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Geosciences Newsletter - 2005

Department of Geosciences

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Mohamed Sultan, Chairperson

Dear Friends and Alumni

A year passed since I joined WMU department of Geosciences. It has been quite a productive year for me and for the department and a rewarding experience on many fronts, thanks to the efforts of the faculty, staff, students, alums, and friends. It is a team effort after all and I am lucky to have the best players on board (all of you).

I will briefly summarize a few (can not cover all) of our departmental achievements over the past year. We invested efforts and time in evaluating our existing graduate program and in developing a comprehensive and well-structured program that takes advantage of the recently acquired areas of expertise (Geochemistry, Sedimentary Geology, Tectonics and Petrology, Geophysics and Remote Sensing). Currently, Geosciences offers Ph.D. degrees in Hydrogeology. Starting fall, 2006, we will be expanding our Ph.D. program in the field of Geosciences to take advantage of the collective expertise in the Department. A new MA Earth Sciences program has been created to accommodate part-time, continuing education and other students who do not seek a research-intensive graduate degree. Timelines for coursework, research and exam requirements for our graduate programs have been streamlined and clarified and admission and program requirements of the existing Ph.D. and MS programs were revised.

Modification to our existing graduate program was just one of some twenty initiatives that were included in our Strategic Plans (Academic Program Plan/Compact Plan) that we generated last year. The initiatives were articulated to

achieve three main goals over the next several years focusing principally on: (1) increasing our research productivity and prominence through increased professional prominence and grant funding among our current and future faculty and promoting rigor and productivity in our graduate program at both the Master's and Ph.D. levels, (2) promoting excellence in education and student research training, and (3) improving enrollment in our undergraduate program offerings and increasing recruitment. We aspire to become one of the top 50 geosciences departments in the US, in terms of research productivity and prominence per capita, within the next 10 years. We will create the infrastructure and conditions in our department to support and accelerate funded research and to improve our program to a level that is nationally competitive. Specifically, we want to expand our abilities for conducting cutting-edge interdisciplinary research through new hires in vibrant and well-funded research disciplines. We realize that increasing our research productivity needs more than just new hires. We plan to substantially improve our base of research facilities and equipment through a number of specific initiatives.

A number of these initiatives are underway or have been completed (e.g., completion of the Core Lab sedimentary research facility, development of a remote sensing research facility, installation of a real-time receiving station). Our plans have been well received by the administration and our progress on the implementation of these initiatives is being noticed. Moreover, we were promised that support for our plans and initiatives is on its way. The University did well on its promise. One of our main initiatives has been the development of a new facility to replace our aging West Hall Core Lab. The project was brought under the radar screen of WMU administration and the administration responded to our initiative by leasing a 30,000 ft² modern facility to house our Core Lab activities. Moreover the administration advanced our proposal for the development of the new facility using Congressional Earmark funding. Out of the fourteen projects that were submitted by WMU scientists, three were forward to Washington D.C. for consideration for Congressional Earmark funding. Out of the three projects that were advanced, only ours received Congressional Earmark funding (600k). The new facility, The Michigan Geological Repository for Research and

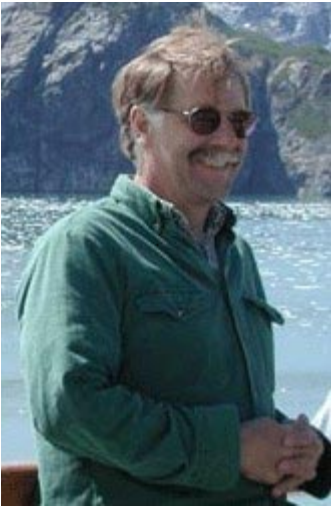
Education (MGRRE) will serve a number of purposes including research and education related to fossil fuels, water resources and environmental problems and applications with a focus on resources in the State of Michigan.

Two of our faculty members, Michael Grammer and Carla Koretsky, were tenured with high marks. Our aggressive research program, our funding (>\$1 million past year) and publication records are all on the rise and all indications this trend will continue. Carla and Johnson secured NSF funding to acquire an ICP-OES, Ron renewed his US Corps of Engineer funding for research on slope stability, and Sultan received new NSF funding to investigate the renewable water resources of Sinai.

Renovations to Rood Hall were conducted over the summer as the building was vacated for asbestos abatement. The graduate student area was completely renovated with new carpet, ceiling, computer connections, desks, and the list goes. Also, the student computer lab was remodeled with new carpet, computer tables, and hard-wired computer connections. We are committed to assist and to support our students in their research and educational activities. We started implementing a new policy to encourage students to present their findings in National by providing partial support to any student who is a presenting (senior author) his or her research in National meetings. We are looking into ways to expand our support for our students. A new initiative is under way to build new endowments for student support through existing departmental funds (W. David Kuenzi endowment ~20k; Lloyd Schmaltz endowment: 10k) and through the generous contributions of our departmental friends and alumni (e.g., Advisory Council Endowment, Envirollogic Technologies Endowment, and W. Richard Laton Field Camp Scholarship).

Our Advisory Council continues to be quite active and supportive of the Department. The Council is currently developing operational guidelines for the body and is looking into ways to develop an affiliated group, the Geoscience Alliance. These steps are being taken to increase the participation of our alumni and friends in our departmental activities. To sum it all, there is a lot going on, the future looks bright, and I am really privileged to be a part of the WMU Geosciences family, its, faculty, staff, students, alumni, and friends. I am looking forward to meeting you all in our upcoming Annual Spring gathering and I will be very glad if you could make it.

faculty news



Dave Barnes

Greetings from Kalamazoo! Field trips to Kentucky, the turning of the weather and the leaves, Alumni Reunions, and Newsletter contributions are all familiar parts of the fall for me in our Geosciences Department. As you can see in the rest of the Newsletter there is much new and impressive going on in our Department and the intensity of professional activity is high.

