

UMD Geological Sciences Newsletter for Alumni & Friends

Editors: Charlie Matsch, Claudia Rock, Colleen Wergin

Would you believe I saw the first flake of snow this morning? I guess that is a prelude of things to come. We have had the most beautiful fall here that I can remember. I still have geraniums blooming outside; however, I think we will get our first really big freeze tonight and they will be gone. But the Department won't. We are beginning a planning process to move the Department forward for the next ten years. We had an external review last spring, and one of the major recommendations of that committee was for the administration to improve our space and infrastructure. For the first time since I have been here (and I got my silver bulldog this year), I have not seen such commitment from Administration. Our building is now on the "university list" for renovation. So please all, keep your finger tips crossed for us.

As part of this process, I had a meeting with the graduate students yesterday to discuss items pertinent to them, and to ask them how they see the Department in ten years. This was a fruitful discussion, much of which doesn't need to be discussed here; however, they came up with one idea which you as alumni can help with tremendously (and it won't cost you any money). They said they would like to see a web page where we had a list of alumni that would be willing to answer questions about jobs, and if possible be able to give them contact information for prospective jobs. I thought that this would be a great idea. So, if some of you are willing to be contacts, drop me a line and I will make sure that your information is available to students.

We are also in the throes of moving our introductory labs to some new space being created for us in the Chemistry Building. Pharmacy is taking over most of Life Sciences, and that building will be

renovated next year. Thus, we are being "moved". We are supposed to do this over winter break, but the space in Chemistry is simply a "gutted" chemistry lab right now—I sure hope Facilities Management can get it done on time.

Elsewhere in the newsletter, you will see a plea for help with a new "microscope lab". Right now we are using my favorite microscopes (Zeiss), which are very old, and we cannot get parts for them any more. It took new faculty to recognize this (I have been using them so long I just didn't notice), and they need to be replaced with good scopes with binocular heads. These would be linked via computer enabling me to teach optics much more easily than I do it now (and also make it easier for the students.) It will also enable better teaching of petrology and stratigraphy-sedimentology. We would like each microscope to be dedicated, and I would love to see one from those of you who took Earth Materials III Spring 1981—those of you who had to suffer metamorphic petrology in my hands. (I am using the word suffer, because you really did—you were my first class. Thank you for being so patient.)

If you also look toward the end of the newsletter, you will see two pages dedicated to presentations and awards that our undergraduate and graduate students have earned. I am extremely proud of them. They are a great bunch of students.

On a personal note, this is the last time you will see my name on the front page. Next year I am going to be the director of the Study in England Programme, and when I return in Fall 2007, I will inhabit a smaller office down the hall (if there is one for me.)

All the best in the new year!

SPONSOR A MICROSCOPE

As I begin my fourth year at UMD, I can tell you unequivocally that the quality of the educational opportunities our undergraduate students receive is very high. The curriculum is up-to-date, courses are in-depth, the exposure to field work is frequent and varied, and many of our undergraduate students are involved in their own research projects.

That said, there are many improvements we can make. Anyone who has toured the Department recently knows that our facilities, many in place for several decades, are "well worn"! In my Petrology class, for example, the polarizing microscopes we routinely use have a number of limitations and are frankly, just plain wearing out. They have served a useful lifetime of more than three decades, but our students are hampered from gaining the maximum potential that microscopy provides.

Many geoscience departments around the country have removed aspects of microscopy from their core curricula in order to reduce required course loads and emphasize new fields. While we have introduced new areas in our curriculum at UMD, we also believe that our students should have a solid grounding in understanding real rocks and earth materials! Our emphasis in this area seems to be paying off – our students are top-performers at field camp and have continued to show success moving on to opportunities in outside careers and graduate school.

You can help! We have set a goal of building a new Microscopy Lab within the Department over the coming year. This new lab will be used regularly by students in Mineralogy, Petrology, Sedimentology, Structural Geology and Ore Deposits classes. The new lab will be used for instruction as well as undergraduate research. We are offering an opportunity for alumni to



sponsor a microscope in the new lab. The lab will consist of 15 new student scopes, linked together by a video-capture and projection system so that students and faculty can interact in real-time. Along with a central workstation and photo system, the new integrated lab will be a big leap forward in our ability to teach interactively and provide high-quality technology in the classroom. An individual or group contribution of \$5,000 will allow us to buy one new microscope for this lab. We welcome sponsorship from companies and alumni class groups (say, the Class of 1970 or 1980!). All sponsored microscopes will be acknowledged with a nameplate permanently fixed to the microscope showing the name of the contributor. Funds for the other components in the lab will be provided by other sources.

This is a chance to give back to the Department in a tangible way! We think that our students will really value the opportunity to see that the microscope they are assigned has been donated by someone who was once a student themselves! To kick off this fund-raiser, Charlie Matsch has offered to buy the first scope. Don't hesitate – please contribute today!

John Goodge



ERIK BROWN I am in the midst of purchasing a great new toy for the lab: an x-ray fluorescence core scanner. This device will allow rapid determination of the composition of lake or marine sediments with mm or even sub-mm scale resolution. Basically, you put a 1.5 m split sediment core section into the instrument and at the end of the day you have millimeter-scale resolution measurements of a suite of a couple dozen elements (for example, Al, Si, Ca, K, Ti, Mn, Fe, Rb, Sr, Zr, Pb, Hg). This type of rapid analysis is critical for evaluation of the hundreds of meters of sediment recovered in this year's lake drilling operations on Lake Malawi (East Africa) and Qinghai (China). It will be really cool!! I'm also continuing my Lake Superior project using moored instruments that measure dissolved oxygen and carbon dioxide. This should let us evaluate biological activity in more detail than would be possible with ship-based surveys.

Spring semester the whole family will be packing up to head to Birmingham (UK) where I will be teaching in UMD's Programme in England. The kids are looking forward to seeing Harry Potter castles (Andrew, 9), Robin Hood castles (Lianna, 7) and Thomas the Tank Engine trains (Matthew, 3). It should be a fun time!

TIM DEMKO 2005 has been a busy year for me. The NSF-REU (Research Experience for Undergraduates) sponsored project on paleoenvironments and dinosaurs in the Jurassic Morrison Formation of the Bighorn Basin in Wyoming continued on into the second of three years. This year two new UMD students, Kat Rocheford and Alyson Cartwright, along with Sara Kubarek and Emily Swor who participated in the first year of the project, joined eight

other students and two other faculty members in the field for another productive season. All of the UMD students are carrying on their projects through this school year supported by the UMD UROP program. Several other undergraduates have been working on UROP-sponsored research with me this year, including Erik Gulbranson, who is teasing apart the diagenetic sequences in continental limestones in order to facilitate stable and radiogenic isotope analysis, and Corey Wendland, who is looking at the trace fossil assemblages preserved in paleosols in the Triassic Chinle Formation in Utah. The new Vertebrate Preparation Lab, which is located in the display case area on the first floor of Heller Hall, was a success and continues to be a popular stop for visiting school groups and campus tours. In fact, the lab is now undergoing renovation and will be better than ever! My veteran graduate students, Joe Beer, Marsha Meinders Patelke, and Ryan Erickson, are at various stages of completion of their projects, and in fact, Joe is defending his Master's in December and has accepted an offer with EnCana Oil Company in Denver, Colorado. I have two new graduate students, Riyad Ali-Adeeb, who will be working on a sequence stratigraphic and magneto-stratigraphic study of the Jurassic Morrison Formation in central Utah, and Lisa Marlow, who will be looking at the Mesozoic development of the Tethys and the eastern Mediterranean via some incredible seismic data we have acquired from the company TGS-NOPEC.

