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Geosciences Newsletter - 2004

Department of Geosciences

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Mohamed Sultan Chairperson

Dear Alumni and Friends of Geosciences

In August 1st 2004, I assumed my duties as the new Chair of the Geosciences Department at Western Michigan University. I want to take this opportunity to introduce myself and to share with you my thoughts and aspirations regarding the future of our Geosciences Department. Prior to coming to Kalamazoo, I was (2002-2004) a Professor of Remote Sensing and Environmental Geology at SUNY Buffalo Department of Geology, and worked (1996-2002) as the Director of the International Programs in Argonne National Lab Environmental Research Division, and as a Senior Research Associate at Washington University Earth and Planetary Remote Sensing Laboratory (1985-1996). I earned (1984) a PhD in Geochemistry/Igneous Petrology from Washington University, St Louis, MO and a MS and BSc from Ain Shams University, Cairo Egypt.

I am an interdisciplinary scientist who takes advantage of available tools and disciplines (e.g., remote sensing, GIS, geochemistry, geochronology, hydrology, surface runoff and groundwater flow modeling, field geology, etc.) to address a wide range of complex geological and environmental problems. My ongoing projects address the potential influences of natural processes, global change, and regional human activities on the water and

carbon cycles and ecosystems. For example, using NASA funding, I am developing and applying an integrated systems approach to assess, monitor, and model the recent and future impacts of changes in landscape and land cover associated with major agricultural development projects in Saharan Africa. The United Nations is supporting our search for alternative renewable groundwater resources in arid and semi-arid areas; NSF is funding our work to model storage variability in artificial lakes (Lake Nasser) and we are evaluating water quality and potential pollution sources for urban and semi-urban aquifers in the Central Valley of Costa Rica using USAID funds. Geoinformatics is an area that is becoming of increasing importance to geologists. Together with investigators from three other Universities (University of Houston, University of Illinois, Chicago, and University of Missouri, Columbia), our research team is involved in an NSF-funded project to develop an interdisciplinary GIS database (TETHYS) as a tool for studying plate collision responses in the Tethyan belt. To expand our research activities in the general area of aquatic remote sensing, we established a direct downlink and processing system for remote sensing data. Specifically, we are acquiring real-time access to the Advanced Very High Resolution Radiometer (AVHRR) L-band sensor data transmitted by the National Oceanic and Atmospheric Administration (NOAA) satellites, as well as the Orbview-2 satellite that carries the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) instrument in real time. Using this added capability, we recently secured funding from NOAA to monitor the harmful algal blooms in the southern Great Lakes. The receiving station will be used to initiate new research directions in forest-fire monitoring, and atmospheric sciences.

These are exciting times for our Department. New faculty are being hired, new research facilities are being established, and new initiatives are being funded, providing new opportunities in research, education, and outreach. Heather Petrovic, our new Geoscience Education hire, is now leading our research activities into the general area

of Geoscience Education and is providing valuable inputs into our ongoing educational and outreach activities. For example, Heather is currently working with her colleagues (Carla and Johnson) on the development of a new course in field and laboratory environmental geochemistry for undergraduate students. She is also assisting in the development of yet another new course in Geologic Hazards. She is particularly interested in developing assessment modules for the purpose of monitoring and examining the performance of students taking the class. The return of Dan Cassidy in the Fall of 2005 will provide support and stimulus to our research and educational activities in hydrology and in related fields. Together with my research team, we are developing the research capabilities of our department in the area of remote sensing and geoinformatics. The Department of Geosciences has developed a State-of-the-art image processing facility, the Earth Sciences Remote Sensing facility (ESRS) in Wood Hall, and a receiving station that currently resides on the roof of Everett Tower. Our plans to construct a new facility that will accommodate six times as much space as the current Core Lab Facility, and provide adequate teaching and research space is attracting a lot of attention from Western Michigan administration and support from donors as well. A recent donation from DTE for the construction of the facility brings the total funds collected in pledges and in cash to over half a million.

The Department is pursuing a number of initiatives that deal with curriculum, space, and technology. We are working on expanding the existing PhD program to include specialties other than hydrogeology. As it stands now, we can only offer PhDs in hydrogeology, despite the fact that this department has extensive expertise in many other geological disciplines (e.g., geochemistry, geophysics, sedimentary basins, and remote sensing) and adequate facilities. Michelle Kominiz is leading our efforts to undertake this task, and is working closely with the curriculum committee (headed by Carla Koretsky) on the development and restructuring of our PhD program. The Curriculum Committee has been working hard on developing plans to establish a 5-

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year BS/Ms degree, reducing teaching loads to allow faculty to spend more time on their research, revisiting requirements for all graduate programs, and introducing new courses. The Space committee headed by Johnson Haas, on the other hand has been looking at efficient ways to utilize existing space and to identify additional space to host the new initiatives. The computer committee headed by Dave Barnes is updating our departmental web site and is modernizing (new hardware and software) in our computer labs, and the Corelab Committee headed by Mike Grammer is actively seeking funding for our new Core Lab facility.

This is an important year: by March 2005, we have to develop a vision for where we want our research, educational, and outreach activities to be five years from now and to come up with a program for the development of our research, education, and outreach activities (Academic Program Planning) and as part of the effort, we have to have our plan evaluated by an external reviewer. Moreover, we have to have a detailed step by step plan for implementing our program, the "Compact Plan". We are taking a good look at every aspect of our activities, and I am quite encouraged by the time and effort that is being dedicated to this activity and, more importantly, the collegiality by which these interactions are taking place given the sensitive issues that are being addressed. I have to say people here get along pretty well.

Changes could also be coming in the ways of our Research Council. In a meeting in October 2004, and in an effort to increase the participation of our younger scientists and increase diversity of the group, the Council members and our Faculty expressed interest in broadening the Council structure to incorporate all of our graduates who express interest in joining. Our research funding is at a record high (in excess of 2.5 million), so is the number of our teaching assistantships (18 as of Spring of 2005). I can go on describing each of these new funding opportunities, but I am sure my colleagues would rather describe their recent successes themselves. I want to leave you with the impression that Geosciences is experiencing many changes and your colleagues here are working hard to make these changes happen. I am quite happy to be a part of this collective effort. I am looking forward to receiving your input and counting on your support.



Dave Barnes Associate Professor

Greetings.

I am pleased to report that I am no longer interim chair! Our department is fortunate to have Dr. Mohamed Sultan at the helm, and I am sure that he has many interesting things to say in his own portion of this newsletter. Mohamed has done a great job so far and we all appreciate his dedication to our department and the focus on group harmony that has characterized his leadership so far. I am also very pleased to hand off most of the responsibility for maintenance of departmental computer resources to the able assistants who work in Mohamed's Geological Remote Sensing research group.

I was apprehensive of leaving the high intensity environment that is the department chair position last summer; I had gotten used to knowing what was going on and interacting with lots of people within and external to the department. Fortunately I have been involved in a variety of highly successful professional activities since leaving the "hot seat" and have experienced little "let down" due to a change in activity level.

I managed to publish a summary paper on our coastal change research in a special edition of the *Michigan Academician* dedicated to the coastal geology of Michigan in early 2004 with co-authors Mike Kovacich and Santis Limezs. It was very rewarding to get this work out after YEARS of hard work on the coast with

numerous graduate and undergraduate student helpers.

Research activities focusing on various aspects of the Michigan basin subsurface have intensified this year and have been highly successful recently. The Michigan basin Core Research lab was fortunate to receive a very valuable collection of shallow subsurface, bedrock core and log data from an environmental contamination site near Mason, Michigan in early 2003. Pennsylvanian strata in these cores represent the best and most important material record of Pennsylvanian bedrock aquifer units in central lower Michigan. Study of these materials has resulted in modest University funding and student research funding to my current Master's student, Niah Venable. Myself, Niah, and other students have published and presented 3 abstracts/talks/posters at regional and national professional meetings in the last 2 years based on work with this material. Our focus is on sequence stratigraphic models for deposition of these bedrock aquifer units and the prediction of strata geometry, aquifer quality and vulnerability. I have high hopes for the successful continuation and external funding of this research project on the basis of regional studies of oil and gas well data, logs, cuttings, etc.

Our subsurface geology research group and the Core Research lab recently received US DOE funding for investigation of geological CO₂ sequestration in the Michigan basin subsurface. We are generating stratigraphic data that will be used in the assessment of potential sequestration volumes using digital mapping techniques. The funding for this important work is nearly \$100,000 and is being jointly conducted by Bill Harrison, Mike Grammar and myself, through end 2005.