Most of my activities in the last year have revolved around subsurface geology in Michigan and my continued involvement in the Michigan Basin Core Research Lab (MBCRL) initiative. As described elsewhere in this newsletter the new Core Lab is a great tribute to the years of effort by Bill and Linda Harrison and the critical influx of energy more recently by Dr. Sultan and Mike Grammar. This facility will certainly be a great place to work, train students and will be a feather in our department's cap for many years to come.

The last year has been productive in several different projects. We continue our work on Pennsylvanian bedrock aquifers and the results of this work continue to be presented by M.S. graduate student Niah Venable as a talk last fall and also a poster this fall at the Eastern Section AAPG Meeting. We are fortunate to continue to work with DEQ and USGS geologists in their characterization of bedrock aquifers in the Tri-counties area (Clinton, Eaton, and Ingham) and study of contamination in these rocks near Mason, MI. I was also invited to present the Key

Note speech at the 2004 Association of Engineering Geologists, Annual Meeting in Dearborn, MI., titled *Application of Key Stratigraphic Concepts to Engineering Geology in Michigan, Including Geological Insights for Engineers from the Sequence Stratigraphy "Revolution"* in which I was able to summarize research activities in recent years on coastal geology and bedrock aquifers in Michigan and "teach" some engineering geologists a little about Sequence Stratigraphy!

Our sedimentary geology research group (Barnes, Gillespie, Grammar, and Harrison) and students (Josh Kirschner and Amanda Wahr) has also been working hard on DOE funded research to understand important, dolomitized hydrocarbon reservoirs in producing formations in the Michigan basin since early in 2005 including *Oil Field Structural Mapping and the Distribution of Dolomite in the Dundee Formation in Michigan* (reported in a poster presentation at ES AAPG, Sept., 2005). We will continue with this program for 2 more years and are putting significant capabilities and instrumentation in place as a result of this important funded research project.

I have also been very involved in consideration of Geological Carbon Sequestration (GCS) and the importance of this technology to anthropogenic greenhouse gas emissions concerns. GCS provides the most economically and technologically viable method to mitigate anthropogenic greenhouse gas emissions especially from large emissions point sources. A 1 year DOE funded research project awarded to Harrison, Barnes, and Grammar to assess GCS potential in Michigan was conducted through the *Midwest Region Carbon Sequestration Partnership* (a 7 state consortium along with project coordination by Battelle Memorial, MRCSP Phase I) and concluded with preparation of a massive, multi-state report, several multi-authored presentations at the 2005 ESAAPG meeting in Morgantown, WV, AND successful funding of the DOE Phase II MRCSP partnership project. This new project funds (at ~\$250K) our MBCRL research group for 4 more years of GCS studies including a probable Enhanced Oil

Recovery/CO₂ Sequestration pilot project in Michigan. Nationally, development and deployment of GCS technology is very significant and has massive economic importance as we move into a carbon emissions constrained episode of human development.

My family is doing well. Brendan is off to college in Cleveland (the Cleveland Institute of the Arts), Nick and Lily do well as students at Mattawan High school, and Teresa is right on the verge of completing caboose renovation and re-activation of her artist professional career. Best wishes to all.



Ron Chase

This past year has really been good to me. I hope you had a good year also and are willing to share with me some of the highlights (ronald.chase@wmich.edu).

I am still teaching the Optical Mineralogy and Petrology/Petrography sequence that many of you grew to love(?). The major changes from past years are discussions of X-ray identifications in optical and some sedimentary discussions in petrology. After 42 years of university teaching, I still feel nervous going into my first classes, love to communicate with students, and love to take folks into the field or bring field materials into laboratory settings. I still teach the two-week summer field courses in the Upper Peninsula and enjoy them as much as ever. I continue to be the Earth Science Teaching advisor and conduct summer workshops for teachers that emphasize subject content. The upshot is – I have officially passed the traditional retirement age, but I do not plan to retire until teaching ceases to be fun or my productivity falls

below departmental standards. I am extremely grateful that WMU and my colleagues continue to have me around without referring to me as “that old fart”.

My research activities continue to be concentrated on studies of coastal bluff erosion and the testing of geotechnical solutions to the problems. As I have stated in newsletters since the year 2000, Al Kehew and I have been very active in designing and implementing a huge bluff dewatering experiment at three sites on the southeastern Lake Michigan in cooperation with, and with significant sponsorship from, the U.S. Army Corps of Engineers. This past year’s activities were the keystone to the project. After two years devoted to well drilling, placement of a large number of ground water and ground movement sensors, and the bringing of these instruments on line with electrical hookups and computer programming, we have been reading real-time data with pumps turned on or off for the past 10 months. As our dewatering experiments continue, I have hit the lecture circuit with presentations at the International Geological Congress, the Association of Engineering Geologists, the technical program at EnviroExpo – Boston, the International Association for Great Lakes Research, and the Geological Society of America. I have also become an official reviewer of slope stability papers submitted as Technical Reports prepared by the Geotechnical Division of the USACE. Our project is scheduled to continue with USACE sponsorship through 2009 if federal funding continues to be available. Although these activities do not conjure up images of the igneous and metamorphic rocks I dearly love, the thoughts that go into my geotechnical studies are very much aligned with those that go into the kinematics and dynamics of metamorphic systems and are merely applied on a larger scale with a more immediate timetable.