My wife, Laura, and son, Noah, are doing great and were able to join me for the field season this past summer in Wyoming. Laura is still working part-time at the Bong Historical Center in Superior and Noah, among many other activities, is learning to ice skate (and eyeing

hockey sticks with a gleam in his eye...). Next year looks like another barn-burner for the Demko's. Along with the third year of the dinosaur project, we are also going to participate in the inaugural UMD Study Abroad field course in Poland!

CHRISTINA GALLUP Two new graduate students joined our lab group this year, Valerie Gamble and Erin Endsley. They will be working on a newly funded multi-University NSF project to drill Lake Petén Itzá in Guatemala. Drilling will commence in January 2006 and continue for three months. Our lab will be working on U-Th dating the gypsum layers in the lake sediments. Multiple proxies from the sediments will provide a long record of climate change in Central America. We are also working on cave deposits, or speleothems, from the region to expand our climate record.

Our group will have a strong presence at the annual American Geophysical Union meeting this fall: Nick Freiburger will present new results on Barbados corals and past sea level, Kristin Riker-Coleman will present new dates on Hawaiian submerged corals, and Leah Gruhn will present her Master's thesis work on stable isotope and Sr/Ca ratios in submerged fossil corals from Papua, New Guinea.

JOHN GOODGE The past year has been a good one for John Goodge. Spring was busy with Petrology, and he had a great group of students to kick off the first offering of a Tectonics class. Early in the semester it was fun to see undergrads and grads cutting out plates with paper and scissors to learn about plate kinematics, and things just diverged from there! John had a productive summer analyzing data, working on

manuscripts, and starting the logistics preparations for a new Antarctic field season. John was elected as Fellow of the Geological Society of America this year.

John has been collaborating recently with UMD alum **Jeff Vervoort** (M.S. thesis with John Green, and currently on the faculty at Washington State University) on the Hf-isotope geochemistry of North American igneous rocks. They analyzed the Hf compositions of igneous zircons from ~1.4 billion year-old granites stretching across North America in order to better understand how the original melts were generated. It turns out the granites of this age have a distinctive Hf-isotope signature that potentially can be used as an isotopic tracer in detrital zircon populations in order to determine sediment provenance. In May they presented their results at the international Goldschmidt Conference, sponsored by the Geochemical Society, and presented similar findings at the annual Geological Society of America meeting in Salt Lake City.

Michael Rieser finished his Master's thesis on a Paleoproterozoic metamorphic complex in the Mojave Desert area of eastern California. These rocks represent some of the oldest crust in western North America and are important not only for issues of crustal growth in Laurentia, but also for potential geological correlation with other cratons during the time that Proterozoic supercontinents are conjectured. Michael's work documented the crustal conditions and strain history of rocks in this metamorphic complex, and he identified a potentially significant crustal shear zone that may have played a role in crustal amalgamation.

After a year off from Antarctica, John headed back to the ice in the fall of 2005. He is collaborating on a study of Holocene glacial deposits with a colleague at Indiana University-Purdue. The goals of the project are to use glacial deposits left by major ice streams to tell us what kinds of basement rocks underlie the main Antarctic ice sheet and to learn about the balance of ice moving outward from the East and West Antarctic ice sheets during the Last Glacial Maximum. From this study we should learn about the ice-covered East Antarctic craton and also how the ice behaved during the last major glaciation, which is important for constraining climate models. **Devon Brecke**, who came to UMD this fall to start work on her Master's thesis, headed to Antarctica with John on this year's field season. Devon focused her research on the provenance of these tills by studying the petrology, geochemistry and geochronology of sediment and clast material in order to define the kinds and ages of materials being carried by the major ice streams flowing off the craton. Two undergraduate students, **Diane Curelli** and **Katie Brosch**, worked on an independent research project having similar goals, but working on marine sediment cores and dredge hauls from the Wilkes Land coast of Antarctica. All in all, John has deviated a fair bit from outcrop-based hard-rock geology – now just applying hard-rock tools to the hard bits found in glacial deposits!

JIM GRANT The event of the year was the birth of our first grandchild, Tara, born to Fiona and Ravi in January. We made it down to her birth with half an hour to spare. Counted fingers and toes - all there, thank God. She is a charmer, with black hair and brown eyes and a



smile that lights up her whole face. Her parents have raised the bar of “doting”. The rest of us think she's OK, too. We've been down to Minneapolis somewhat more than usual, partly to visit Tara, and partly press-ganged into service on Fiona and Ravi's new Victorian house.

Ian and Lisa still thrive: I at last chose my retirement gift from the Department, in the form of a 19th century Chinese cabinet from Ian's shop, or Aladdin's cave as I think of it. Lisa is still very much appreciated at Guidant (and wherever she goes) and we hope the takeover by Johnson & Johnson remains friendly.

Christabel is possibly starting to cut back at the Bong WWII Center. She has a small but very good staff now, and is talking about going to shorter hours next year – with more time for us to gadd about while we're still able. We only gadded about a little this year. We enjoyed skiing at The Canyons in Park City in March, then a great family wedding near Monterey, California, and in June we went to Chicago for the 100th anniversary of Rotary. The convention hosted more than 50,000 Rotarians, which is pretty awesome in one building! A tidal wave of humanity from all over the world. We decided to stick around Nebagamon for the summer – why go anywhere else, it's so gorgeous. Alas, in July I had a short but very sharp bout of what was probably a variant of West Nile virus with sudden limb paralysis. Totaled my car, scared and puzzled all and sundry and then it was gone.

As for geology, if you need to feel humble try THERMOCALC. As the year turned, I was humming along calculating equilibria in PT and

TX space, trying to test this model against my experimental melting results. In March I had a grid of reactions that was a dead ringer for the quantitative one I derived 20 years ago for the rocks of Morton Pass. I was about to send this over to my cobbers in Melbourne, when they sent me an update on the THERMOCALC program that showed convincingly that my model was a pretty piece of fiction, and I had to start again. Which I did, and it worked out differently but reasonably, and now I've sored (not a misspelling) to a new plateau with different problems as we try to tune the model more closely. Soon I'll have gone as far as is worthwhile until they deal with a couple of problems that I was able to identify a year ago, particularly the temperature at which orthopyroxene first appears. Next on the agenda is back to the microscope and probe to finish dealing with the wonderful refractory restite from the Bushveldt that Sally Drews did an REU project on so long ago. I've an invited review of the isocon method coming out this month in a special volume of *Physics and Chemistry of the Earth*. Twenty years later it still appears to be a simple and useful remedy for whatever ails your rocks compositionally. Apart from that, I'm due to do a course on geology of the National Parks for University for Seniors in winter quarter, which should be fun. Retirement is still the way to fly!

Best wishes for a happy Christmas and a superb New Year!