The most noteworthy, recent successful research activity is funding of a regional study of fracture-related dolomite hydrocarbon reservoirs in the Dundee, Niagaran, and Trenton/Black River units in the Michigan basin by US DOE for in excess of \$1,000,000. The principle investigator is Mike Grammar, and co-PI's Robb Gillespie, Bill Harrison, and myself. Successful funding, I believe,

is the culmination of years of work in the Michigan basin subsurface and petroleum geology by Harrison and myself, an impressive collection of subsurface geological data and core samples curated in the Michigan basin Core Lab, substantial credibility and expertise in carbonate sedimentology as a result of the participation of Mike Grammar, and some good ideas, generated, in part, through recent petroleum geology studies in the Michigan basin by our research group. We all look forward to a period of intense activity and research productivity focusing on the subsurface and petroleum geology of the Michigan basin that will involve a number of graduate and undergraduate students for several years to come.

Family life goes very well, all the children are in high school and running cross country this semester. Brendan is a senior, ran well all season and is off to the state meet in early November. Teresa is making steady progress on her caboose with power and propane heat in place. We are shooting to have a renovated caboose by this Christmas.

Hope that all is well with our alumni and friends and we hope to see you all at the alumni reunion in the early spring!



Ron Chase

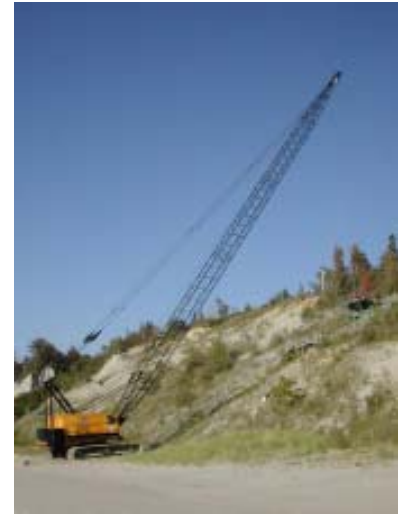
Hi again! Yet another year! As I evolve into "old fartdom", I am probably more active and happier with my job than I have ever been. I wish you all equal happiness. I get to contact many of you through conventions, alumni gatherings, visits to our department, and Emails. I hope that we will meet and greet often.

Please contact me at ronald.chase@wmich.edu and send me your news.

The coastal bluff erosion control study that Al Kehew and I are conducting is about to evolve into a new and exciting phase. All dewatering wells were installed last fall, but it has taken an endless year to install all displacement sensing equipment and data logging capabilities. It appears, as of this writing, that all systems are go and we will start the pumps in about two weeks. Ever since Al and I submitted our grant proposal to the U.S. Army Corps of Engineers in 2000, they have been extremely supportive with annual stipends that provide field expenses, some release time, laboratory equipment, and support for two graduate students (currently Rennie Kaunda and Amanda Brotz). The very substantial costs of field equipment and installations are provided on behalf of WMU by the Corps of Engineers and grant support will likely continue through 2009 while the long-term experiments run their course.

From a general professional standpoint, the 2003-2004 year was quite productive. Teaching has always been a great love. This year was particularly satisfying because I had the largest Petrology/Petrography class in years (16 students) and they were a pretty serious group. The two Upper Peninsula field courses I taught contained the nicest collection of students I have encountered in many years. My highlight was a journey to Florence, Italy in August where I presented a bluff research paper at the 32nd International Geological Congress Meeting and did some field tripping (with many auxiliary stops in the Tuscan countryside to sample geological byproducts). My low point was a severed bicep muscle I managed to accomplish in June and had repaired in July. I am now mostly back to wellness.

The Chase family has nothing terribly new to report. Chris is still enduring the never ending absent mindedness and domestic laziness of her husband. Karl is still a sales manager at the Peninsula Hotel in Chicago. Andy is still a "between career" cab driver in Seattle (perhaps being between careers IS a career!). Scott is still a foot and ankle surgeon in Indianapolis. Jamie is still an attorney in Washington, D.C. Our latest family member, Annie, is still a very sweet cat in our house. Scott and Jamie are married. Karl is in love and thinking about it. Still no grandchildren!



Coastal bluff work



Mike Grammar

Greetings Alumni and Friends of WMU's Geosciences Department. Well my second full year at WMU was a very satisfying one in several ways. Our biggest research news is that my lab (The Carbonate Sedimentology Lab) in combination with the Michigan Basin Core Research Laboratory at WMU (Bill Harrison) have received a 3-yr grant from the Department of Energy worth \$1.03 million. Although I am the Principal Investigator on this project, I have four colleagues on board as co-P.I.'s – Dave Barnes, Bill Harrison, and Robb Gillespie. We will be taking a look at the origin and distribution of dolomite in the Michigan Basin using state of the art geochemical, petrographic and stratigraphic tools and approaches. We anticipate having at least

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3 graduate students working with us on this project, including Audrey Ritter, who is finishing an Honors thesis on Paleozoic algal mounds with me this year.

My two M.S. students are getting close to finishing, and both will hopefully be done by next summer. Peter Voice will be presenting initial results from his study on paleoceanographic reconstruction of the Michigan Basin during the Silurian using stable isotopes in brachiopods at the upcoming national meeting of the Geological Society of America in Denver. We were able to get Peter down to the University of Miami this summer to take advantage of their specialized micro-sampling equipment to generate his primary data set. Peter also recently presented some research that stemmed from a graduate level Carbonate course that I taught last year. He presented these results at the Eastern Section of AAPG in Columbus this month.

Tony Sandomierski, my other graduate student, is currently in Houston doing a 3-month internship with ExxonMobil, working in the Reservoir Characterization group. Tony will be presenting the results of his study on Silurian pinnacle reefs in the Michigan Basin at next year's annual meeting of the American Association of Petroleum Geologists in Calgary. Audrey Ritter, whom I mentioned above, also presented a paper at the Eastern Section AAPG meeting in Columbus (actually taking second place in a student competition where all the other students were graduate students). Audrey will also be presenting at the AAPG meeting in Calgary, where she will be summarizing the results of her Senior Honors research.

On other fronts, we have been to the field a number of times this year, including a couple exotic trips. Bill Harrison and I took a group of students to the Florida Keys last Spring to look at modern carbonate environments, and I took a group out to Utah to look at Paleozoic carbonates this summer. This summer I also took part in a field excursion in Kentucky where Dave Barnes got together with an old friend of mine from the University of South Carolina, Chris Kendall, to visit each others favorite outcrops with an eye toward possibly working together on outcrop-based student exercises.

This year will be taken up with recruiting a couple more graduate students for our DOE grant and then starting the fairly long list of tasks that are required with the grant. It looks to be a busy and

rewarding year without a doubt. As before, please stop in if you are in the area.

Best Wishes for the coming year.



Duane Hampton

Howdy to all our alumni and friends. Last year was a good year, a keeper. My older son got married, making three of my four kids now "settled." Al Kehew took me, Bill Sauck and his wife, and Laura Smart, a doctoral candidate, to Egypt for two weeks in mid-December to look for potential water supply sites in the southwest Sinai area. I have incriminating pictures of most of these people on camels, horses, 4-wheel drive "jeeps", etc. We experienced Egyptian culture, learned some lessons, and identified potential water supplies in this parched region. Some of our Egyptian friends visited us this summer during the hydro field course. Also good news was the decision of Dr. Daniel Cassidy to rejoin our department in Fall 2005, Dr. Johnson Haas beginning to teach Geoscience courses this Fall, and the 2004 hirings of Dr. Mohamed Sultan as department chair and Dr. Heather Petcovic as an earth science educator. We also rejoice in the grants awarded to several of our faculty.

On the debit side, two research proposals to test new remedial technologies for the PCB-contaminated sediments in the Kalamazoo River didn't get funded. However, we got decent reviews which hopefully we can build upon for the future.

I see new vitality in our department and a renewed interest in strengthening our programs at all levels. We have been working on bringing everything up to date for the course catalogs. We expect to make positive changes in undergraduate, masters and doctoral programs. Dr. Sultan has set the course for these efforts, and many faculty are contributing to make them a reality. The

hydrogeology degree programs at all levels will be improved. The web site will also be improved.

Periodically I see or hear from our alumni. At a recent Kalamazoo River Superfund public meeting, the presentation was made by an EPA site manager who got his M.S. at WMU under Ron Chase, and was attended by a county soil erosion specialist who earned his B.S. at WMU. You represent the department well. Also, I hear from many of you when your companies have vacancies for hydrogeologists, and I pass that news on to our students. Keep those emails coming!



