carbon dioxide between ecosystems and the atmosphere assume a constant effect of diffusion on the oxygen isotopes of soil carbon dioxide. Weihong is now a Ph.D. student in the Marine Science Program at the University of South Carolina.

Matt Dvorak, a M.S. student, is working on evaluating the effects of land-use changes on the health of tropical estuaries. He has been collecting samples from four estuaries experiencing different degrees of land-use change in their watersheds. He presented his preliminary results at the annual GSA meeting last year and found a close relationship between level of disturbance and primary productivity in estuaries of SW Florida, suggesting that land-use changes have negatively affected the health of these estuaries.

In addition to working with my graduate students and my pos-doc, I taught three classes this past academic year: “Stratigraphy and Sedimentology,” “History of the Earth” with Ken Windom, and “Paleoclimatology” with Bill Gutowski. I was also involved in three additional research projects. In one project, we reconstructed rainfall patterns for northern South America for the past 500,000 years on the basis of geochemical and micro-paleontological data of a marine record. Three papers were already submitted to describe our findings of this NSF-funded project. In another project, we are evaluating the possibility of using isotope markers as a stratigraphic tool to correlate marine and terrestrial Aptian sequences. Finally, I am working with two other faculty members to evaluate the strategies developed by native savanna and prairie vegetation to withdraw water. We are employing oxygen isotopes to trace the movement of water from rain to the soil column and to the studied plants.

This past academic year saw how three people of my group successfully completed their studies and research projects. It was tremendously satisfactory for me to see their academic progress throughout these years and to witness the fruitful completion of their hard work. Although I am going to miss them, I am happy that they are embarking on new academic challenges in their lives. I am also looking forward to working with two new students who will join my research group this coming year. I am sure that their enthusiasm and hard work will contribute to the success of our entire research group. Expect more good news next year!!

Karl Seifert, Professor Emeritus

Carole and I are both doing well. We made many visits to St. Louis this past winter to help care for her daughter who had a staph infection and her husband who had lung cancer. Both are doing well now. For those of you who knew my first wife, Norma, she had a major stroke and is now in a nursing home in Sun City Center, Florida. Our kids have been taking turns watching over her and taking care of her home and bills.

This last year has been spent working on a long manuscript discussing the geochemistry of the Adirondack Anorthosite. I had two coauthors, but one died last year. Both coauthors worked at Washington University in St. Louis. Larry Haskin was the co-author and friend who died a few weeks ago; the school had a big celebration of his life and works which Carole and I attended. My other coauthor is Bob Dymek and he is doing fine except he must be frustrated with my rate of progress. Nevertheless we hope to submit the manuscript to a journal publishing a special issue in honor of Larry Haskin next December.

Carole and I are about to leave for summer vacation in Calgary to see North America’s largest rodeo, the Calgary Stampede. From there we will drive to Vancouver Island and the Olympic Peninsula to sight-see in what is probably the most remote region of the lower 48. As always, we try to avoid the large cities, although we will fly into and out of Seattle.

Be sure and write to me and/or the department to let us know what you are doing these days. We always enjoy knowing how you are doing!!

Bill Simpkins, Professor

My stress level decreased further this year when I was notified in May that I would be promoted to Full Professor. This was great news for me personally and for the department as a whole. My goal was to accomplish this by the time I was 50 years old, and, having just reached that milestone in December 2004, I came pretty close. The promotion was due in large part to a number of recent publications from students and co-workers and some recent grants. In particular, Martin Helmke’s papers from his dissertation on fractured till appeared Journal of Environmental Quality and Vadose Zone Journal (an on-line journal) in late 2004 and early 2005. The 3rd manuscript was recently accepted in Ground Water. An article that I co-authored with Mike Burkart and others on phosphorus in groundwater appeared Journal of the American Water Resources Association in June 2004. My article on the application of the analytic element model to Clear Lake, will come out in Ground Water this year as part of a special CD-ROM volume on analytic element modeling at the end of 2005. I am revising another manuscript to JAWRA on for a special edition on riparian buffers and will re-submit that this summer. I received a big USDA grant with a team of economists,
ecologists, hydrologists, and agricultural engineers, to examine the water quality effects of conservation practices in 3 watersheds in Iowa. I also completed my 8th year as an Associate Editor for Ground Water and am winding down with my responsibilities with the Hydrogeology Division of GSA.