JOHN GREEN Along with various birding/exploration trips to far corners of the state and our usual family visit to Maine in August, I've been keeping my fingers dirty with various geological projects such as continuing to advise Minnesota

Geological Survey geologists (Terry Boerboom and Jim Miller) in their new round of mapping on the North Shore, and teaching geology courses for the University for Seniors here on campus and at the North House Folk School in Grand Marais (both with field trips, of course). I also presented a review of geochronology of the Midcontinent Rift System at the North Central GSA meeting in Minneapolis in May (my first attempt at PowerPoint). I'm continuing to serve as a board member of the Sugarloaf Interpretive Center Association and the Superior Hiking Trail Association, as well as on the (Minnesota DNR) Commissioner's Advisory Committee for the Natural Heritage/Scientific and Natural Areas Program. For dessert I've been helping to scout out a route for the Superior Hiking Trail up in the hills between Duluth and Two Harbors – all bushwhacking, and I've begun work on a booklet, to be funded by the DNR's Coastal Program, on the Geology and Natural History of the Superior Hiking Trail in the City of Duluth (all 39 miles of it). To round out our family's year, we became proud owners in May of a Toyota Prius (~49 mpg), and Jan was honored as an Environmental Hero by the Wilderness Society in September.

VICKI HANSEN We've had a wonderful year in structure-tectonics and Venus. The big news for us is that we just moved into a new lab space, which has been appropriately dubbed the Planetary Processes Laboratory. We even have our own logo thanks to a night or two when Nick Lang needed a break from manuscript writing. Also, we are in the throws of updating computer and visualization equipment. If you are in the neighborhood, please stop by and ooh and aah with us—we're hoping

that all will be in place very soon! In addition to adding two new gorgeous HUGE write-on Cintiq monitors to replace the 15" Cintiq monitors at the Mac mapping stations, we'll be adding a "windows" workstation (I cannot actually believe that I am spending good money on a non-Mac computer!) so that we can project our Venus mapping using GIS Globe. The problems that we are now addressing are such that projection issues present very real stumbling blocks. But thanks to the new global workstation, and Roger Bannister's incredible computer expertise, we'll be compiling global maps of Venus in, well, a truly global environment.

On the people front: Kelly McDaniel defended her Master's thesis this summer, the first of her incoming class! Congratulations, Kelly! Roger Bannister is well on his way to completing his Master's research, now writing, writing, writing, when he is not figuring out ways for us to upgrade the lab with regard to computers and visualization facilities. Undergrads Taylor Nordberg and Adam Brewer are involved in UROPs, each mapping about 800 by 800 km regions of two of Venus' crustal plateaus, aimed at understanding the evolution of structural terrain. We believe that these distinctive, beautifully deformed regions represent expanses of ancient scum, formed across truly immense lava ponds. We hope to succeed in roping freshman Kirsti Hakala into joining the group when she is not on the ice with the Women Bulldogs.

The group presented posters and talks at several meetings throughout the year. We had a good showing at the Lunar and Planetary Science Conference in Houston this past March. We submitted three VMap quadrangles (25° by 30° regions)

to USGS for review and publication (hopefully!) as part of the NASA Venus Mapping program. Ivan Lopez (V52; my Spanish colleague and past Ph.D. student), Nick Lang (V24), and I (V23) each took a lead role on one for the quadrangles. These are huge mapping and writing efforts and it is fair to say that we are all pleased to have the beasts on others' desks at this point! V35, Ovda Regio (Bleamaster and Hansen) was finally published this year. The NASA Mappers meeting held at the Air and Space Museum in Washington, D.C. this past June provided an excellent opportunity to catch up on Venus and Mars mapping. In August, I journeyed to Scotland for a Chapman conference on plumes. The trip was much too short. The Scottish Highlands reminded me so much of past field work in Yukon Territory, Canada; truly glorious, though a tad soggy! I wished that Jim and Christabel Grant could have joined me. Nick, Roger, Taylor, Adam and I all flew to Salt Lake City for the GSA meeting where we all presented talks.

Looking ahead to 2006, Taylor and Adam plan to present their UROP research at the national conference in North Carolina this spring. Roger and Nick will be off to the LPSC meeting in Houston. I hope to attend a Chapman Conference on Venus in February after spending several weeks as a visiting scientist at the Planetary Science Institute in Tucson, Arizona where I will collaborate with wonderful colleagues Les Bleamaster and David Crown on both Venus and Mars research. We hope to move Roger and Nick on their way come May - fingers crossed, to bigger and better things (or at least better paying!) Next spring and summer I hope to finally get involved in fieldwork in

northern Minnesota. Venus is fantastic, but I think that I need a fix of ductile shear zones. Here's hoping that this winter brings us at least as much snow as last, and that all of you are well.

TOM JOHNSON This past year has been an exciting and productive one, with much of the excitement centered on the Lake Malawi drilling project. Chris Scholz from Syracuse University (M.S. – UMD, 1984) was the lead principal investigator on the project, with co-PI's John King of the University of Rhode Island, Andy Cohen of the University of Arizona, and me. We had hoped to be drilling in early January when the rainy season brings calm conditions to the lake, but shipment delays and technical difficulties pushed drilling operations back. We finally headed out onto the lake on February 25th, and for the following two weeks encountered one technical challenge after another, culminating in a malfunction in the dynamic positioning system. Fortunately our drill string was just above the lake floor so no damage was done. We had 9 meters of mud to show for our \$4 M operation, with prospects of facing complete failure. However, we persevered, ultimately solving all of our technical problems, and by March 12th we were running an efficient round-the-clock drilling operation. We recovered more than 623 m of core at two sites (92% recovery), in seven holes, including one hole in 600 meters of water that reached a subbottom depth of 380 m. The project triple-cored a high-resolution site in the north basin, which extends back ~100kyr, double cored the deep site covering the past ~200 kyr, and single-cored the deep site to 380 m, perhaps 1.5 million years in age at the bottom. We finished drilling operations on March 24th, having expended all our operational funds, and went ashore the following morning, after five

weeks of living on the barge accompanied by the most spectacular water spout and lake fly hatch I've seen in my twenty years of working on the African lakes. The longest continuous record cored in Lake Malawi prior



to this was 25,000 years; this is the first time any of the African rift lakes has been drilled.

Two of my Ph.D. students successfully defended their dissertations this year. Andy Breckenridge (Ph.D., Geology and Geophysics) worked on a number of piston cores from Lake Superior, analyzing the varved glacial-lacustrine sequence laid down after the Marquette re-advance. Andy was able to establish a stratigraphy of carbonate abundance and varve thickness that could be correlated across much of the basin, related to both the rate of retreat of the Laurentide Ice Sheet and to discharge from Glacial Lake Agassiz between 9000 and 10,600 years ago. Lindsay Powers analyzed cores from Lake Malawi, applying a new sedimentary signal of past lake temperature to derive a 25,000 year history of thermal change in this part of East Africa. The signal is TEX86, based on the composition and structure of lipids from a group of aquatic microbes called crenarchaeota. This "paleothermometer" was first developed for ocean sediments in 1982 by Dutch scientists. Lindsay demonstrated that it works for lake sediments as well, publishing her first results in *Geology* in 2004.

This is a major breakthrough in continental paleoclimatology, and no doubt will lead to new discoveries of how the thermal history of past continental temperatures is linked to the global climate dynamics.