Alan E. Kehew

Hi Everybody,

After a busy and much needed sabbatical following my last year as Chair, I have returned to the faculty and am enjoying the lack of responsibility for everything except my own teaching and research. My sabbatical time was totally filled by commitments associated with my three research projects. Most of the fall of last year was consumed by field work at the Lake Michigan bluffs, on the bluff recession project that Ron Chase and I have been working on for several years now. Last fall was the major push to get dewatering wells, inclinometers, and piezometers installed in the bluff so that we can monitor bluff movements in real time as they occur. The project is funded by the Corps of Engineers and the consulting company STS has the contract for most of the drilling and installation of instruments. I took time off for a few days from that project to host the Midwest Groundwater Conference here in Kalamazoo, which attracted about 125 groundwater people from around the region. One other fall task was to write a paper on the dynamics of the Lake

Michigan lobe as part of a special volume of papers to be published in Quaternary Science Reviews from a symposium at last year's INQUA meeting.

No sooner did field work wrap up that the first WMU group left for Egypt on the US State Dept. project to develop a hydrogeology coalition with two universities over there. That group included Duane Hampton, Bill Sauck, Laura Smart (PhD student), and me. Bill's wife Elen accompanied us and my youngest daughter Liz also came along. We spent the semester break, including a memorable Muslim/Christian holiday party on Christmas Eve in a resort on the Red Sea, making geophysical measurements in the Sinai Peninsula in order to assess the prospects for the occurrence of aquifers. In late February, a second WMU group went to the City of Qena in Upper Egypt to investigate the contamination of an aquifer by municipal wastewater irrigation. That group included Steve Beukema (PhD student), Jenny McCrary (MS Student), and myself. Several people from International Affairs were with us on part of that trip. Both trips were fantastic experiences and have solidified my belief that the vast majority of Egyptians are friendly, peace-loving people who respect and admire Americans (even if they disagree with our government's policies).

When I returned from that trip, I almost immediately left for Spain with my wife Kay, to celebrate our 30th anniversary, which occurred later in the year. For a few weeks, I was in kind of a permanent jet-lagged blur. Despite the unseasonably cool, wet weather in Spain, we saw a lot and had a great time.

In the Summer I term, I taught Glacial Geology and completed the drilling for my glacial mapping project, the third of my research projects. The summer was pretty well taken up by another component of the Egypt project—their visit to WMU for the Summer Hydrogeology Field Camp. That visit was somewhat of a disappointment because only three of eight faculty members scheduled to come were able to get their visas on time. We really need to find a way to differentiate between people who should be more carefully screened and people like these who are participants in our own State Department's exchange program.

In between other activities, I began a revision of my geology for engineers textbook, but I really didn't get as far as I should have. After the end of the field course, it was time to start the fall

semester. This one is keeping me quite busy as I am teaching Intro to Soils, a new course for me. I wish the best to all of you out there and would love to hear from you either by email or in person, if you happen to be passing through.



Steve Beukema, Dr. Kehew, and Jenny McCrary



Liz Kehew, Laura Smart, Dr. Kehew, Dr. Hampton, Dr. Cutrim, and Dr. Sauck



Michelle Kominz

Hello again, alumni and friends of Western Michigan University's Department of Geosciences. Life in the lake effect snow belt is good.

I ended my stint as graduate advisor last academic year. The processes that I put in place for seminars continued smoothly under the guidance of Dr. Koretsky and the annual evaluations were easier the second time around. It has been rewarding to help students fulfill their dreams of obtaining a masters degree for

improved employment opportunities and/or to help prepare themselves for going after the big Ph.D. We need to hear from you folks as to how successful/happy you are today. The little that I hear is positive.

I continue to be the instructor of ocean systems, trying to provide oceanographic excitement and knowledge to the future teachers and the folks who avoid science. It's a lot of fun and has finally become somewhat easier. I try to keep updating though. In the spring (Jan.-April 2004) I got to teach our first-ever super class, with about 300 students in the room. This replaced two 175-student classes, reducing the time devoted to lecturing. This innovation was also tried in several other large enrollment lecture sessions. Discipline was a little bit of a problem in my class but had more to do with the internet-access, computer-friendly environment that is now present at WMU than it was to the large numbers. I also taught my first Ocean Systems summer class during Summer I, while our normal instructor, Dr. Barnes, carried out his chairman duties. This required some substantial revisions to the structure of the course, due to the very different schedule of classes. That, and the smaller class size, made it fun for me and the students as well.

The Geophysical Exploration class in the Fall of 2003 was a small but elite group of students who worked very hard to understand the tools used to delineate subsurface anomalies. We performed several labs at WMU's Business Technology Research Park where we attempted to better understand the effects of leaf effluent on groundwater, and to constrain variations in the thickness of loose sediments above the Pleistocene basement. Results were mixed, but that is the nature of scientific exploration.

In May I attended my last IODP SSEP meeting in Granada Spain, only to discover that I was being kept on for one more meeting, this November in Okinawa. This is fine with me. I will miss the constant forced updates on new and future oceanographic research programs, not to mention the friends I have made, the field trips and the introduction to foreign lands and their geology. I will not miss the long flights and jet lag, however. And I will be happy to be able to get to national geoscience meetings again.

And if you like the IODP boondoggle, you should consider workshops in Addis Ababa, Ethiopia. Estella Atekwana invited me to join a

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workshop on the future of science in the active and incipient rifts of east Africa. That was an incredible trip and I certainly learned more than I have in a long time, since it was my first trip to Africa and the rifting process is not exactly my area of expertise. Still, when all was said and done I did find a colleague with the possibility of developing a program involving studying subsidence and eustasy on the Indian Ocean coast of Africa. This will be down the road. Equally down the road is a project to drill the Canterbury Basin on the east coast of New Zealand's South Island and offshore drilling of Miocene sequences off the coast of New Jersey. In fact, if it's New, I will be proposing to drill it, for scientific purposes, of course.

This year is all about research. Yes, I am on sabbatical: a brilliant invention. I love teaching, but I am very much in need of some time, set aside to focus on my research. My part in analyzing and interpreting the results of drilling into the Cretaceous beneath the New Jersey Coastal Plain remains in its infancy, although the results from the first two wells, drilled over 5 years ago, are finally in press (Basin Research) in a paper with Bill Van Sickle's name in the first author slot. It was his thesis work, after all. Results of that work were part of a paper published early this year by Miller et al. in the Geological Society of America Bulletin in which we finally came out in print admitting that our results are highly suggestive that there were mid-sized glacial ice sheets in Late Cretaceous greenhouse times. In fact I just gave a talk last week on that topic at the University of Illinois, Chicago.

The ridge volume project with Chris Scotese (Univ. of Texas at Arlington and PALEOMAP) is the main thrust of my sabbatical research. A small miracle happened and the NSF proposal was funded so my sabbatical pay cut is not quite as large as I was expecting. Plus I have 2 new computers in my Haenicke Hall Lab, a Macintosh G5 and a Dell 840. Danielle Odette, an undergraduate student is helping to gather Ocean Drilling Project porosity data so that sediment can be properly unloaded in the hunt for a new seafloor age vs. depth relationship. I was invited to give a keynote address in a session at GSA in Denver on the subject of Cretaceous spreading rates, so we are smack in the middle of an effort to reconstruct the 90 Ma earth. It's fun and

it's stressful. Halloween is a stroll in the park in comparison.

Of course my other focus of my "spring" semester will be downhill racing. Keep watching my times with NASTAR. I ended up 12th out of 61 expert women in my age bracket last year. I am hoping to do a little better this next year, and even hope to make the Park City Utah Championships, since I do not have to be teaching that week. So, come out and join me there or at Timber Ridge if you need to stay close to Kalamazoo.

Mowing and raking have taken second seat to painting my new (50+ year-old) house. With a little luck the paint will be on the cedar siding before the snow falls, maybe even before the last leaf has hit the ground!