I mentioned last year the formation of a CUAHSI group (Consortium of Universities for the Advancement of Hydrologic Sciences, Inc.) at ISU. A group of us from many departments submitted a proposal to hold Vision Paper Workshop in June 2004 on the topic of “The Hydrology of Intensively Managed Landscapes (IMLs) in the Glaciated Midwest U.S.” The workshop was held on June 15-16, 2004, at Reiman Gardens, had about 45 attendees, and was by all accounts a big success. In addition to hammering out the scientific questions, we led field tours in the Walnut Creek watershed and the Risdal Riparian Buffer. I presented a Cyberseminar in October on the topic and am writing up a paper from the workshop proceedings as a paper to submit to Water Resources Research. A core group of about 20 people, including many new faculty on campus, participated in CUAHSI Cyberseminars on campus this year. In late August, I also participated in a CUAHSI conference at Utah State University on the formation of Hydrologic Observatories.

My fall teaching load included Hydrogeology (10 students) and Watershed Hydrology and Surficial Processes (18 students; co-taught with Dr. Lee Burras). We tried “The Civil Action” case once again (http://www.las.iastate.edu/newnews/geotrial04.shtml) in Hydrogeology and the defense came very close to winning this year. I co-taught Energy and the Environment with Paul Spry in the spring with about 70 students. I found this course to be rewarding in that is caused the students to really think about energy issues and the environmental consequences. The field trip to the Power Plant, Resource Recovery Plant, and the Bioenergy Conversion Facility was a big hit once again.

In student news, Lucie Macalister (Colorado School of Mines) joined us in mid-semester to work on the conservation effects assessment project. Maneesh Sharma left us in spring to pursue studies at the University of Wyoming and follow his spouse, Shikha. Cheng Cheng and Mike Cheng will finish up there M.S. degrees on buffer modeling this fall. I have taken on 3 new students for fall 2005. Evan Chistianson (Gustavus Adolphus College) will be working on a new City of Ames grant to re-assess the Ames Aquifer. Jenny Abrahamson (Beloit College) and Mindy Buyck (Illinois State University) will be working on riparian buffers. Former Ph.D. student Martin Helmke has just taken a tenure-track teaching position at West Chester University outside of Philadelphia. Graduate student Tim Wineland is working for MWH Americas in Des Moines and had a baby this year. I had dinner with Jim Eidem and Beth Johnson (both doing well with Geomatrix in Minneapolis) and their respective families at the North-Central GSA meeting in Minneapolis in May 2005.

Finally, on the home front, Scott is now 16 and presently in Europe with the Western Civilization field trip for 20 days sponsored by Ames High School. He will be a senior and we are making 6 college visits this summer in the Midwest in an attempt to narrow down his potential choices. He wants to study biochemistry and genetics. In addition to the usual band and choir stuff, the highlights of his year included learning how to drive (with a manual transmission), being in the Buffalo Bills quartet for the Ames High School production of the Music Man in February, and playing no. 3 on the varsity tennis team. Kelsey (now 15) sailed through her freshman year at Ames High and enjoyed being in all the band and choir activities. She did a project with me relating water-table elevation to precipitation for her Honors Earth Science class and the results came out quite nicely. Vacation in 2004 took us to the Civil War battlefields in the eastern U.S., Washington, D.C., Cape Hatteras, and Mammoth Cave. Vacation this year will take us to the north rim of the Grand Canyon, Arches National Park, Rainbow Bridge, Santa Fe, and some whitewater rafting in Colorado.

Team Hydro will be 6 strong come fall, so please stop in and see us and tell us what you are doing!

Paul Spry, Professor

Last year marked my 22nd at ISU; how time flies!! I submitted several manuscripts last year and had quite a few papers appear in journals. I have started a very successful collaboration with Luca Bindi, a mineralogy professor from the University of Florence, Italy. We have been working on the mineralogy and crystallography of unusual or rare tellurium-bearing species from several localities around the world. I was able to visit Luca in Florence last summer during the International Geological Congress. At that same meeting, I presented another paper with other new collaborators, Stellios Tombros and Karen St. Seymour from the University of Patras, Greece. We have been working on the geology, mineralogy, and geochemistry of gold telluride mineralization at Panormos Bay, Tinos Island, Greece. This has turned out to be a terrific project as nearly 100 minerals have been identified by us from this location, including two new unnamed copper-silver sulfotellurides. We are planning on working with Luca to get these minerals officially named. I will be visiting Greece this summer to visit Stellios and Karen and to generate a new project on the geochemistry of gold deposits for new Master’s student Todd Bonsall. However, the two projects that took up most of my time last year were those with graduate students, Adriana Heimann and Patrick Hook. Adriana and I have been working with a group of colleagues in Australia, on our NSF supported project on garnet and garnite-bearing rocks in the Proterozoic Curnamona Province, Australia, and their genetic relationship to Broken Hill-type deposits. We have generated an enormous amount of data for this project, requiring several trips to the University of Minnesota (for me) and a trip to Macquarie University (Adriana Heimann). We are currently working on several manuscripts, which we hope to submit to journals during 2005. Patrick Hook finished his Master’s thesis this year on the “The reduction of concrete deterioration in Iowa highway concrete using crystal growth inhibition techniques.” This
project was done in collaboration with Bob and Anita Cody and was financially supported by the Iowa Department of Transportation. Bob Dawson (IDOT) was a great help on this project and others that we have done on concrete deterioration over the last decade.