My M.S. student, Jon Van Alstine, is currently analyzing a suite of multi-cores that we took at an offshore site in western Lake Superior near Isle Royale. The site is a classic setting of ring depressions that result in an unusually complex lake floor morphology for a deep lake basin. Jon is determining how variable sedimentation rates and sediment composition can be within such a small area, which will have application to coring strategy to be used when analyzing Lake Superior sediments for contaminants.

I am on sabbatical this academic year. Kate and I are currently living in Nyack, New York, while I am carrying out my research at Lamont-Doherty Earth Observatory of Columbia University. The Lamont campus is up the Hudson River a few miles from New York City, situated on a beautiful old estate on the palisades. The rocks look like they belong on the North Shore! In January we head overseas for seven months, spending time in England, New Zealand, and Australia. So, we have lots to look forward to!

CHARLIE MATSCH Not long after last year's newsletter was in the mail, I began an unexpected adventure into the world of hospitals, doctors, surgeries, serious medications, and finally, physical therapy, all the aftermath of the discovery of cancer cells in my colon. The good news is that surgery successfully removed the trouble. The bad news was I developed a life-threatening

infection. After weeks at St. Mary's Intensive Care Unit and Polinsky Rehabilitation Center, I can say that I am feeling better than ever. What a way of avoiding a Duluth winter!

Although recovery was the major focus of my energy throughout the spring and summer, I did some traveling to Maine in June and August, Tucson in late September, and to the GSA in Salt Lake City in mid-October. I gave myself a physical endurance exam in my old Field Camp stomping grounds in the Wasatch Mountains on hiking trails around Jupiter Ridge near Park City, in Big Cottonwood Canyon, and finally a trek from Alta in Little Cottonwood Canyon into Albion Basin. Grade: A- (I stumbled a few times).

So I'm back doing the things that I love, feeling strong and really happy and grateful for how things turned out, and hanging in there for the long haul. My regional challenge during the New Year is taking on the Superior Hiking Trail! Best to you all in 2006.

HOWARD MOOERS Happy holidays everyone! Last year at this time I was in the midst of classes in Birmingham, England, on UMD's Study in England Programme. Our time in Europe was great. Kathleen, Ian, Lilly, and I visited nearly every corner of Britain and also took a week to visit friends in Potsdam, Germany.

We returned to Minnesota on January 1, greeted by cold, snow, and wind. It didn't take long to get back into the swing of things at UMD. I taught Astronomy and Geomorphology, and a couple of independent offerings in glacial geology during spring term. But the international travel bug bit again, and I returned to England over Spring break to help out with a research project that we started earlier (Lilly came with me and returned to school for the week).

Two undergraduates on the Study in England Programme were conducting research projects (UROPs) under the direction of Steve Sternberg (Chemical Engineering) and me. Amanda Putz and Jackie Berger were enrolled in my geology class as well as Steve's air pollution class. We proposed that they use a measure of tombstone corrosion as an indicator of the spatial distribution of acid rain during the industrial revolution. The students traveled to numerous cemeteries throughout the English Midlands looking for evidence of corrosion that could be quantified.

I mentioned last year that Phil Larson and family moved to Anchorage, Alaska. However, Phil and I are still working on a number of projects, and Phil hopes to finish his Ph.D. by January. We have a number of papers in press or review that are related (at least peripherally) to Phil's dissertation.

For those of you that are getting grey hair, you may remember Heidi Rantala. Heidi defended her Master's in the spring and is currently finishing a Ph.D. at the University of Alabama.

Other grad students are hot on the trail of their degrees as well. Heather Anderson (MN-DNR) is working on changes in till composition and the origin of washboard moraine of the Des Moines lobe in southern Minnesota. Charlie Matsch is quite supportive of this project, and is always willing to tell us if we are on the right track or not. We are doing fine as long as we read carefully Matsch (1970, 1972). Margretta Meyer is in the final throes of her study of the Rogen moraine of the Rainy lobe and hopes to finish by January.

The new addition to the grads is Irv Mossberger. Many

of you know Irv as the long-time hydrogeologist with Twin Ports Testing. Irv dumped his lucrative career in the environmental field, got his wife, Maria, a second job, and is now working on groundwater controls on slope stability in the Nemadji River watershed. It seems that groundwater seeps are concentrated in areas where the potentiometric surface intersects the land surface. The discharge is focused at discrete points that are identified by the presence of large sand volcanoes.



The sand volcanoes are located along fault scarps that are the surface expression of rotational slumps. Our analysis indicates that minor disturbances, such as the damming or draining of a beaver pond or slope modification near highways can trigger slope instability. Once groundwater has a conduit to the surface along fault scarps, volume loss of sand from the aquifer perpetuates the processes of slumping, dewatering, and further aquifer volume loss.

In August, Phil Larson, Heather Anderson, Amanda Putz, and I traveled to Iceland. This is my third trip to the icy paradise. I always expect the weather to be warmer there. But I suppose that in a place where glaciers come down to sea level one should not expect palm trees and tiki bars. We spent ten days mapping micro topography on recent moraines and documenting the geometry of

englacial meltwater channels. There was, of course, time walking on the steaming flanks of Eldfell; dipping in the geothermally-heated pools; and for eating Icelandic hot dogs, hakarl (Hot Carl for those on the last trip), and yes even a whale steak. (There goes my Greenpeace membership.)

RON MORTON Last winter was one full of teaching, skiing on the cross-country trails across from our house, and having finished walking the Superior Hiking Trail, I began to put together the material for a book that will end up as a walking guide to trails natural history, landforms, and walking conditions. Spring, summer, and fall can be divided into three different, though related, activities: 1) completing the draft for the walking guide - Hooray! (this book will be available in late March or early April in time for a new hiking season), 2) re-hiking sections of the trail to see if what we wrote made sense - some embarrassing moments here, and, 3) with my co-author on the walking guide, Judy Gibbs, hiking all of the trails in the state parks along the north shore including Jay Cook - this is for a companion book to the one on the hiking trail.

I spent two very nice weeks at field camp (with a great bunch of students from UMD), and managed trips to San Francisco to visit our son, and Boston for our daughter's graduation. Megan graduated with an honors degree in civil engineering from Northeastern University and, heart attack city and Halloween horrors, moved back to Duluth. Once here she quickly found a permanent job as a civil engineer and bought a house! Penny and I are still in a state of shock having her so close - we never thought that would ever happen. Our son, Chris, is doing great in Redwood City, California and we had a chance to visit him in May. In doing so we found out what a neat place he has

as he lives right on the Bay estuary. We also managed some time in wine country.

Life is good. I can say that because it is a lovely fall day and I am sitting under a huge white pine on the banks of the rushing Manitou River watching two eagles soar overhead. I assume the rest of the faculty is at the department meeting! Hope this finds you all healthy and finding enough time to do the things you enjoy.

DICK OJAKANGAS Another busy and fun year! You may have heard the old axiom that "the older one gets, the faster time goes". VERY TRUE! Gave a talk at NC-GSA on sedimentary rocks in the Midcontinent Rift and was co-leader on a Mesabi Range geology field trip, but it was cancelled for lack of participants. (But, the field guide is in print!) Attended ILSG Nipigon, and went on an offshore field trip into the Sibley Group, rocks that I had been trying to get to for decades!

Have had to do the usual lecturing on cruise ships (it's a job). Did the Baltic and Peach also lectured, on Finnish and Scandinavian foods. As I write this, I am finishing PowerPoint presentations for a Caribbean cruise for early November.