Carla Koretsky

Hi Friends and Alumni! It has been a busy and exciting year for my research group. I was fortunate enough to be awarded two external research grants this past year. The first is from the American Chemical Society Petroleum Research Fund and will allow me to investigate how organisms like shrimp, fiddler crabs and polychaete worms change the form and mobility of trace metals in coastal sedimentary systems. This work will involve some field study in the US and some interesting lab work with modern sediments as well as trace fossils. The second grant is from the National Science Foundation's CAREER program. This is a tremendously exciting award because it will allow me to fund field (US and Netherlands), laboratory (including purchase of some great new instrumentation) and modeling work with several graduate and undergraduate students over the next 5 years. Our overall

goal in this work is to use some rather sophisticated thermodynamic and kinetic models in order to better understand how metals interact with and travel through the temporally and spatially heterogeneous world of bioturbated, vegetated, intertidal coastal sediments. So, there is plenty of work ahead for us! Luckily, I have eight students working with me at the moment. These are the guys who really do the work to make the research happen. They are: Soumya Das (PhD candidate), Hailachin Mengistu (PhD candidate), Suama Ndengu (MS Geology candidate), Amanda St. Amour (MS Earth Science candidate) and four dedicated undergrads – Keith Boneburg, Tracy Lund, Chris Landry and David Eagle.

I have done a bit of traveling this year, although not so much as in some of the past few years. I was invited to participate in two very interesting workshops this past year. One of these, held in lovely La Jolla, CA, involved looking at ways that geoscientists can use advances in Cyberinfrastructure in order to improve sharing and linking of data. The second workshop I attended, in Albuquerque, NM, was hosted by a variety of government agencies and was focused on finding ways to link up sophisticated models with "real world" problems, such as disposal of rad waste and remediation of contaminated aquifers. It was a really interesting experience, as the conference included a mix of "pure academics" (like me!), agency reps (from EPA, DOE, USGS, NRC and even the new Homeland Security agency) and some folks from industry. I was also recently invited to speak at the upcoming "Nereis conference", which believe it or not, is an entire conference dedicated to looking at Nereis (polychaete worms) and other modern bioturbators. Who knew there were enough geologists studying worms to have a whole conference? I was particularly glad to accept the invitation, as this conference is to be held in the south of France this November (!).

Please do drop a line or swing by the office and let me know what you've been up to and have a great year!



R.V. Krishnamurthy

During the past year I had the enriching experience of working with students from two domains. One was with PhD students Loago and Ahmed and the other the continuation of a project with high schooler and my son Rohan. Loago and Ahmed went full steam ahead and completed PhDs and graduated in good time. Both of them presented their work in national and international meetings and Ahmed went on to publish a good paper in the *Journal of Hydrology*. His return to the United Arab Emirates has opened up exciting new avenues for the hydrogeology program. The second experience, more than by sheer chance, continued with my son Rohan working on a project in collaboration with NASA. NASA's Space Biology program incorporates extensive studies to understand photosynthesis under micro gravity. This is intended to enable future space research involving a large number of scientists to develop a self-sustaining extra-terrestrial ecosystem. Rohan investigated carbon isotope fractionation in plants grown in the Space Shuttle under micro gravity to examine if photosynthesis under those environments exhibits any unique fractionation effects. This project was placed 3rd in the Science Talent Search competition at Wayne State University and earned him the right to present the paper at the National meeting in Cleveland. Interestingly the first, second and third places in this context went to the KAMSC students! Which reiterates the fact that for the research minded faculty, there is warehouse of brainpower close by which can be tapped for mutual benefit.

Tsigabu and Steve quickly filled the vacuum created by the departure of Ahmed and Loago. Steve started work on the late glacial climate of the Himalayan region by analyzing lake sediments obtained from an altitude of about 18, 000

ft. He did not personally collect the samples, which were given to us as part of our collaboration with scientists of the Physical Research Laboratory. Tsigabu has started work on a very challenging topic that aims to look at carbon isotope fractionation during bacterial reduction of metals. Being a somewhat new field to both of us, we have decided to draw from the expertise of colleagues Carla and Johnson. Our initial experiments have some surprises and wait until next year to hear about that!

During summer, I had the opportunity to present an invited talk in Singapore where the first international meeting of the Asia-Oceania Geosciences Society was held. Well over 1000 delegates attended it and I have been entrusted with co-convening a session next year. Singapore is indeed a true bridge between the East and the West. Claimed to be the cleanliest city in the world, the visitor is impressed from the moment he or she lands at the sprawling Changi airport. Excellent ground transportation and diverse cuisine make the stay very affordable and lively. I also had the honor of delivering the Prof. K.R. Ramanathan Distinguished Lecture at the Physical Research Laboratory in Ahmedabad. It was especially sweet, PRL being my Alma mater and considering that previous Ramanathan Lecturers have been Nobel Laureates and Academy Science members.

On the home front, daughter Sowmya got admitted into the Business School at the University of Michigan and continued with her hard-hitting articles as a columnist for the *Michigan Daily*. She had a memorable stint at the CNN headquarters during summer as in internee, doing something more than a gofer's job. My son Rohan joined the local Kalamazoo College with a Heyl Foundation Fellowship to pursue a double major in Math and Music. He also won a national award in India for his musical skills and continues to travel across the country performing at various venues.



Heather Petcovic

Greetings, geoscience friends and alumni! I had the pleasure of meeting some of you during the advisory council's visit, and hope to meet more of you in the future.

I am delighted to be the newest member of both the Department and the Mallinson Institute for Science Education. My husband, Michael Winkler, and I arrived this summer after a cross-country move from Portland, Oregon. We arrived and moved into our new home mostly intact, although I don't think our two cats enjoyed the trip very much! I am grateful that my cello also arrived safely, and I play with the Collegium Musicum at Western. We perform medieval and renaissance music (although we don't dress in costume). Mike is also a geologist, currently telecommuting to his environmental consulting firm back in Portland. We have enjoyed getting to know Kalamazoo this fall, and look forward to exploring the town and the rest of the state in the coming year.

I began my geological career as an undergraduate at Smith College, where I majored in geology and minored in music. I had the opportunity to participate in a field research project in the Oregon Cascades, which led to my honors thesis mapping lava flows and unraveling their geochemical history. I returned to Oregon intending to study Cascade volcanoes for my graduate work, but was sidetracked by the Columbia River Large Igneous Province. The Columbia River Province is fascinating because of the enormous volumes of lava erupted over a geologically

faculty news

short time span. It includes the earth's largest individual basalt lava flows, which continue for over 500 miles and cover vast areas of Oregon and Washington. For my graduate work at Oregon State University, which I completed in June, 2004, I examined feeder dikes to some of these enormous lava flows. The heat from a few of these dikes caused their surrounding rocks to melt, and the melting reactions record how long the dike was active. In one case, my work suggests that one of these enormous flows was erupted in only 3-4 years. My field work took place in the Wallowa Mountains, which is a beautiful, rugged, and remote wilderness area in northeastern Oregon (picture Yosemite without the tourists). I highly recommend a visit!

While working towards my doctorate degree, I was awarded a GK-12 Teaching Fellowship. This program places scientists in public school classrooms in order to enhance the teacher's subject area knowledge and to expose the scientist to the K-12 education system. I spent a year teaching 6th graders at an urban, multi-ethnic, low-income middle school in Portland, Oregon. It was certainly an eye-opening experience. I came away from the program with an admiration for the hard work of teachers, and a desire to remain involved in education (not to mention a strong desire to NOT work with 12-year-olds on a daily basis). For the next three years, I was the Program Coordinator for Science Connections, an outreach program at Oregon State. During this time, I ran a science lecture series for high school students, brought groups of high school students and teachers to work in science laboratories at Oregon State, and brought together university students and elementary and middle school students to engage in hands-on science.

My primary role at Western will be as the department's Earth Science Educator, although I continue to be involved with research in the Columbia River flood basalts. This department already has a strong commitment to education in many ways: strong undergraduate and graduate degree programs, and an active program to prepare secondary earth science teachers. My goal is to enhance these programs even further through educational research, preparation of teachers at all levels, and improved ties to the local education community. Through teaching "Earth Science for Elementary

Educators" in the spring term, I will strive to improve the geoscience competence of these students. Together with Carla Koretsky and Johnson Haas, we have proposed a new environmental science field course coupled with workshops for local teachers. I also plan to work with the geology club to bring earth science activities and programs to Kalamazoo schools. I look forward to working with my colleagues in both Geosciences and the Mallinson Institute – there is much to do and I am eager to begin.



William Sauck

Hello alumni and friends of WMU Geosciences! Fall 2003 semester got off to a start with a 187-student section of Geos 100 and 9 students in the Geos 563 (Electrical Methods) class. I "reluctantly" broke away in mid-September to present a paper on our findings in the sand column and diesel-oil experiments, at the Brazilian Geophysical Society Conference in Rio de Janeiro. Later in the term, Baraka Kinabo completed his MS thesis, about the geophysical characterization of the former Lakeside Refinery site in Kalamazoo.