Chris and I are still living in a large house that used to be occupied by children who are now scattered to the winds. She is currently thinking about a return to a career in education after taking some time off. I suspect her motive is to escape from her absent minded and domestically lazy husband. Karl, now married as of September 17, is still a Sales Manager at the Peninsula Hotel in Chicago, one of only two five-star properties in that city. His new wife is a Sales Associate at Chicago’s

Sheraton Towers. Andy is still driving a cab in Seattle while wondering what to do with his life. Scott is still practicing his orthopedic surgery in Indianapolis where his wife is also in the medical field as a dietician. Jamie is still an attorney in Washington D.C. where his wife is also an attorney with a rival firm. Ah – all of those professional children and yet no grandchildren.



Duane Hampton

Western’s Geosciences dept. continues to grow and evolve. Our dept. has greatly benefited from the leadership brought by our new chair, Mohamed Sultan. We have done a fair amount of departmental work which I’m sure has been reported elsewhere. One change is that we modified the hydrogeology major. The modifications should make it more flexible and hopefully more attractive to potential majors.

It has been a quiet year for me. Some larger proposals I submitted to look at improved ways to remediate or isolate PCB contamination in the Kalamazoo River sediments didn’t get funded. A few small projects did get funded, including a review of a TCE spill cleanup at a Michigan DOT building and a “cleanup” at Asylum Lake, where all of the wells were either flush mounted or abandoned. I also have started advising some masters students who are researching issues near and dear to my heart, including using hydrophobic gravel packs to increase free product recovery, and evaluating different slug test methods, including Bouwer & Rice. I hope to see worthwhile results from these projects. I have taught mostly hydrogeology courses the last few years since Dan Cassidy has been in Canada. We look forward to his possible return in August 2006.

In my personal life, my youngest child made significant progress this year. My wife and I are rejoicing over his decisions, and are enjoying our time as empty-nesters. We have two new cats. I finally achieved my long-term ambition of having one of our family members named Darcy (even if she is only a cat). Life is good. I wish you all the best.

The faculty have recently decided to set up several potential endowments to honor the contributions of various former department members. The Kuenzi fund, together with the new funds honoring Lloyd Schmaltz and William Harrison III, recognize the significant contributions of former faculty. We encourage you to donate to any of these funds as a token of your esteem and gratitude for the work of these men. In future years we will probably create funds honoring other emeriti. Several other endowments are being created by alumni (Jeff Hawkins and Richard Laton) and by the Geosciences Dept. Advisory Council. Once these funds attain the \$10K minimum required for endowments, their annual revenues will be used primarily for student aid. We will also create a new fund to which the faculty will contribute. You are also invited to join us in supporting the work of the department, whether by contributing to this (or one of the three faculty-named funds) or by donating unrestricted funds to be used to meet immediate departmental needs.



Alan E. Kehew

Dear Alums and Friends,

I hope you have had an enjoyable and productive year since our last newsletter came around. I have no complaints about my year. Every year I

faculty news

promise myself to cut back on the number of commitments I make, but it never seems to happen.

At the beginning of last academic year, I was just finishing a sabbatical. In September, I had an interesting trip to Latvia to look at glacial deposits. The subglacial sediments that were deformed by the overriding ice were spectacular, and very similar to some features we have been finding in gravel pits in southwestern Michigan. One of my major goals for the past several years was to finish a paper on these features, and that finally happened during the year. This paper (with co-authors and former students Steve Beukema, Brian Bird and Andrew Kozlowski) will be coming out in *Quaternary Science Reviews* this fall. I was also happy to see a paper by Gerald Unterreiner and myself finally come out in the summer edition of *Ground Water Monitoring and Remediation*. This one deals with herbicide compounds in groundwater in Calhoun County.

The hydrogeology coalition we have with Suez Canal University and South Valley University in Egypt continues to flourish as we near the end of the project (funded by the State Department). A large group was supposed to come here for our hydrogeology field course in the summer of 04, but, because of gridlock somewhere in the federal government, only 3 received visas. This last summer, the visa process went better and 6 visitors came. We had a great time with them both in the course and in some cultural trips we made to Chicago, Mackinac Island, and Dearborn. We are also progress on the two joint research projects we have going, one in the Sinai and one in Upper Egypt near Luxor. I plan to make a final visit there in December with Bill Sauck.

One of my longtime pursuits, the geologic mapping of 7 1/2- minute quads that we have been doing around here, came to a close this year. In all, a large group of students and myself mapped St. Joseph County, Van Buren County, and about half of Allegan County. It was a lot of fun and I will really miss doing that kind of work.

The end of the mapping projects will hopefully allow me more time to devote to the bluff recession monitoring and dewatering project that I have been doing with Ron Chase for the past few years. The dewatering system was in operation most of the winter and now we are

interpreting the data from that phase. If the Iraq war and Hurricanes Katrina and Rita don't divert too much of the US Army Corps of Engineer's funding, we hope to keep this project going for a few more years.

One of my other ongoing activities was the revision of my textbook, "Geology for Engineers and Environmental Scientists" for the 3rd edition. A revision is nowhere near the work of a first edition, but it is still a big effort and the end is now in sight. I am reading page proofs this fall and the final product should be out late in the year. They make great Christmas presents, so order now—the supply is limited.

Add in a little consulting and expert witness work, helping with the Groundwater Teacher Training Workshop in Battle Creek, and serving on departmental committees, and that pretty much covers my professional activities for the past year.