Taught another University for Seniors course on Geology and Peoples, and have given numerous lectures to various organizations. One of my standards is: "The World's Oil: Past, Present, and Future", a topic about which most Americans are SO ignorant!

Spent a week at Holden Village, Washington (a church retreat camp in an old copper mine site), and lectured there. Drove out - always enheartening to see THE WEST! Peach and I

spent three weeks in Turkey on a food writers' trip, but there are great rocks and archeology there, too! The most fascinating rocks were in central Turkey (Cappadocia) where early persecuted Christians hid out in villages carved into tuffs.

The most exciting news this year was that Peaches was inducted into the James Beard Foundation Cookbook Hall of Fame at a big black-tie affair in New York City in May. (However, not a single woman wore a black tie!) Her 25th cookbook, "Cooking With Convection", was published in April.

The more mundane--still plugging along on "Roadside Geology of Minnesota", various research projects, and some volunteerism.

Well, off to the Caribbean the day after tomorrow. Being busy in retirement is FUN! Have a good year, all of you!

RIP RAPP Rip still enjoys "the best of all possible worlds" living in Duluth in the summer and in Tucson, Arizona the rest of the year. He has two books in press; one on hieroglyphics from the eastern desert of Egypt [with two of his former Ph.D. students, Russ Rothe and Bill Miller] and the second edition of *Geoarchaeology* (Yale University Press) [with UMD alumnus Christopher Hill]. Currently Rip is working on the publication of his project at Anyang, China [also for Yale University Press]. He can be reached at: grapp@d.umn.edu.

JOHN SWENSON Greetings from somewhere high above the North Atlantic. As I write this, I am en route to Salamanca, Spain, for the annual meeting of the EuroSTRATAFORM program, which is jointly funded by the European Union and the United

States Office of Naval Research. This is, unfortunately, the final year of the program, which, by any measure, was a huge success. EuroSTRATAFORM brought together a diverse group of European and North American oceanographers, marine geologists and geophysicists, sedimentologists, and stratigraphers to focus on the formation of strata on continental margins across a huge range of spatiotemporal scales. Over the past five years, I have developed many fantastic relationships and had many wonderful travel opportunities. These I will miss greatly.

As one research program wraps up, another is just getting underway. Together with a pair of colleagues from the Virginia Institute of Marine Sciences (a research organization affiliated with the College of William and Mary), I recently received funding from the National Science Foundation to undertake a three-year study of the Waipoa River system in New Zealand. Our work will combine field observations and mathematical modeling in an effort to decipher the late-Quaternary evolution of the Waipoa fluviodeltaic system. My colleagues just completed the first field campaign to gather shallow seismic data of the system's subaqueous delta, and the preliminary data look spectacular. I think this project will prove to be very exciting, and I am looking forward to traveling 'down under' next fall. For a guy who does virtually no fieldwork, I certainly get to travel to some very interesting places!

As in the past, 2005 was filled with a considerable amount of travel to meetings and for collaborative research. Notably, I spent two weeks in Nagasaki, Japan, in early January and a week at the Technical University of Delft, Netherlands, in August, where I presented several papers at the 8th International

Conference on Fluvial Sedimentology. However, my most interesting, productive, and satisfying trip was to Boston, in July, where our NSF-sponsored "working group" on Novel Methods for Modeling the Surface Evolution of Geomorphic Interfaces met for the second time. This group brings together approximately twenty researchers from the fields of Physics, Applied Mathematics, Mechanical and Civil Engineering, and Geology and Geophysics to identify and work on moving-boundary problems (my favorite!) in Geomorphology.

NIGEL WATTRUS The past year has been a busy one for me. My summer field season was particularly hectic and it only came to an end last week when I had my final research cruise on Lake Superior (this was the last cruise for the Blue Heron before its lay-up for the winter).

This past June, I traveled to Iceland to conduct some high resolution multibeam surveys on some lakes up near one of the Icelandic icecaps. One of the lakes we surveyed still has a glacier draining into it. This was very demanding work but great fun. We faced many challenges in getting the work done (such as actually getting a suitable boat to these remote locations). In the end, however, the results were well worth it. The images were spectacular and have raised several very interesting questions. We will be presenting the results of this work next month at the AGU meeting in San Francisco.

As soon as we got back from Iceland we had to get ready for our next international expedition, to collect seismic data in Great Slave Lake in northern Canada. This is one of the deepest lakes in North America and it had not

been surveyed before our expedition (a rare thing these days!). The objective of this survey was to collect a “seed” dataset to use in a proposal we are writing with our collaborators from the University of Aberystwyth in Wales and UC-SC. This will test a hypothesis that during the last glaciation of the continent there was a subglacial lake in this area. This would presumably have had significant impact on the ice dynamics of the ice sheet.

Following our return from Canada, we turned our attention to the North American Great Lakes.

This year we received funding from the National Science Foundation to purchase a new, state-of-the-art digital sidescan sonar and CHIRP sub-bottom profiler. In August we used it to survey the lake-floor rings and sub-surface fracture systems off Isle Royale. Recent multibeam sonar data collected in the area suggests that the rings are actually coalesced chains of pockmarks that we’ve dubbed “ring-o-pearls”. Similar structures have been described in the North Sea. They appear to be produced by episodic de-watering of the lake floor sediments. The new system

worked wonderfully and we obtained some beautiful images that clearly show exquisite de-watering structures in the sediments. We will be presenting a paper based on these results at the AGU next month.

My final major research cruise this year didn’t occur until mid-October when we took our little research boat, RV Noodin, down to southern Lake Michigan to map some spawning grounds near Michigan City, Indiana. The surveys went well; let’s just say that towing the boat through Chicago was “interesting”!

Steve Colman is Welcomed Aboard!

It’s now been a little over a year since I joined the faculty of the Department of Geological Sciences and became Director of the Large Lakes Observatory (LLO). For those who don’t know me well, I attended Notre Dame, Penn State, and the University of Colorado, getting my Ph.D. at the latter in 1977 in Quaternary Geology. I worked for the USGS in Denver until 1984, on projects related to Quaternary history of glaciation, tectonics, and salt diapirism. In 1984, I transferred to the USGS Marine Geology office in Woods Hole, Massachusetts, and worked on research projects involving Quaternary sedimentation in marine and lacustrine environments, using seismic stratigraphy, sedimentology, and various dating methods. Much

of this work was rather basic research, conducted with academic collaborators. Gradually, I focused more and more on paleoclimate records from large lakes, notably Lakes Michigan, Baikal, Titicaca, and several lakes in the western United States. Interspersed with this research for the USGS, I spent a year with IGBP-PAGES (Past Global Changes), in Bern, Switzerland; a year and a half as Program Manager of the Earth System History Program at NSF, and a semester as Gibson Visiting Professor in the Geology and Geophysics Department at the Twin Cities campus.