The highlight of the year was the 15-day trip to Egypt in December, with Al Kehew, Duane Hampton, and grad student Laura Smart. This was a return trip to visit our colleagues at Suez Canal Univ., funded by a U.S. Dept. of State exchange grant written by Al. We were awed after visiting the pyramids at Giza, the National Museum, and the Citadel. Next were two days with our very gracious hosts at SCU in Ismailia. Then we took an SCU minibus under the canal and down the west coast of the Sinai, turning inland for the climb up

to the base of Mt. Sinai where we spent a short night at the SCU field station. More history! We toured St. Katherine's monastery, a Greek Orthodox "fortress" in continuous operation for more than 1500 years. Thanks to the dry desert air, their museum has preserved ancient biblical and classic Greek manuscripts, icons, etc. The monastery was spared from numerous invading armies and crusades by its isolation and protection by the local Bedouins. Later that day we descended to the coast and went further SE, to El Tor, where we stayed for a week in the Moses Bay Hotel. My part of the research effort was to try to help understand why only the NW half of the El Qaa coastal plain had producing water wells. This coastal plain is actually a 20km x 100+km bajada, sloping from the linear (faulted) mountain front to the shoreline. We split into two geophysical groups, with Laura very capably leading the larger group in conducting 20 Schlumberger VES measurements with the WMU Syscal system. I took the WMU Worden gravimeter and a pair of GPS receivers and established about 100 gravity stations at 1.5 to 2 km intervals along various transects. The gravity results quickly showed a deep half-graben with a -20 mGal minimum to the NW, but shallow basement to the SE. The VES transect was in the SE part of the gravity survey and also showed less than 200 meters to basement rocks, nicely corroborating the gravity interpretation. The geophysical work was fortuitously positioned to define the SE end of the half graben, and its transition to shallow basement. However, the water shortage for the resort city of Sharm el Shiekh at the southern tip of the Sinai is still unresolved.

Spring term was time for the GPR course with 9 students, and another large section of Geos100. In February it was off to renew ties with colleagues at the SAGEEP meeting in Colorado Springs. Laura Smart also presented, and we were involved in two other papers with Estella Atekwana and former student Dale Werkema.

Another paper in our biogeophysics series, dealing with the conductivity anomalies caused by hydrocarbon-degrading bacteria, was published in "Geophysics" in early 2004. This paper was a record for me, being one of nine authors. This was truly a multidisciplinary project including geophysicists, hydrogeologists,

geochemists, and microbiologists. I again taught the Geophysics module of the Hydrogeology Field course during Summer II, and then went with Elen to work on our beach property in São Luis, Brazil through the month of August.

On the family front, Jeff moved his family to Crystal Lake, IL. Christine finished her 2nd year of graduate work in Clinical Psychology at Clark Univ. Carolyn was sent with her new Mechanical Engineering diploma to work at the base production facilities of her employer (SABO USA) in São Paulo for a year. Eric finished his Sr. year at Mattawan with high honors and was admitted to the Engineering College at U of M with a tuition scholarship. He is now taller than I am and wears size 13 shoes. Elen made it through the year without a surgery (not much left to replace, I guess) and still gives lots of dinners and also travels more than I do. It was a very good year!

Adjunct Professor



Robb Gillespie

Cheers to all alumni and friends. It's hard to believe that another whole year has flown by. It has certainly been a busy one.

I had the opportunity to teach Geomorphology 432 during the spring semester filling in for Dr. Allen Kehew who was on sabbatical. It had been some time since I last taught Geomorph, so my days, nights and weekends were spent putting together new power-point lectures. I was lucky to have Peter Voice as the Teaching Assistant for the class, and Peter proved to be a major help. The class is designated as a "writing intensive" class, so I spent as much time correcting tests and papers as I did putting together lectures. However, I found it to be extremely rewarding, and I hope the students did too.

This semester I am teaching both sections of Ocean Systems 322 filling in for Dr. Michelle Kominz who is now on sabbatical leave. I'm very glad to have had the opportunity to teach one of the 2 class sections two semesters ago when I could confer with Dr. Kominz. But, even so, we are using a new edition of the book this semester, and once again, I seem to be spending most of my time putting together power-point lectures. It's a really good thing I like to do this. I also have a section of Earth Studies 100 to teach. So, overall, I have about 600 students this semester. Once again I'm lucky to have a great Teaching Assistant, Nathan Brandner. He is charging hard and doing a great job helping with logistics and grading. I have the same teaching assignments next semester, so, it appears that there will be no let-up for Nathan for the rest of the school year.

The big excitement for me this year was joining with Drs. Mike Grammer, Dave Barnes and Bill Harrison in submitting a grant proposal to the U.S. Department of Energy (DOE) to investigate fractured dolomite reservoirs. We were awarded the grant in August and asked to start work in October (we originally planned on January). So, we of course were not dumb enough to say no, and work is now ramping up to speed. It appears that this will be an excellent way to help support some students and grow the sedimentation and stratigraphy portions of our program. So much for time off during the next three years.

Tres Rios Resources, Inc., the small Texas based oil and gas company I co-founded 10 years ago also had a good year. My partner and I sold our production in West Texas and participated in drilling a second well on a new venture we helped develop in the East Texas Basin. We were rewarded in June with a new field discovery well that should at least pay our expenses. This well also opens other possibilities for future drilling.

After years of deterioration, my left knee finally gave out and I had a new partial knee installed in June. I'm now able to climb the stairs in Rood Hall for the first time in 2 years. My wife Linda is fond of telling me now that I have half a knee built out of titanium that I'm really worth something.

The house continues to claim a large portion of my time (and paycheck). The last of the decks got built this

summer, more dead trees disappeared, and over 20 new spruce trees got planted. This week begins "fun with leaves" now that fall has finally arrived, and I have a mountain of bark chips to spread around. Good exercise – I keep telling myself. But, thank God for John Deere.

We have a strong group of students this year just itching to spring their potential upon the unsuspecting world. The Geosciences Department is growing as the faculty works together to move up to the next level. It will be another exciting year.



Bill Harrison

This first year of retirement doesn't seem very different than all those working years. I have presented a half dozen talks at meetings, workshops and conferences around the country, I attended three AAPG meetings, National, Eastern Section and Rocky Mountain Section. We also had a couple of PTTC Workshops here in Michigan and one in Pittsburgh.

Activities in the Core Lab have occupied a lot of time with the continued fund raising for the new building and the wide array of visitors coming to the lab for data and a lot of renewed student research. We are very excited about the potential for a new Core Lab. Recently there has been a lot of support through the Department, the Dean's office of the College and the Provost. We have also received quite a few pledges from individuals and corporations in support of the new building. We are still actively seeking additional donations.

In January, Mike Grammer, Dave Barnes, Robb Gillespie and I wrote two proposals for research projects. One was for a short term study of the Michigan

Basin strata as potential sequestration units for CO₂. The other was for a regional study of the Origin of Dolomite in the Michigan Basin. Both were funded and we are already doing some of the research.

Linda and I had two nice trips to Germany to tour the Bavarian Alps. Linda also has been continuing with her landscape and nature photography, including several week long workshops on professional photography.

I enjoyed meeting a number of our alumni at the AAPG National and Rocky Mountain Section meetings. I hope that you will all consider visiting the Core Lab next time you are in Kalamazoo.

Dick Passero

The bane of the retiree's existence is to dream up anything in his or her life of interest to anyone but the retiree and sometimes immediate family. That doesn't mean to say that life is boring, quite the contrary; it's just different. When I retired, my wife and I followed our daughter east, stopped in Hershey, PA for 4 years where Gin taught nursing in the graduate school at Penn State, then moved on to Connecticut. Actually it was somewhat of a homecoming for me. Now we live comfortably in a quaint but modern New England town, Madison, established in 1669. We live in a condo with walking distance of Long Island Sound. Gin's Anglo-Saxon ancestors helped to settle this area, so even the D.A.R. doesn't mess with us. Fortunately it has been repopulated with Italians. The result – good restaurants and a buffer against Yankee conservatism. The truth is that the people here are generally friendly, progressive and active.