It was so busy, in fact, that Kay and I only got to Maine for about 10 days around Memorial Day. We have some property there and we no sooner arrived that a big storm blew through and knocked two huge trees down, one against our cottage and power line. It was nothing compared to Katrina, but it still pretty much ruined our trip what with the cleanup from that and the usual work and maintenance we had to do. Kay is working full time now at Heritage Community of Kalamazoo and likes everything but the hectic pace. Our twin daughters both got remarried during the year. Michelle lives in Grand Rapids and Melissa in Maine. Youngest daughter Liz is now a junior at the University of Southern Maine majoring in psychology.



Dr. Kehew with the Egyptian visitors



Michelle Kominz

Hello, alumni and friends of Western Michigan University's Department of Geosciences. Yikes, it's my 8th year at WMU and I can tell you: time flies when you are having fun!

I taught nothing last academic year. Instead, I moved into my Haenicke Hall lab with a vengeance. This was a great advantage over the summer while, as Rood Hall was being asbestos abated, my group of stalwarts had a place to be productive. Over the course of the year I had 3 undergraduates (Danielle Odette, Jake Marson, Dan Peabody) and now have two graduate students (Travis Hayden and Kisa Mwakanyamale) working with me there. We have 3 new Macintosh desktops and one new Pentium (well new over the last year anyway, all computers are old as soon as you take them out of the box, it seems).

So what were we up to in that lab? I have two main projects ongoing. Central East Coast margin tectonics and eustasy (global sea level change) has now morphed into tectonics, eustasy and asteroid impacts. Travis has taken on the preliminary analyses of existing well data and the first analysis of a well that is to be drilled this fall into an Eocene impact crater in the southern Chesapeake Bay. Meanwhile work on the eustatic and tectonic history based on data recently acquired from boreholes continues apace. Bill Van Sickle's Thesis work finally came out in Basin Research and is incorporated in a synthesis paper that Ken Miller (Rutgers University) will have coming out in Science very soon. Kisa just arrived from Tanzania on the Jon P. Rood Scholarship. She will be starting to analyze wells from offshore Tanzania basins, which may be able to tell us if those "sea level" curves based on the east coast U.S. are actually eustatic, as well as offering insights on the tectonics of the northeast African margin.

My other project, which started officially (with NSF funding) last spring, is an analysis of the impact of seafloor spreading on long-term sea-level change. Jake actually spent a lot of time helping me start the process of breaking the oceans down into basins and developing a method for removing anomalous seafloor data. Danielle and Dan are helping to compile porosity data from ODP (Ocean Drilling Project) wells in order to determine sea-floor depths due to tectonic subsidence. Danielle presented a poster last spring at the North-Central GSA (Geological Society of America) meeting and got a "best poster award". She will be presenting her latest work at the National GSA in Salt Lake City. I have been working on defining the age vs. depth relation of ocean floor (using the above data). I presented a poster (with Jake) at the NCGSA meeting and will be presenting another at the Fall American Geophysical Union Meeting in San Francisco. It still remains to write up the results for publication and to get together with my colleague, Chris Scotese (U Texas @ Arlington), who is doing the paleo-reconstructions, in order to finally assess the impact of spreading rate changes on eustasy.

I attended quite a few meetings last year; the privilege of one on sabbatical. I attended my last IODP SSEPs meeting in Okinawa, Japan. It was remarkable to leave, feeling an expert in the process, and ready to let others take over the task of steering and evaluating the Integrated Ocean Drilling Project. I also went to the National GSA Meeting in Denver and gave an invited talk on my PhD work. Specifically I was talking about the impact of spreading rates over the last 150 million years on sea level. This is a hot topic and I am deep in a debate that goes kind of like this: "Spreading rates were high in the Late Cretaceous. Were not! Were So! Were not! Were So! I'm telling! You wouldn't. Would! Would not! Would too!" Actually this ended up being the topic of a special mini-conference held in June at Rutgers University with Dr. David Rowley and myself as the chairs (we are the main instigators of the above paraphrased discussion). The conference: "Relationships among seafloor spreading, long-term sea level, and ocean chemistry changes from Late Cretaceous to Present" was attended by movers and shakers of eustasy, plate reconstruction and geochemistry from as far away as Europe and Australia and can be read

about in EOS (AGU's monthly magazine) soon. I attended a meeting of Andriil (Antarctic Drilling) in Denver in March and discovered that a lot of great work is being done there. However, my proposal was for zero time and no money. I need them to gather a lot more data before I can begin to use my modeling approaches. A trip to Breckinridge to attend a Geodynamics workshop in June rounded out my meetings. Modelers are definitely pushing the limits and are working on providing uniform, powerful 3-d computer code that can be used by the greater community.

Of course my last year was not all work. I had a stellar downhill racing year, but not (as I had hoped) due to increased time devoted to it during the season. In fact, I spent most of January and February sick with the flu (no flu shot for under 80's people last year) and performed half of my race league competitions in that condition. Despite, or because of illness I managed to pull off a major coop – fastest "mature" female in the league. From there I took advantage of my sabbatical to attend the NASTAR championships in March in Park City Utah. And I came home with the silver medal. Bottom line, it was a good year for downhill racing.

Now I am back in the teaching saddle, with a new group of (181) ocean systems students. They are recovering this weekend from their first exam. I also have 4 graduate students in my quantitative basin analysis class. Kisa and Travis both need it for their research and there are a couple of other stalwart souls who are game to learn about quantitative approaches to stratigraphic data.