I’ve enjoyed my first year in Duluth, despite some administrative and financial challenges. Developing new courses (Global Climate Change this semester) has consumed lots of time, but has been a positive experience. LLO is an exciting and vibrant research group, mostly because of Tom Johnson’s prior hard work and leadership, which I hope to continue. Our shared vision is one of a virtual Oceanography department whose research is focused on large inland seas, otherwise known as lakes. We filled two vacancies this past year with a dynamic couple named Liz Minor and Jay Austin, trained as chemical and physical oceanographers, respectively. We have one more vacancy to fill, and we are exploring the possibility of a joint Mechanical Engineering-LLO hire who would focus on lake-process instrumentation. Over the next several years, we



hope to grow by two to three faculty positions. We continue to nurture relationships with the departments with whom we share appointments, currently Geological Sciences, Chemistry and Biochemistry, and Physics, and look to connections with other departments in the future. Usage of our research ship, the RV Blue Heron, was up this year, although we received a financial blow when state LCMR funding for an inspection and refit of the vessel was vetoed. With support from the University, we will overcome this challenge and continue to run a world-class research program here on the shores of Lake Superior. Our research on lakes throughout the world, as well as Lake Superior, is intended to be an integral part of the University's focus on freshwater research.

ALUMNI NEWS

Carlson, Kurt, BS 99 (MS Western Michigan University), is working at Terracon in the Twin Cities. Kurt's address is 2025 Hawthorne Avenue E., St. Paul, MN 55119

Coleman (Gustafson), Jill, BS 96, works for St. Mary's in Duluth and was married in December 2004. Jill's address is 6405 Duncan Road, Saginaw, MN 55779

Crawford, Patty, BS 04, has been accepted to the Rhetoric Department at the University of Minnesota to pursue a degree in technical writing starting Spring 2006. Patty is engaged to Joshua Michaud (BS 02). They are planning a wedding for late summer. Patty's email address is love4rocks@yahoo.com

Deick, Jan, BS 82, works for Golder Associates in Anchorage, Alaska. Jan and his family live at 13720 Capstan Drive, Anchorage, AK 99516

Duly, Susannah, BS 95 (MS University of Michigan), is a Senior Project Scientist for Blasland, Bouck & Lee, Inc. Susannah's address is 215 W. Main Street, Stockbridge, MI 49285

Everett, Karl, BS 75, works for Oglebay Norton Company as an EHS Manager covering facilities in Virginia, Pennsylvania and Oklahoma. His address is 132 Driftwood Drive, Stephens City, VA 22655

Frazer, Chris, BS 05, and his wife, Stacia, welcomed a baby boy, Garrett, this summer. Chris continues to work for the National Guard part-time and participated with relief efforts in New Orleans. His email address is fraz0036@d.umn.edu

Frikken, Jennifer, BS 04, is finishing her Master's in Environmental Health and Safety and currently works for Wausau Paper in Groveton, New Hampshire. Her email address is frik0003@d.umn.edu

Goshey, Stephanie, BS 04, is working on a Master's degree at Central Washington University specializing in geomorphology. Stephanie and Jordan Vandal were married in August 2005. Her email address is slgoshey@hotmail.com

Green, Wayne, BS 92, is a forest hydrologist for the Lewis and Clark National Forest in Great Falls, Montana. Wayne moved to Montana after 2 ½ years at the Cibola National Forest in New Mexico. Wayne's address is 2719 Fern Drive, Great Falls, MT 59404

Hager, Keri, BS 01, is in her final year of pharmacy school at the University of Minnesota. Keri is engaged to Jeff Naglosky who also attended UMD. Her email address is khager@umn.edu

Hoffman, Adam, has been working for Newmont Mining Corp. in Winnemucca, Nevada and is enjoying his job as well as the small town atmosphere. Adam and Jessica were married in June 2005. Jessica is finishing her nursing degree at the University of Nevada Reno. Adam's email is hoff0578@d.umn.edu

Johnson, Joel, BS 96 (PhD Oregon State University), finished his PhD in August, 2004 at Oregon State University in oceanography. Joel had been working as a post-doc at Monterey Bay Aquarium Research Institute in Moss Landing, California before taking a tenure-track position at the University of New Hampshire, Durham specializing in sedimentary geology starting Fall 2005.

Kniebush, Diana, BS 04, is teaching ninth grade physical science at Chisago Lakes High School. Diana's email address is knie0011@umn.edu

Lachance, Eric, and his wife, Patricia, celebrated the birth of their second child, Claudia, in August 2004. Eric continues to work at Falconbridge Limited in Sudbury. His email address is eric_lachance@yahoo.com

McDaniel, Kelly, MS 05, completed her Master's degree this summer and has now begun working on a forensics degree at Pace University in New York. Her email address is mcda0054@d.umn.edu

McMaster, Steve, BA 94 (MS Southern Illinois University), continues to work for the Nebraska Department of Natural Resources as a Water Resources Planner. Steve has also been elected to the Region VII Board of Directors for the Association of State Floodplain Managers and has been involved in helping reshape national natural disaster mitigation policy in the aftermath of this year's hurricanes. Steve and his wife, Andrea, welcomed a baby girl, Erin, in October 2005. Their address is 10870 N. 136th Street, Waverly, NE 68462

Michels, Jon, works in River Falls, Wisconsin as the Executive Director of the Kinnickinnic River Land Trust, a non-profit conservation organization. Jon and his wife, Michelle, have three children. Their address is 1815 S. First Street, Stillwater, MN 55082

Munter, Jim, BS 77 (MS University of Wisconsin Madison), stopped by to say hello with eldest daughter,

Lynn, who is a freshman at UMD. Jim is an environmental and ground-water resource consultant in Anchorage, Alaska where he has been since 1982. He enjoyed seeing all of the changes at UMD and all of the things and people that haven't changed much over the years. His address is 5701 Penny Circle, Anchorage, AK 99516

Neisse, Jeff, BS 00, works as a project geologist for ATC Associates Inc. in Roseville, Minnesota. His address is 5571 Mahoney Avenue, Minnetonka, MN 55345

Norton, Kevin, MS 00, started a PhD program at the University of Hannover in northern Germany this past summer. His research will be using cosmogenic nuclides to study erosion rates in the Alps. His email is k.norton@mineralogie.uni-hannover.de

Pagel, David, BS 83, is the author of a newly published book (2005) by the Kenspeckle Letterpress, Duluth, Minnesota entitled "The First Chinook". It tells the real life adventures of a New Hampshire dog breeder named Arthur T. Walden and his legendary sled dog, named Chinook. It is beautifully illustrated with woodcuts by his friend Rick Allen. The book is a great read for all ages. The tale is in the style of Robert Service. David's address is 801 Woodland Avenue, Duluth, MN 55812

Quinn, Mike, BS 78, works for ChevronTexaco as a staff geologist and is serving as President of the Lafayette Geological Society. His address is 113 Tackaberry Drive, Lafayette, LA 70503

Raye, Jeremy, BS 01, lives in Lawrence, Kansas managing the Lawrence-Technical Department at EMR, Inc. He misses being out in the field and tries to get out whenever he can. Yana is busy continuing work on her PhD. Jeremy's address is 1821 W. 21st Terrace, Lawrence, KS 66046

Rauner (Hoff), Melissa, BA 01, is working with the Minnesota Pollution Control Agency and is back living in the Twin Ports. Her email is melr2b@hotmail.com

Riederer, Matt, BS 05, is working on his Master's degree at University of Wisconsin in Madison. His email address is riederer@geology.wisc.edu

Riker-Coleman, Kristin, and husband, Erik, celebrated the birth of their second child, Leah, in September 2005. Kristin's email is rike0003@tc.umn.edu