So how do the Passero's spend their time? Mostly making over our two-year old granddaughter (Darby Kathryn Dutter), searching for old "Winnie the Pooh" and "101 Dalmatians" videos, and learning how to play like a toddler. She has charmed us absolutely and transformed our life. She is our present and our hope for the future. When there is time left over, Gin coordinates an AAUW book club and meets friends daily for walks along the Sound. I continue to dabble in water colors, help with Lion's Club

activities (particularly related to the Helen Keller legacy, local scholarships, etc.), and design groundwater education aids including general and area-specific ground-water models. If you throw in a few surgeries, loss of several beloved family members, and elevated blood pressure due to our increasing national entropy, you have some insight into what is otherwise a good life. If you would like to visit, as several Kalamazoo friends have, we would love to see you.

Lloyd Schmaltz

Retirement continues to be a rewarding experience. After some recent medical setbacks, I have regained my energy and enthusiasm which I'm using to help Bill and Linda Harrison raise funds to build a new Core Research Laboratory. We hope to vacate the confined quarters in old West Hall so that the Lab can add new collections and provide expanded services. See Bill's comments on the project. Also, I continue to serve on the Geosciences Advisory Council and on the WMU Foundation Investment Committee.

I've started two small vineyards on my son's properties, Two Paws Cellars (in Paw Paw, MI) and Buchhorn Farm Vineyard near Three Rivers. Bill Harrison and I are making several wines from the 2004 vintage which are turning out to be quite promising. I've learned that growing grapes and making wine involves a lot of science.

Marilyn and I are planning on returning to Sandestin, Florida this winter where we can walk the beach and I can play a little tennis. We send greetings to all Geosciences Alumni and friends and wish you a rewarding and prosperous year.

AAPG Grants-in-Aid

Peter Voice and Anthony Sandomierski were selected to receive AAPG Grants-in-Aid for their research. Out of 280 applications, only 75 applicants were successful in being awarded a portion of the \$130,200 that was available. Congratulations, Peter and Tony!

INTERNSHIP

Undergraduate major, **Jessica Crisp**, was awarded one of the highly competitive NASA internships for summer 2004. Jessica worked at the NASA - Ames PGG Planetary Aeolian Facility in California, mapping aeolian deposits on Mars. Congratulations, Jessica, on this very prestigious award!!

WESTERN MICHIGAN GEOSCIENCES ADVISORY COUNCIL

The Geosciences Advisory Council sends Holiday Greetings to all faculty, staff, students, alumni and friends.

The Council met twice during 2004, first on April 16 and then again on October 15. Council members welcomed both opportunities to meet and associate with the students and with the faculty of the Geosciences Department.

The spring meeting was focused around the Alumni Reunion, and the student poster session. Council members were very impressed with the work and the displays prepared by the undergraduate and graduate students. The poster session provided not only the Council, but also the Alumni and visitors that attended the reunion, an opportunity to appreciate the high quality and caliber of the studies being done by students in the Geosciences Department. Both the Council and faculty agree, that additional events of this nature should occur in the future to provide exposure for the high level of work done by the students at Western.

A retirement function for Dr. William Harrison, a long-time faculty member, and a respected professional in the oil and gas industry culminated the events of the day. The Council wishes Dr. Harrison well in his future endeavors, and looks forward to actively supporting him in his efforts to build the proposed new Core Research Laboratory facility.

The October meeting was highlighted by the introduction of the new Geosciences Department Chairman, Dr. Mohamed Sultan. Dr. Sultan escorted Council members through new laboratory facilities, and to meet the faculty and students responsible for obtaining the recent grants that made them possible. The new research work, and the associated grants, underscores the continuing high level of professionalism developed in the Geosciences Department. As alumni and friends, we are extremely proud of the heritage being established by both the faculty and the students.

The Council was pleased to welcome the new Dean of Arts and Sciences, Dr. Thomas Kent who attended a portion of our meeting. He graciously thanked and commended the Council members for their dedication and volunteer efforts in support of the Department and the University. Dean Kent apprised the council of new efforts to fund the Core Research Laboratory. The Council members unanimously endorsed the building of the Core Research Laboratory facility, and offered their support to the efforts of the Department and the College of Arts and Sciences.

Congratulations to Mr. John Fowler, the recipient of the Geoscience Department College of Arts and Sciences Alumni Achievement Award for 2004. John presented a personal and educational talk about his career in the Michigan Basin oil and gas industry.

Mr. Jeff Hawkins and the Council hosted a potluck dinner for faculty, students and friends of the Department. We appreciate all who attended. We hope to continue our professional and a social relationship with the faculty, students, friends and alumni of the Geoscience Department. As we progress into the new millennium, we support the efforts of the Department in building a stronger bond with the alumni and friends, and encourage their greater participation in future activities.

John A. Yellich
Chairman

Thomas C. Kamin
Secretary

CONGRATULATIONS!

Congratulations to David Barnes, Mike Grammer, Bill Harrison, and Robb Gillespie! The following is part of a press release on the U.S. Department of Energy webpage.

"Western Michigan University (Kalamazoo, Mich.) will undertake research with three objectives. Researchers will first generate a publicly available critical summary of all surface data relating to hydrocarbon reservoir occurrence and characterization of the Silurian Niagara group and Devonian Dundee limestone. They will then study the mechanisms and geological controls on dolomitization in these important intervals in the Michigan Basin. Their third objective will be to develop improved geologic models for distribution of hydrocarbon reservoirs. These models will improve hydrocarbon exploration in the Michigan Basin. (Project duration: three years; total award value: \$1,033,475)"

CONGRATULATIONS!

Congratulations to undergraduate Audrey Ritter! She attended the AAPG Eastern Section meeting and won 2nd place in the technical posters at the Student Job Quest. This is especially noteworthy as her competition were all graduate students.

Steve Beukema, PhD Candidate

Hello, once again! It's been another active and exciting year for me. Research is getting underway. I'm working with Dr. R.V. Krishnamurthy in applying stable isotope geochemistry to paleoclimatology. Currently I'm working on lacustrine sediments in the Northern Indian Himalaya that were dated with OSL at ~11,000 to ~16,000 YBP. I'll be looking at stable isotopes from organic and inorganic carbon, oxygen, and hydrogen. R.V. and I are also investigating a new method of isolating non-exchangeable hydrogen from kerogen for stable isotope analysis.

In other news, I spent an exciting 3 weeks in Qena, Egypt with Dr. Kehew and Jenny McCrary doing field work on a groundwater contamination problem. I also had a great intern experience at the MDEQ Remediation and Redevelopment Division, where I evaluated sites of environmental contamination and where I acted as the unofficial GIS guru for the division.

In personal news, I had two exciting backpacking trips this past year - a winter trip to the Grand Canyon and a summer trip to the Canadian Rockies. I'm also remaining quite active with the piano, although there are never enough hours in a day for everything.

Soumya Das, PhD Candidate

Hi there,

It is nice to say hi to all of you again. My heartiest welcome to the newcomers in the family of rock and fossils. Last year was a busy academic year for me. Taking classes and teaching petrology labs kept me busy. I went to India in this summer and had really nice time over there by eating traditional homemade Indian cuisine and spending good time with my family and friends. I came back to the U.S during the last week of June and went to Houston to see one of my friend's newborn baby girl. I had really wonderful time with that little princess.

This summer I took 3 weeks of Hydrogeology field camp and being T.A. for other two weeks. That was really hectic schedule for 5 weeks. Last spring I was the T.A for petrology and we went to Missouri as usual for the field trip with Dr.

Chase. That class was a full house. We had fun doing field work and camping out there.

I have started working on my research with Dr. Koretsky. She is really helpful all through my research. I am working on adsorption on lead on mixed mineral assemblages. I have finished working on single mineral adsorption experiments with HFO (hydrrous iron oxide) and silica. I used sodium nitrate as background electrolyte with constant (0.1M) and variable (0.1, 0.01 and 0.001M) concentrations. Concentration of lead (Pb^{2+}) also varied from $10^{-4}M$ to $10^{-6}M$ for HFO and $10^{-4}M$, $10^{-5}M$ to $10^{-6}M$ for silica. Results I have gotten so far are very promising. Adsorption increases with increasing pH as expected. I have also done two adsorption experiments with mixture of these two minerals. Results are yet to come. This fall is also going to be a hectic semester for me. Doing research in full pace and teaching optical mineralogy and mineralogy labs will keep me very busy. Hoping for the best. That's all from here. See you guys around.