I will be heading to Lamont-Doherty Earth Observatory while my students and colleagues go off to the national GSA meeting. I have been invited to give a talk on the work I did with Gerard Bond over a decade in the 80's and 90's. It is hard to find myself speaking among many of the greats of geosciences because Gerard, my colleague and my mentor for so many years is no longer with us.



Carla Koretsky

Greetings Friends and Alumni,

It has been another busy year at WMU, and it's hard to believe that it is time to write a newsletter blurb again. I began the last academic year with lots of exciting happenings. I was fortunate enough to be the invited speaker at a conference held at a little resort in the south of France during November. The "Nereis Park Conference" is an entire conference dedicated to folks who study worms and their influence on solute and sediment transport in marine systems. Who knew there were enough people to hold such a conference? I presented the results of some of my modeling of worm behavior and solute transport, and in return had a whole week to enjoy French wine and cuisine every day. Not a bad deal at all! On the conference front, we also had a tremendous contingent of undergraduate and graduate students from the department attend the Goldschmidt Conference, held this past May in Moscow, ID. This conference is the premier annual geochemistry conference, and I am pleased to report that Soumya Das and Suama Ndengu presented excellent and well received posters regarding their work on Pb and Ni adsorption to sediments. Tracy Lund and Keith Boneburg, two other students in my research group, came along to see the conference, as well. I also presented some of my work, chairing a session on worms (them again!) and giving an invited talk on competition between chemical and enzymatic pathways of Fe reduction in marine sediments. Many of us plan to attend the upcoming GSA conference in Salt Lake City.

Two of my masters students defended their theses with success this summer. Noah Ndenga defended his

thesis, "Seasonal Variability in Trace Metal Speciation and Vertical Redox Stratification of Freshwater Lake and Marsh Sediments in the Kalamazoo River Watershed (MI, USA)", while Suama Ndengu, defended her thesis, "Investigation of Nickel Partitioning in a Contaminated Aquifer". I wish both Noah and Suama the very best of luck. Noah plans to pursue a degree in pharmacology. Perhaps Suama, a Fulbright Scholar who completed a truly outstanding thesis, winning the department's outstanding MS Research award, will return to us to complete her PhD in Geochemistry. I have two new graduate students in the group: Keith Boneburg and Terri Shattuck. Keith worked with me previously as an undergraduate, and is beginning a study of metal speciation during reductive dissolution of metal-doped ferrihydrite. Terri is working on worm (and shrimp and crab) burrows – measuring metal concentrations with distance from the burrow wall. Terri, as well as Dave Eagle, an undergraduate in the department, have both worked on this project, and accompanied me to Sapelo Island, GA this past spring to collect burrows. Other new students in the group include Chris Landry, a GEOS undergraduate who is looking at Co adsorption on mineral surfaces, and Melinda Schaller, an undergraduate at Kalamazoo College, who is looking at Cd adsorption on feldspar surfaces. I also had six fabulous high school students (Katy Knoechel, Gabe Surprise, Ben Quintel, Steve Breisach, Sagar Deshpande and Jessica Song) do short internships in the lab this summer.

In between supervising students and running off to conferences, I spent a significant amount of time this past year, together with many of my colleagues, revising our graduate MS and PhD programs. We are very proud of the results, and encourage you to go to the new and improved GEOS website and have a look. The new programs should be very beneficial to our students, and we would love some feedback from you, our alumni!

Lastly, I am very pleased to have been promoted to Associate Professor this year, and I am grateful to the National Science Foundation and the Petroleum Research Fund for their support of my research group. My ongoing NSF CAREER grant, together with my ACS-PRF grant, make it possible for me, and all of the excellent students in my group, to do our

research. Furthermore, Johnson Haas and I were tremendously fortunate to receive another grant from the NSF, in spite of fierce competition this past funding year. This grant will allow us to purchase an Inductively Coupled Plasma Atomic Emission Spectrometer. The new instrument will add significantly to our current aqueous geochemistry analytical capabilities. The instrument should be up and running this fall. Come on over to Haenicke Hall for a demonstration!



R.V. Krishnamurthy

The past year was a busy and exciting period at the stable isotope laboratory. PhD students Loago and Ahmed completed their degrees and returned to their respective countries. Ahmed in particular has established himself as a very valuable member of the United Arab Emirates University and frequently sends e-mails remembering his enriching days in our lab. He has in fact represented his country as a representative for United Nations in meetings in Egypt. With his assistance we have signed a Memorandum of Understanding with his university, which is expected to enhance collaborative research between us.

Tsigabu and Steve who quickly filled the vacuum created by the departure of Ahmed and Loago are going full steam with their research. Steve's results so far show significant variability in Indian Monsoon during the early Holocene and his work is supported in part by a grant from Michigan Space Consortium. We are still waiting for a precise chronology but the data fits well with a recent speleothem-based study published in Geology. That study was from a site not too far from the lake where Steve's samples came from. Steve will be presenting his work at the GSA Meeting this fall. Tsigabu's work dealing with

carbon isotope fractionation during bacterial reduction of metals did spring some surprises when we observed that abiotic reactions- most likely photochemical- was taking place right under our nose! His project also won him the Monroe Brown Life Science Graduate Research Award. His preliminary results were presented at the prestigious Gold Schmidt Conference. Another pleasing note was from Applied Geochemistry journal which sited one of our papers authored by Tony Marfia, Eliot Atekwana and myself was one of their 25 "most requested" articles. Alas, Tony is not around us to experience this thrill.

During summer, there was a lull in the lab activity dictated by the building-wide closure. Hopefully, the sounds of rotary and turbo molecular pumps will be heard on the third floor not too late!