Scheflo, Monica, BS 99, is working in the Dean's office at UMD in the College of Education and Human Service Professions. Her email is mschefl1@d.umn.edu

Schneider, Bob, BS 81 (PhD University of Texas El Paso), is in his last year at the University of Louisiana-Lafayette and has been serving as President of the Southwest Louisiana Geophysical Society this year. He tells us that Lafayette came within 100 miles of Hurricane Katrina and escaped without too much pain and Hurricane Rita came within 80 miles giving them quite a glancing blow. Although his home had no structural damage, he told us there is not a family unaffected by these storms in his region. Bob's email address is rvschneider@bellsouth.net

Spranger (McCutcheon) Mathea, BS 02, has been working as an Administrative Assistant for Environmental Management Resources, Inc. which is a company that designs municipal water treatment systems. Mathea and her husband, Brian, purchased a home and are living in Crystal, Minnesota. Their address is 4640 Zane Avenue N, Crystal, MN 55422

Steger (Marien) Elise, BS 94, and her husband, John, celebrated the birth of their first child, Kilian, who was born on Christmas Eve. Elise is the Operations Manager for Waste Management at the Burnsville Landfill. The Steger's live at 2656 Ann Circle, Shakopee, MN 55379

Turner, Scott, MS 90, is employed as a senior geologist for Environmental Resources Management in Lake Charles, Louisiana. Scott's wife is a pediatric nurse and they have a 3-year old daughter and 1-year old twins. Their address is 341 East Prien Lake Road, Lake Charles, Louisiana 70601.

Wenz, Zach, BS 02, has graduated from the University of Alaska Fairbanks. He worked on a project in southwest Alaska studying plutonic hosted gold system. Zach and his wife are living in Minnesota. His email is zachwenz@msn.com

Wittkop, Chad, PhD 04, is working at the New Hampshire Geological Survey as a Quaternary Geologist. Chad's email is wittk004@umn.edu

LOOKING FOR A JOB?

We are starting an electronic service for individuals seeking jobs in the geology field who would like to receive job postings that come to the Department. As we receive announcements about new employment

opportunities, we will forward the notices to you electronically. It should be fast and easy! Simply notify us (geol@d.umn.edu) with your email address and tell us you would like to be added to the distribution list. You will be able to subscribe or unsubscribe at any time.

Scholarships, Awards and Other Notable Mentions

Outstanding Graduate Teaching Assistant Awards for the 2004-05 academic year were presented to **Joseph Beer** and **Marsha Meinders Patelke** in the amount of \$200.

The *Outstanding Senior Award* (Ralph W. Marsden Fund and the SME) is a \$750 award given to one or two outstanding graduating seniors on the basis of scholarship. This year's recipients were **Adam Johnson** and **Matthew Riederer**.

The *SME Tools-Of-The-Trade Award* is given to outstanding sophomores in the form of \$300 worth of geological field gear. **Taylor Nordberg** and **Eric Quigley** were presented this award at the 2005 SME Minnesota Section Mining Symposium luncheon.

The *Roderick Syck Field Camp Scholarship* is awarded each summer to the UMD student(s) with the highest achievement at field camp. **Katherine Brosch**, **Erik Gulbranson**, **Adam Johnson**, and **Michael Taylor** were each awarded \$500 for their efforts at Wasatch-Uinta Field Camp in 2005.

Undergraduate students **Katherine Brosch** and **Adam Johnson** were selected to receive rock hammers donated by Estwing for their exceptional performance in Geologic Field Methods.

Field Camp Scholarships. All UMD students attending field camp in 2005 received \$1,350 in scholarships, which covered the entire tuition portion of their expenses! The scholarship and recipients are shown below:

Ralph W. Marsden Fund - **Adam Brewer**

R.C. Bright Field Camp Scholarship - **Erik Gulbranson**

Robert Heller Field Camp Scholarship - **Adam Johnson**, **Terra Kiffmeyer**, and **Adam Tripp**

"Rip" Rapp Field Camp Scholarship - **Adam Brewer**, **Katherine Brosch**, and **Terra Kiffmeyer**

Charlie Matsch Field Camp Fund - **Diane Curelli** and **Erik Gulbranson**

Lempi M. & John W. Pagnucco Scholarship - **Katherine Brosch**, **David Demmer**, **Katherine Heimgartner**, and **Michael Taylor**

Descriptions of these funds, as well as information on how to make a donation to the Department, can be found on our website at www.d.umn.edu/geology/

Odin D. Christensen (BS 1970) is a recipient of the Ben F. Dickerson III Award in recognition of his professionalism and contributions to the mining industry. Odin is considered a leading authority on gold deposits, particularly Carlin-type deposits. He is presently an independent consulting mineral geologist.

Roger A. Bannister (graduate student) was selected as a winner in the UMD Student Web Contest and was awarded \$500 in January 2005.

Joseph J. Beer and **Ryan E. Erickson** (graduate students) each received an American Association of Petroleum Geologists Grant-in-Aid award for their individual research projects. This year 88 grants were awarded with over 300 applicants.

Deborah E. Rausch (graduate student) was a recipient of the Chrysalis Fellowship from the Association of Women Geoscientists.

Mary Kathryn Rocheford (undergraduate student) received a Peterson Scholarship from the College of Science and Engineering.

Undergraduate Student Presenters and Contributors

Geological Society of America

Salt Lake City

Cartwright, Alyson M., Cleland, Timothy P., Derby, Sean F., Ergas, Emmanuel E., Fay, Hannah I., Loughney, Katharine M., Riedel, Jeremy A., **Rocheford, Mary Kathryn**, Scott, Crystal L., Skaggs, Kyle L.: Aspects of the Paleontology and Stratigraphy of the Lower Triassic-Lower Cretaceous Strata of the Eastern Bighorn Basin, Wyoming. (All these students are in a NSF – Research Experience for Undergraduates program.)

Demmer, David L., Mooers, H.D.: Lewis Glacier, South Sister Mountain, Oregon: Farewell Old Friend?

Nordberg, Taylor L., Brewer, Adam J., Hansen, V.L.: Detailed Geologic Mapping of Venus' Crustal Plateaus and Implications for Plateau Formation.

Putz, Amanda J., Mooers, H.D., **Berger, Jaclyn C.**, Gallup, C.D., Branstrator, D.K.: Tombstone Corrosion and the Peppered Moth: Quantifying Historical Acid Deposition Rates in Central England's Black Country. (*Jaclyn Berger is a UMD student in Fine Arts. She did this work while in the Study in England Program.*)

North Central Geological Society of America

Minneapolis

Gulbranson, Erik L., Demko, T.M.: Applications of Phosphor Imaging to Geologic Materials: Diagenetic

Emplacement of Uranium/Thorium in Mesozoic Palustrine Carbonates and Calcretes, Colorado Plateau, U.S.A.

Kubarek, Sara J., Swor, Emily J., Ramirez, E., Bodenbender, B.E., Demko, T.M.: Taphonomy, Taxonomy, and Anatomy of Sauropod and Theropod Dinosaur Remains from the Upper Jurassic Morrison Formation near Shell, Wyoming.

American Association of Petroleum Geologists

Calgary, Alberta

Gulbranson, Erik L., Demko, T. M.: Calcrete Overprinting of Palustrine Carbonate Facies: The Role of Phreatic Water Movement.