Tsigabu Gebrehiwet, PhD Candidate

Hello WMU Geosciences community, I am on my third year as a graduate student. Sorry, I missed updating you on my second year for some unknown reasons. A couple of years ago I told you that my topic of research was not decided. This year, I came with a topic to tell you about my ongoing research. The title of the research is "Microbial reduction of metals: Laboratory based geochemical and isotopic approaches". Here we are trying to compare and contrast the reduction of different environmentally significant metals (Fe, U, Mn and Cr) using various species of bacteria in heterogeneous media with different electron donors and acceptors. One of the electron donors I wanted to try out is to use TCE as in most contaminated sites different metals are associated with chlorinated hydrocarbons, particularly TCE because it is used in metal plating industries. So far, I am very excited with some of the preliminary results I found in the experiments I have done so far. On my personal life, since last fall I am enjoying life being accompanied by my long time girlfriend, now my fiancée. She is doing her masters in accounting here at Western. My two years experience at WMU has been joyful in personal life but

challenging in searching for funding for my research. Hopefully next year I will convoy some of my results both on my research and personal life. You all have a wonderful year and see you next year!

Rennie Kaunda, PhD Candidate

When I moved from Arizona to Kalamazoo, Michigan a year ago, some people said I was either crazy or a glacial geology maniac. But I did survive the Michigan winter, and no - there was no ice age last year. It was a fascinating year of learning the ropes, getting acquainted with new faculty and students, doing research, surviving the 6-week death match - I mean Field camp course, and driving on ice.

I moved to Kalamazoo to be a part of the Slope Stability Project, along the western shore of Lake Michigan, with Dr. Ron Chase and Al Kehew. Our objective is to conduct slope stability investigations of receding bluffs along the shoreline using computer modeling techniques and field studies, for mitigation purposes. Given my geological engineering background, I'm excited to be a part of this project. My previous experience includes a DOE engineering project and a USGS engineering project. Under the first project I worked with two different mines to apply new technologies such as digital image processing systems and online drill monitoring systems to gather large quantities of field data for both field and lab tests. Under the second project, I participated in conducting transient electromagnetic (TEM) surveys near Sierra Vista Arizona to investigate water resources in the area. The TEM data was inverted using modeling software.

This year I'm looking forward to more field monitoring and computer modeling along Lake Michigan. There is nothing like the drive to the study site near South Haven: beautiful, green, rolling, hummocky terrain and the Pig Sty near Bangor. To teach me humility, I'm also taking Applied Hydrogeochemistry and Seismic Refraction. They say marriage is the spice to life, so I decided to spice mine up this October. Hopefully that should keep me sane through grad school.

graduate student news

Peter Voice, MS Candidate

Hello All,

Well this is the start of my seventh and last year at Western, and it has been a long seven years. I did my undergraduate degree in geology with an emphasis on geochemistry here at Western and wrote an undergraduate honors thesis with Carla Koretsky as my advisor. I am finishing up my Masters under Mike Grammer, Bill Harrison and R.V. Krishnamurthy, and hope to graduate in April.

My work in the Carbonate Sedimentology Laboratory has provided me with several field experiences in the past year. We toured the Florida Bay region as an examination of modern carbonate depositional environments. It gave the participants a good feel for the facies distribution and facies characteristics found in modern environments. We also looked at Pleistocene carbonates and spent some time snorkeling over the modern reef tract to the east of the Florida Keys. A second trip, was a prelude to the fall sed./strat. Kentucky trip, and was led by Dr. Dave Barnes and Dr. Chris Kendall (University of South Carolina). We looked at deposits ranging in age from Ordovician to Pennsylvanian in central and eastern Kentucky. The materials included both carbonate units (the Kope Formation and the Newman Limestone) and clastic units (the Borden Formation and several black shales). The last of the field experience, I received this summer was through an AAPG student chapter field trip to Bancroft, Ontario, Canada. This trip explored the igneous and metamorphic units and was a great trip for collecting incredible mineral samples. I was fortunate enough to find two crystals of Beryl that are both five inches long.

I helped teach the geologic mapping and geologic field experience courses during the summer, but with a new twist. For the second session, I actually did most of the teaching, as Dr. Chase was unable to teach due to injuries. It was great experience, and it solidified my dreams of teaching as a career. Though if I teach, I definitely want a good teaching assistant to help me out, because it is pretty stressful when you are by yourself.

This semester has been busy with three labs. I am teaching the lab for Sedimentology and Stratigraphy for the first time this semester, and I am continuing my fall tradition of teaching the labs for Evolution of Life. This is the fourth time around for Evolution. Sed./Strat. just returned from their course field trip to Kentucky. It thankfully did not rain during the trip. The students saw Devonian, Mississippian and Pennsylvanian clastic and carbonate units, and were exposed to the concepts of lithostratigraphy. In addition, they were allowed the pleasure of seeing some of the most incredible trace fossils in the world.

My work at the core lab is going well. I have been working on maintaining our wireline log database, as well as scanning wire line logs to make electronic copies. In addition I have helped several classes with core projects at the lab. The Sed./Strat. students looked at both clastic and carbonate cores from the Michigan Basin during their early work on classifying sedimentary rocks. A second class from Michigan Tech. used some of the same cores in an exercise on core description. In addition, to looking at cores from the Grand River Formations, there Professor Buddy Wylie and I led a field trip to the Grand Ledge area for his students to look at the rock in outcrop. As part of my duties at the lab, I helped out at the most recent Petroleum Technology Transfer Council meeting in Michigan.

I presented a poster at the eastern section meeting of the AAPG in early October. The poster was titled "Using Modern Analogs to Understand the Genesis of Ancient Carbonates: Trenton/Black River Formations, Michigan Basin". This poster presented work done during a Carbonate Depositional Systems course taught by Dr. G.M. Grammer. In the class, cores of Trenton/Black River formation material from the Albion/Scipio field, were analyzed for their facies character and vertical distribution. One of the key results of the work was presenting a contrary model to the widely held dogma pertaining to the Albion/Scipio field. Former models presented fracture related dolomitization as the key to reservoir quality. Our work suggests that fractures only generated vertical conduits for dolomitizing fluids, and that lateral transmission of hydrothermal fluids occurred along zones of primary or depositional porosity including skeletal grainstones, burrowed facies, and along fenestral porosity. Production development of hydrocarbon reservoirs should consider primary depositional fabrics in addition to secondary dolomitization and fracture patterns. I also attended a one-day workshop on fractured reservoirs during the conference, and was reminded of a lot of structural geology that I had neglected to learn as an undergraduate. The conference was a great experience.

I received several awards that have assisted funding my thesis work, including an AAPG grants in aid award of \$2000, a \$400 scholarship from the Michigan Basin Geological Society and a \$600 award from the Western Michigan University Graduate College Research and Creative Activities Fund. This money supported a trip to Miami, where I did experimental work for my thesis at Rosentiel School of Marine and Atmospheric Sciences under Dr. Peter Swart. My thesis research involves characterizing paleoceanographic conditions in the Michigan Basin during Burnt Bluff Group (middle Silurian) deposition, through stable isotope analysis of brachiopod shell material. I will be presenting some of my results at the annual Geological Society of America conference in Denver in a talk titled "Paleoceanography of the Michigan Basin in Silurian time as revealed from stable isotopic analysis of Brachiopods".

In addition to my professional development duties and teaching duties, I have represented my classmates in two governing councils on campus. For the past two years, I have served as department representative to the Graduate Student Advisory Council, where I help formulate policy on graduate student life and activities. I was GSAC's representative to the Faculty Senate's Technology and Operations Council, which discusses technological issues on campus such as use of technology in the classroom, email policy, etc.

I am also planning a symposium that will be held at the Geochemical Society's Goldschmidt conference in May of 2005. My co-chair and I are leading a session titled "Biomineralization Models and Mechanisms". One of my major interests is the origin of biomineralization and modeling silica biomineralization in single celled organisms such as diatoms and radiolarians. My future plans away from Western include a PhD, though I am not sure where I am going yet.