On the home front, daughter Sowmya spent three months in New York working for American Express and it was also my first experience at the Big Apple. May be because of the brevity of stay, but New York confirmed the statement that it is unlike any other US cities. To me it looked more like a slightly cleaner version of Bombay; at least the spots that I visited. My son Rohan completed his first year at Kalamazoo College. He had, as usual a wonderful year, performing in concerts and also teaching a class on South Indian Percussion at the college. He has been inducted to the Kalamazoo Symphony and is slated to perform at the Youth Series next spring.

Another incident that took place while going to press comes to mind and it is worthy of addition here. Last week while waiting at the Kalamazoo airport a mother-daughter approached me and I recognized the young girl as a student, a precocious one, in my undergraduate class. She introduced me to her mother who said "my daughter greatly enjoyed your class and learned a lot. She and her brother(the other precocious one) have started looking at the earth and environment on the basis of your teachings". I thanked her and had a feeling of satisfaction and happiness far greater than would result from a positive phone call from a Program Manager or a journal Editor!



Heather Petcovic

Hello Geosciences friends and alumni! I have greatly enjoyed my first year at WMU and have had the pleasure of meeting many of you through the geology club, field trips, and alumni functions. Because of my joint responsibilities between the Geosciences Department and the Mallinson Institute for Science Education, I am not always around the department. But I am always happy to talk about volcanoes, igneous rocks, and geoscience education.

This past May, I attended the Goldschmidt conference in Idaho, where I co-led a field trip to the Columbia River flood basalts. During the field trip, we examined the physical and compositional characteristics of huge-volume lava flows and their feeder dike systems. This area had been the focus of my geologic research for several years, and is a fascinating place in which to study volcanic processes, eruption mechanisms, and the links between flood basalt volcanism and tectonics.

I also had the pleasure of accompanying Ron Chase, Peter Voice, and the GEOS 438 field course to the Michigan Upper Peninsula this summer. This was my first trip to the U.P., and I was truly impressed by the geology we encountered – everything from glacial features, to Precambrian fossils, to beautifully preserved sedimentary structures, to copper and iron deposits, to my personal favorite, the Keweenawan

flood basalts. Many thanks to Ron, Peter, and the students for making this an unforgettable experience.

In my role as the department's Geoscience Educator, I have been involved in a number of projects. Together with Earth Science Education faculty from the Geography Department, I have undertaken a major revision of the content and format of several earth science courses for future elementary teachers. The revised courses are being piloted this fall, and I am in the process of gathering data for a research project on how well students understand the course material. I hope these data will ultimately lead to a better understanding of how future teachers learn geoscience content, and how that content can be more effectively taught.

I also have initiated a pilot study that examines student attitudes toward outdoor learning, such as on field trips and at field camps. Because most geoscientists spend at least part of their time working outdoors, it is critical that we understand how students learn in the field environment. So far, the data are showing that field experience increases both competence and confidence in geologic abilities. Many thanks to the GEOS 438 students who agreed to be "guinea pigs" for the initial study.

The coming year promises to be full and exciting. I plan to continue my research on the flood basalts in Oregon and Washington, as well as my work related to geoscience education. Additionally, I am involved with outreach and educational initiatives related to the new Core Lab facility. I also am working to increase ties between the department, local schools, and local earth science teachers. On a personal note, my husband Mike and I are expecting our first baby in early November. I am sure that our new addition will keep us busy through the coming year.



William Sauck

Hello alums and friends! Fall 2004 semester got off to a start with Geos560 (Introduction to Geophysics) and Geos561 (Seismic Methods) classes. For the latter, the Betsy seisgun has been popular as a seismic source for the outdoor lab sessions. Interesting how that is perceived as much more exciting than the sledge hammer!

Spring term was time for the Geos562 course (Gravity & Magnetic Methods), and another large section of Geos100. In early April I went to the SAGEEP (Symposium for the Application of Geophysics to Engineering and Environmental Problems) meeting in Atlanta to present a paper co-authored by students Laura Smart and Dan Lynch (Anthropology). This was an update on the archaeological geophysics being done at Ft. St. Joseph in Niles, MI. Incidentally, it included extending the magnetometer survey area into the St. Joseph River with a wading survey in July, and into another area covered by thin ice in Feb.

Another paper in our biogeophysics series, dealing with the column experiments on conductivity anomalies caused by hydrocarbon-degrading bacteria, was published in "Geophysical Research Letters" in late 2004. After Spring finals, Elen and I went to Vienna to the European Geosciences Union (EGU) general assembly, where we both presented papers. Mine (with co-authors Kehew and Smart) was about the preliminary results of the gravity and electrical methods surveys done in Dec. 2003 in the Sinai of Egypt. We included



the weekends before and after the EGU meeting in our schedule. The first was spent at a WMU sister university in Passau, Germany, about a 3-hr train trip north from Vienna. After the EGU we took the 5-hr hydrofoil boat trip down the Danube to Budapest for the second weekend. Together with the wonderful evening dining and music activities during the intervening week in Vienna, this was a most memorable trip.

From Vienna I went (with a gravity meter) directly to Cairo where I was met by colleagues from Suez Canal University, and transported to El Tur, at Moses Bay on the Gulf of Suez coast of the Sinai. I spent 6 very productive field days with Dr. Farouk Soliman, Dr. Mohamed Rashed, and our ever-cheerful Bedouin driver, Youssef, while expanding the gravity coverage over the El Qaa Plain groundwater basin. Both of these professors from SCU also came to WMU for the Hydrogeology Field Course in July-Aug.