Apart from three papers that I presented at the IGC meeting in Florence, Adriana and I also presented papers at the regional North-Central section Geological Society of America (GSA) meeting in Minneapolis and at the national GSA meeting in Denver. I also attended the Eugen F. Stumpfl Memorial Symposium in Leoben, Austria during April. Eugen was one of the world's leading economic geologists.

The previous academic year was also fun because of various classes I continue to teach. I am teaching “Igneous and Metamorphic Petrology” as well as “Mineralogy and Earth Materials” with Ken Windom, and also “Energy and the Environment” with Bill Simpkins. This year I will be adding a new course “Gems and Gemstones,” for non-science majors, to my teaching load. So far 42 students have signed up for the course with minimal advertising. Last year, I continued my duties on the editorial board of three journals: Economic Geology, Mineralogy and Petrology, and Canadian Mineralogist.” Added to these duties is that I am guest editor for a special issue on “Selenide- and telluride-bearing precious metal deposits,” that will appear in Mineralogy and Petrology in 2005 or 2006. I have enjoyed talking and corresponding with several of you by phone or by e-mail over the last year. Please keep in touch by phone at (515) 294-1837 or by e-mail (pgspry@iastate.edu). I hope to see many of you in the fall at our alumni reunion.

Carl and Georgia Vondra at the 2005 Geology Spring Banquet.

Carl Vondra, Distinguished Professor Emeritus

Although retired, I have managed to keep as busy as ever. I am still continuing work in Africa. Last August I spent two weeks in the field in the Serengeti National Park in Tanzania participating in research at a significant Middle Stone Age site. I will return again this summer, however, to a much expanded project involving over twenty scientists and excavators.

I returned from Tanzania in September in time to teach, “An Introduction to Geology,” to a capacity class of retirees for Iowa State’s College for Seniors. It was quite a refreshing experience to have an excited and interested group of students. About half of the class consisted of retired ISU faculty members. This was my fourth class for the College for Seniors. I have agreed to do another next spring. This time the topic will be, “The Geology of Iowa.”

Georgia and I continue to travel. The highlights of the past year were an excursion to the National Parks and Monuments of the Colorado Plateau region in Colorado and Utah; a cruise in the Adriatic and Mediterranean Seas; an extended stay in Paris; and several visits to our children’s homes in Colorado, Indiana, and Minnesota. Needless to say, we have had a most enjoyable year.

On June 4 of this year, Georgia and I reached a milestone. We celebrated our 50th anniversary of many wonderful years together.

I look forward to seeing many of you during our alumni days this fall.

Ken Windom, Associate Professor

Well, we have put another academic year to bed and are getting ready for the next. As I write this, I am actually in the middle of teaching Geology 100 during the first summer session. This is always a bit more enjoyable than teaching the large intro courses during the regular year because the class is only about one-tenth as large. You have a much better opportunity to get to know the students. This is also a time I get to try out some different teaching methods that will ultimately be tried in the larger courses. Currently, I am working on the most effective ways to use a new technology in the classroom that will allow students to provide me with almost instant feedback. The formal name for these devises is “Personal Response Transmitter” but most people just call them “clickers.” I am finding them to be very valuable because it forces students to think about the subject matter almost immediately after it has been introduced in class (sometimes even before I introduce it) plus allows me to determine which ideas are getting through to the students and which are not. I have found some of the results to be very enlightening. Many things I thought were quite obvious turned out to be anything but obvious to the students. Using the clickers also provides a controlled break in the lecture, allowing students to refocus their thoughts if they have allowed their minds to wander.

I took on a new teaching responsibility this past year. German Mora and I are sharing History of the Earth. I do the first part and re-emphasize plate tectonics and basic geologic principles used in relative age determinations, along with radiometric age determination techniques. I also cover the Precambrian. This sets the stage for German to come in and present the geologic history of the Phanerozoic.

I continue to teach Environmental Geology each semester and Geology for Engineers and Environmental Scientists each fall. I team-teach Mineralogy and Earth Materials in the fall and Igneous and Metamorphic Petrology in the spring with Paul Spry. Trying to stay current in the science and current in my teaching techniques keeps me busy but I think I am a better teacher as a result.

On a personal note, Jane and I continue to enjoy life in the country. Maintaining an acreage requires a different kind of expenditure of energy: physical vs. mental. Doing this type of work provides a good break, however, and keeps me more mentally alert than would be the case otherwise. I am looking forward to seeing many of you this fall.
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