2003

**Geosciences Department
Awards**

**Graduate Research and Creative
Scholar Awards**
Ahmed Murad

**Graduate Student Teaching
Effectiveness Award**
Tony Sandomierski

Senior Honor Awards
Earth Science
Jessica Jackson

Earth Science Education
Dave Rose

Geology
Jeff Hammerberg

Hydrogeology
Kelly Kroll

**Advisory Council Field Camp
Scholarship**
Kevin Kahmark

Laton Field Camp Scholarship
Soumya Das

**W. David Kuenzi Memorial
Scholarship**
Delwar Ahmed
Tsigabu Gebrehiwet
Tony Sandomierski

Lloyd Schmaltz Award
Audrey Ritter

**Distinguished Student Service
Award**
Peter Voice

Seminar Award
Sarah Morin
Laura Smart

**The Kalamazoo Geological and
Mineral Society Scholarship**

Soumya Das
Kevin Kahmark

Recent Graduates

Bachelor's Degree Recipients

Earth Science Majors

Nicholas Blackmer
Kevin Camp
Bryan Corkins
Steven Corlew
Diane Dubois
Chad Ellison
Scott Gardner
Regan Goodrich
Phillip Hall
Jessica Jackson
Jeremy Jones
David Katz
Nicholas Meyer
Julie Meyers
Eddie Ouellette
Andrew Phillips
Mark Plachta II
Catherine Reinhardt
Amy Robbe
Robert Walters
James Yost
Jeffrey Zoli

awards & graduations

Geology Majors

Scott Badham
Roger Bajorek
Kier Book
Zachary Jarvie
Amy Nowakowski

Hydrogeology Majors

Kevin Bouw
Jeffrey Doerr
Michael Gatien
Kelly Kroll
Patrick Laatsch

Geophysics Majors
Diane Dubois

Master's Degree Recipients

Earth Science
Sarah Morin

Ph.D. Degree Recipients
Ahmed Murad



Presidential Scholar: Scott Badham being presented the Presidential Scholar award by President Judith Bailey and the Faculty Senate President Peter Krawutschke.

alumni news

Roger Bajorek (BS, 2003)

I am currently an Environmental Geologist for Yeoman Group - Environmental Risk Management in Northville, Michigan. My job requires performing environmental due diligence (Phase I's) for banks, including Phase II soil and groundwater sampling, analysis, and contaminant delineation. I'm also a state certified asbestos building inspector and I perform these inspections according to state-mandated guidelines. Furthermore, I'm pioneering a ground penetrating radar program for this company and trying my best to get it off the ground. This job is different every day - it's not the same old grind. Each project is a brand new start, so it's always fresh. I'm always busy and on the road a lot but I really enjoy it. It's nice not to be stuck behind a desk all day. I get to go to many different cities and sites. Each one is unique and I face a new challenge of digging out any environmental concerns that lie just below the surface (literally!). Although the economy is slow, business right now is actually quite good. Work comes in every day so there's little down time. I'm currently working to achieve certification as an Environmental Professional and Professional Geologist. I'm also thinking and making (at least) preliminary plans toward a Master's degree.

Geosciences Department Staff

Kathy Wright Admin. Secretary

*Beth Steele Newsletter Editor
Dept. Secretary*

Mike Durham Technician

Amy Nowakowski (BS, 2004)

Hello WMU Friends!
I am currently living in beautiful Dubois, Wyoming along the Wind River Valley between the volcanic Absaroka Mountains and the thrust-faulted Wind River Range. I am employed by the United States Forest Service as a field hydrologist on the Shoshone National Forest. My work primarily consists of conducting stream surveys via the Rosgen classification system for use in the Upper Wind River Watershed Report as well as other regulatory agency documents. Additional projects that I am involved in include surveying a recent stream restoration project on the Wind River, collecting weekly precipitation samples for the National Atmospheric Deposition Program, and collecting epilimnion samples in the Fitzpatrick Wilderness for the Air Quality Related Values High Lakes Sampling Program. The most exciting project is the study of the jokulhaup (glacial outburst flood) that occurred in September 2003 on Grasshopper Glacier. The glacier is situated in the heart of the Wind River Mountains, just east of the continental divide. A lake at the head of the glacier broke through the moraine, traveled subglacially and flooded the valley below where it was recorded at a gage station approximately twenty-five miles away. Work involves getting to the glacier (which is most challenging and typically involves riding into the mountains on horseback), documenting the ice and sediment features of the recent flood as well as clues to past floods, and conducting Rosgen surveys on the new position of the stream channel. All I can say is life is great. Thanks to all of you for your guidance and support in getting me here.

Corey Blaker (BS 1998)

Corey is currently a Chemical/Soil Engineer, Technical Specialist with the Nalco Chemical Company.

"Many students and even professors told me it would be difficult to obtain a job with a non-teaching earth science degree. I encourage everyone to bang down the doors of large private companies because they are always looking for people trained in the sciences."

Casey Smith (MS, 2003)

Since graduation in December 2003, I have been living in my hometown of Grand Rapids. I was hired by NTH Consultants, Ltd. in February of this year as a Staff Scientist working on a variety of different projects from soil and groundwater contamination investigations, to geotechnical investigations, to remediation and construction oversight work. I was married to Amy Goodrich on July 31, who I met at CMU as an undergrad. Also, we have just purchased our first home on the northeast side of Grand Rapids and look forward sharing our new home with Jake, our mischievous chocolate lab.

Shannon Wong (MS, 2002)

Hello friends! I am currently working for ATC Associates Inc. in Pleasanton, California and I now live in San Jose (about 1 hr south of San Francisco). I started working for ATC in May 2004 and have been working on Phase I's and a long-term soil and groundwater remediation project. I love my job and life in California is good.

Field Trips

The Faculty and students bring back great pictures from their class trips and Geology Club trips! It was hard to choose, but we had to share some of them! Special thanks to Danielle Odette, Audrey Ritter and Peter Voice for their contributions!



Outstanding Alumni Academy

The Department of Geosciences held an Induction Ceremony and Reception on October 15, 2004 to induct John Fowler into our outstanding alumni and to showcase his distinguished career in the field of Geology. John Fowler has made great contributions to the field of Petroleum Geology.



I came to Western Michigan University in the fall of 1975 to attend graduate school, after receiving a Bachelor of Science degree in Geology from Michigan State University that same year. I left Kalamazoo in the spring of 1978, having studied sedimentology under W. David Kuenzi, and also having had the pleasure of working as a graduate assistant for Professors Lloyd Schmalz and Ron Chase. With thesis complete, I received a Master of Science degree in Geology in December of 1979. I moved to Oklahoma to join Phillips Petroleum as a petroleum geologist in April of 1978. I moved back to Michigan in 1980 to work for Patrick Petroleum, followed by Ladd Petroleum in 1984. In June of 1986 I co-founded Polaris Energy, where I have been ever since.

Polaris Energy is a geological/geophysical consulting firm, specializing in services to the oil and gas industry. Among other things, we provide clients with integrated models of the subsurface, so as to economically explore for new sources of oil and natural gas, or to efficiently develop known reservoirs. Our clients range from small, locally based family-run companies, to large international independent oil and gas firms. We have worked in far-flung places like Australia and South America, but we are focused mainly on North America, including the Michigan Basin. Some of our most exciting work involves generating oil and gas prospects on spec. Within the last few years we have focused specific attention to developing prospects in fractured shales, Pennsylvanian-aged sandstones, and Lower Paleozoic Carbonates.

I am a member of the American Association of Petroleum Geologists, the Michigan Basin Geological Society, and the Potential Gas Committee. I have been a member of the Western Michigan University Geosciences Industry Advisory Council since its inception in 1983. I have been married to Janet for 30 years, and we have four grown children.



Ms. Lisa Phillips and Dr. Alan Kehew



Dr. Bill Sauck, Jeff Hawkins, and Dr. Duane Hampton



Mr. John Fowler with daughter and wife, Janet.

Special Honor

The Geology Club made the most of an opportunity to honor Dr. Lloyd Schmaltz for his life-long contributions to the Department. A plaque with his picture and a list of his achievements will be hung outside of the Lloyd Schmaltz Museum. If you get a chance, please stop by and check it out.



Geology Club officers: Danielle Odette, President; Jessica Crisp, Vice President; Steve Mouton, Secretary.



Danielle Odette presenting Dr. Schmaltz with the plaque.



Mr. Jerry Aiken, Marilyn Schmaltz, and Lloyd Schmaltz.



The plaque that will hang outside of the Lloyd Schmaltz museum.

donations for 2003

Your generous contributions to the department support a wide array of activities and we appreciate your help. We try to thank each donor, but as with all bureaucracies we do miss someone occasionally. If we missed you, please know that we rely on your support and will continue to make every effort to acknowledge your gifts. Please accept our sincere thanks.

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We hope that you will consider making a contribution to the geosciences community. You may specify that your donation go to the Department of Geosciences Development Fund for any of the purposes listed, or write in a selection of your choice.

The Development fund is used to support a wide array of activities, including undergraduate scholarships, student travel, supplemental support for equipment purchases, student activities and a variety of projects for improvement of teaching and research in the Department.

The Kuenzi Fund is used to support graduate student research with emphasis on students studying sedimentology.



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Return to: Dr. Mohamed Sultan, Chair, Department of Geosciences, 1187 Rood Hall
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