On July 1, a geophysicist friend from the Univ. of São Paulo arrived in Kalamazoo with his wife and daughter to begin a 5-month post-doctoral stay. Jorge Porsani is the younger brother of a former student of mine from the years I was a visiting professor in Belém (mid-1970's). He specializes in near-surface geophysics, particularly GPR. We have a recent article in the Journal of Applied Geophysics on the use of GPR to map fractures in a granite quarry.

I taught the Geophysics module of the Hydrogeology Field course during Summer II as usual, and then went with Elen to work on our beach property in São Luis, Brazil until the last week of August.

On the family front, Jeff is still in Crystal Lake, IL with his wife and our only grandson. Jeff is working toward his instrument pilot rating in his spare time. Christine finished her 3rd year of graduate work in Clinical Psychology at Clark Univ. in Massachusetts. Carolyn (mechanical engineer) was brought back from the home office of her employer (SABO USA) in São Paulo after a stay of a year and a half, and returned to work at their Plymouth, MI office. She and brother Eric are living in a new condominium on the south side of Ann Arbor. Eric is a Sophomore in M.E. at U.of M., and also works part time at SABO. Elen made it through a second year without a surgery, and still gives lots of dinners and also travels more than I do. It was another very good year!

Adjunct Professor



Robb Gillespie

Cheers to all alumni and friends. What a year this has been!

The big news, of course, is that after years of planning, fund-raising and endless meetings and reports, the new Core Lab is becoming a reality. Bill and Linda Harrison, Mike Grammer and the rest of us saw approximately \$1 million dollars raised and a new 10-year lease on a great facility come together as WMU kicked into gear. Things just started to happen. Now we have all those cores to move. Uhhh yes, be careful what you wish for.

This semester I am teaching 2 sections of Introductory GEOS 1000 and one section of Ocean Systems GEOS 3220. You will note that we have a new course numbering system with a "0" added to end of all the old numbers. I guess that means that the classes this year are 10 times better than before. I'm busily revising things to include tsunami and hurricane updates and improving power-point slides done 3 years ago. Once again I'm lucky to have Nathan Brandner as my Teaching Assistant, and this year, aided by Terri Shattuck.

Drs. Mike Grammer, Dave Barnes, Bill Harrison and I have been working on the U.S. Department of Energy (DOE) grant we were awarded last year to investigate fractured dolomite reservoirs in Michigan. Things never seem to move as quickly as planned but we are making good progress. All those graphs sure do devour color printer cartridges at a rapid pace. We have a great group of students working with us on the project and we couldn't do it all without them.

Tres Rios Resources, Inc., the small Texas based oil and gas company I'm associated with, is still going strong. We had to put a pumping unit on the well we drilled last year, but it is happily pumping along right now. So – I guess high oil prices do have some upside. Now, the trick is to just find a couple more wells.

My new left knee is doing great now that all the physical therapy is done. I can do things I haven't been able to do for the last 3-4 years, such as climb the stairs to the third floor in Rood Hall. Now if I can just keep my old right knee from getting any worse.

The house saga continues. More dead trees disappeared, and more new spruce trees popped up in their place. I'm still working on last summer's (2004) to-do list, and "fun-with-leaves" is just around the corner again. You know the old saying "The harder I work the further behind I get." But that's what I get for going on a bit of vacation.

Linda and I spent 3 weeks in Alaska cruising up the inside passage on a small ship. Whales and eagles were everywhere and we almost became jaded – oh look, another whale. We spent some time watching the Le Comte and Sawyer tidewater glaciers from shipboard, and spent a day sailing around Glacier Bay looking at all the glaciers there. We took a helicopter up onto the Mendenhall glacier near Juneau and hiked across it, going down into crevasses, examining medial and lateral moraines in the making and climbing nearly vertical ice walls (yeah – my knee is better). The train from Skagway took us along the route of the Klondike gold rush and gave us another view of Alaska. We visited Anchorage, saw wildlife in Denali National Park and ended our journey in Fairbanks. I also got to finally touch the Trans-Alaska pipeline – a big deal to me because I worked for ARCO, one of the major oil companies that built the line. That's what paid my salary as a petroleum geologist for a number of years, and that's part of what eventually provided me with the opportunity to come to WMU.

The Geosciences Department continues to get stronger as the faculty works together. Mohamed's proactive leadership, along with the hard work from

everyone in the department, has put Geosciences on the right track and gained support from the University administration during a time of tough budgets. There's still a long way to go, but there is enthusiasm in the department and great things loom on the horizon (as long as the money holds out).

We have another strong group of students this year. They make teaching here fun. Now if they would just all come over to my house and rake leaves.

Lloyd Schmaltz

Another year and another vintage. At the time of this writing the grape harvest is about over and Bill Harrison and I have about 50 gallons of red and white wine fermenting. It was a good year for grapes and we expect the wines to be among our best.

The determined efforts to find a new facility for the Core Lab are coming to fruition. It is great to see the excitement in Bill, Linda, Mike Grammer, and others in anticipation of moving into a facility that is appropriate for their dedicated efforts. Please see Bill's comments for a summary on the new Lab.

I continue to serve on the Geosciences Advisory Council, the WMU Foundation Investment Committee and the Core Lab Advisory Committee. All three are challenging and enjoyable.

Marilyn and I continue a very active pace with regular exercise programs. We expect to return to Sandestin, Florida for January of 2006 to walk the beach if any of it is left. While in Sandestin last January former Geology faculty member Skip Davis and his wife Mary Ann stopped by for a visit. Skip was attending a conference on coastal erosion at the Sandestin Resort. This summer Wayne Lueck an earth science graduate when the ES program just started stopped by for a visit. We reminisced about our early field trips to the Upper Peninsula. Wayne later served as a Park Ranger at the Pictured Rocks National Lakeshore.