Demko, T.M., Beer, Joseph J., and **Gulbranson Erik L.**: Lakes in Tropical Western Pangaea: Siliciclastic- and Carbonate-Dominated Lacustrine Deposits of the Upper Triassic Chinle Formation, Colorado Plateau, U.S.A

The Society of Vertebrate Paleontology

Mesa

Kubarek, Sara J., Swor, Emily J., Demko, T.M.: Taphonomy, Taxonomy, and Anatomy of Sauropod and Theropod Dinosaur Remains from the Morrison Formation, Shell, Wyoming.

Graduate Student Presenters and Contributors

Geological Society of America

Salt Lake City

Bannister, Roger A., Hansen, V.L.: Analysis of Deformation in the Interior Region of Artemis (Venus, 34° S 132 °E): Preliminary Results.

Castaneda, Isla S., Werne, J.P., Johnson, T.C.: Environmental Variability in Tropical East Africa during the Last Glacial/Interglacial Transition: The Lake Malawi Biomarker Record.

Erickson, Ryan E., Demko, T.M.: Sequence Stratigraphy and Incised-Valley Fill Architecture of the Lower Part of the Upper Triassic Chinle Formation in the Dinosaur National Monument Region, Utah and Colorado.

Lang, Nicholas P., Hansen, V.L.: Venusian Channel

Formation as a subsurface Process.

Lang, Nicholas P.: Utilizing Venus Magellan Imagery in Geoscience Coursework.

Mooers, H.D., Wattrus, N.L., and **Mossberger, Irvin G.**: Regional Groundwater Control of Slope Stability in the Glacial Lake Duluth Basin, Minnesota.

North Central Geological Society of America

Minneapolis

Anderson, Heather E., Mooers, H.D., and Matsch, C.L.: Transverse Ridges and Indicator Dispersal: Implications for Compositional Variability in Des Moines Lobe Till, Minnesota, U.S.A.

Beer, Joseph J., Demko, T.M.: Tectonic and Climatic Control on Continental Paleovalley Fill Architecture:

Evidence from the Upper Triassic, Lower Chinle Formation, South Central Utah, USA.

Breckenridge, Andrew J., Johnson, T.C., Colman, S.M.: Late-Glacial Paleohydrology of Lake Agassiz and the Upper Great Lakes: Insights from Lake Superior's Oxygen Isotope Record.

Castaneda, Isla S., Werne, J.P., Johnson, T.C.: Terrestrial and Aquatic Ecosystem Change in Tropical East Africa Since the Last Glacial Maximum: The Biomarker Record from Lake Malawi.

Mooers, H.D., **Marlow, Lisa M.** and **Larson, Phillip C.**: Glacial Lakes in Northern Minnesota: Drainage Relationships, Chronology, Discharge, and Isotopic Composition of Meltwater.

Mooers, H.D., **Larson, Phillip C.**, and **Marlow, Lisa M.**: Ice Advances in the Western Lake Superior Region: A Reevaluation of the St. Louis Sublobe and the Marquette Phase of the Superior Lobe.

Powers, Lindsay A., Werne, J.P., Johnson, T.C., Hopmans, E.C., Sinninghe Damsté, J.S., Schouten, S.: The Development of TEX86 for Continental Paleotemperature Construction. (Presented by J. Werne)

Quinn, John J. and Mooers, H.D.: Geostatistical Analysis of Glacial Hydrogeology: Extrapolating from Data-Rich Sites to Data-Poor Sites.

Van Alstine, Jon D., Johnson, T.C., Engstrom, D.R., Oliyai, F.: Temporal and Spatial Changes of Sediment Accumulation Rates in Lake Superior: Anthropogenic Impacts or Natural Variability?

American Association of Petroleum Geologists
Calgary, Alberta

Demko, T.M., **Beer Joseph J.**, and Gulbranson Erik L.: Lakes in Tropical Western Pangaea: Siliciclastic- and Carbonate-Dominated Lacustrine Deposits of the Upper Triassic Chinle Formation, Colorado Plateau, U.S.A.

American Society of Limnology and Oceanography
Salt Lake City

Castaneda, Isla S., Werne, J.P., Johnson, T.C.: A 22,000 Year Biomarker Record from Lake Malawi, East Africa: The Response of Terrestrial Vegetation and Algal Community Structure to Climatic Variability. (Presented by J. Werne)

Powers, Lindsay A., Johnson, T.C., Werne, J.P., Hopmans, E.C., Sinninghe Damsté, J.S., Schouten, S.: Worldwide Calibration of the Molecular Paleotemperature Proxy TEX86 in Lacustrine Systems

and Application to a Tropical African Sediment Record through the LGM. (Presented by J. Werne)

Goldschmidt Conference
Moscow, Idaho

Powers, Lindsay A., Werne, J.P., Johnson T.C., Hopmans, E.C., Sinninghe Damsté, J.S., Schouten, S.: The Development of TEX86 for Continental Paleotemperature Reconstruction: Problems and Promise.

Institute of Lake Superior Geology
Nipigon, Ontario

Breckenridge, Andrew J., Johnson, T.C.: Lake Superior's Oxygen Isotope Record Suggests Overflow to Lake Ojibway between 10,000 and 9,400 CA1 BP (~8.9-8.4 14C KA).

International Conference on
Glacial Sedimentary Processes and Products
Aberystwyth, Wales

Larson, Phillip C. and Mooers, H.D.: Sediment Transport Scales of the Laurentide Ice Sheet: Insights into Subglacial Processes.

International Meeting for Organic Geochemistry
Seville, Spain

Castaneda, Isla S., Werne, J.P., Johnson, T.C., **Powers, Lindsay A.**, Huang, Y.: Vegetation Change in Tropical East Africa since the Last Glacial Maximum: The Molecular Record from Lake Malawi.

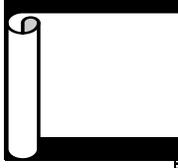
Castaneda, Isla S., Werne, J.P., Pearson, K.D., Kenig, F.: The Occurrence of Branched Alkanes with Quaternary Carbon Atoms (Baqs) in the Sediments of Two Large Freshwater Lakes: Lake Malawi (East Africa) and Lake Superior (USA/Canada).

Powers, Lindsay A., Werne, J.P., Johnson, T.C., Hopmans, E.C., Sinninghe Damsté, J.S., Schouten, S.: The Calibration and Application of TEX86 in Lacustrine Systems: A Powerful Tool for Independent Continental Paleotemperature Reconstruction. (Presented by I. Castaneda)

Lunar and Planetary Science Conference
Houston

Lang, Nicholas P., Hansen, V.L.: Venusian Channel Formation as a Subsurface Process

McDaniel, Kelly M., Hansen, V.L.: Circular Lows: A Genetically Distinct Subset of Coronae?



2005 GRADUATES

BA

Diane Curelli
Eric Scheidel
Adam Tripp

BS

Joshua Dark (Honors)
Joseph Dunnigan
Christopher Frazier
Matthew Haacker
Alex Hokenson
Adam Johnson

BS

Heidi Rantala (WRS)
Michael Rieser

MS

Benjamin Kelley
Rachel Peters
Matthew Riederer
(Honors)
Kim Smith
Michael Taylor