Marilyn and I are planning to take a cruise from San Diego to Cabo San Lucas and other ports along the Sea of Cortez. We are looking forward to a side trip to Copper Canyon to see how it compares with the Grand Canyon. We extend best wishes for a prosperous New Year.

News from the Emeriti



WMU Geosciences Alumni, Gerald Unterreiner and Emeriti Faculty member, Tom Straw

Tom Straw

Odessa and Tom Straw continue to enjoying life on the banks of the Wabash in New Harmony, IN. In January the "Wabash" could be seen about a 1500' to the northeast as the highest flood since 1950 lapped at the flanks of low terrace on which New Harmony is situated. Knowing that their home was not impacted by the 1913 "flood of record" was some comfort to them.

Odessa is nicely recovered from total replacement of her left knee. Her recovery was complicated by the surgery team fracturing her thigh bone which required her to keep her weight off that foot until the bone had healed. Tom said that it was the only time in more than fifty years that he had seen her "torqued off" for almost four weeks. She is now confident enough that she and Tom joined a tour to Scotland and Ireland for two weeks in early October.

The two California wetland court cases on which Tom had been working since 1999 ended during the late fall and winter with very satisfactory results for his clients. His reply to Odessa's plaintive question, "Are you through with that sort of thing?" Was, "It's unlikely that anyone will ever ask me to work in another

wetlands case"...he is scheduled to help install some 60 automatic water level records near Cleveland in late October.

Although Tom has commonly said that working in wetlands is a bit like being paid to walk in the woods, he recently learned that demons can lurk there. In April he was treated for lyme disease inflicted by deer ticks, and in late August he endured a mass attack of chiggers, or "red bugs" as they are known further south. He is convinced that his body is viewed as "chigger candy" by these troublesome mites.

If you have reason to be in or near southwestern Indiana let Tom and Odessa know and they will be pleased to show you "their town." New Harmony is one of the most visited historical sites in Indiana with a wide array of intact early nineteenth century buildings, a number of art galleries, and a wide array quality sculpture. Summer months are the theater season, and the "Under the Beams" concert series held in the "Granary," out of which David Dale Owen did some of the first geologic surveys of the mid-west, highlights the winter months. If you don't have a reason, visit us anyway.

michigan basin core research lab



Bill Harrison

Greetings from the Core Lab! We hope your year has been rewarding. This has been a very full year here. Linda and I made our annual pilgrimage to Bavaria in May. We had a fantastic time visiting our friends there and seeing the beautiful countryside. We also made a short visit to California wine country in conjunction with a photography workshop that Linda was taking in Carmel at the Ansel Adams Institute. Bill and his Dad took a road trip in June to Arkansas and were chased by the remnants of Hurricane Dennis all the way to Memphis. Over the Labor Day holiday, Bill went on a road trip with his Dad to a family reunion just a few days after Hurricane Katrina went through. Boy was the price of gas high in Knoxville!

Professionally, it was also a great year. Retirement seems a lot like working to me. I attended the AAPG convention in Calgary in June and the Eastern Section AAPG in Morgantown in September. I was co-author on several oral and poster papers presented at both meetings. Linda organized two PTTC workshops this year. The Spring workshop, held jointly with MBGS and SPE, focused on the Antrim Shale play and the Fall workshop was held jointly with MOGA and was the USGS final report on their Oil and Gas Assessment of the remaining undiscovered reserves in Michigan. Almost 400 people attended the workshops. Bill also presented at both workshops and provided some core displays for the attendees to view. Dr. Grammer presented a paper at the most recent workshop.

Bill and Mike Grammer led a field trip to the Bahamas to study modern carbonate sediments this spring. Attendees included several industry professionals, some WMU students and students and faculty from Michigan Tech. A great time was had by all, especially while we were riding the giant waves while crossing the Gulf Stream.

It has been an especially exciting year for the Michigan Basin Core Research Laboratory. We have had a lot of success in our fundraising campaign to get a new building for the Lab. Many donors from the Michigan oil and gas industry, some alumni and friends of the lab pledged over \$700,000 on our way to our goal of \$2.5 million. We also recently learned that our congressional earmark request through the University to the Federal government has been funded at \$600,000. Because of all the activity relating to the Core Lab initiative, the University Administration decided to lease a beautiful building near campus for us. It is the former Whitman Saddle Manufacturing facility on Michigan Avenue overlooking U.S. 131. It has over 20,000 sq. ft. of warehouse storage space and over 6000 sq. ft. of office space. We have been moving in gradually since early September and expect to be completely relocated sometime this winter. We still need to continue our fund-raising effort, though, so that we can purchase the building for our long-term needs. If you might consider supporting this effort, please give us a call at (269) 387-8633. It is a very exciting time for the Core Lab and we hope you will stop by and see us in our new facility whenever you are in Kalamazoo. You can check out some pictures and information about the new Core Lab which is now part of the Michigan Geological Repository for Research and Education at the web site: http://www.geology.wmich.edu/Research/CoreLab/CoreLab_cover_page.htm

GEOLOGY CLUB

Hello,

The club is a useful tool for the department to meet students, faculty, and alumni. We want to promote learning and teaching geology, while keeping active in the community and having numerous field experience opportunities throughout the year. We have a number of fundraisers, such as, our annual spring rock auction/raffle, WMU Geology T-shirts/mugs, community outreach, and can drives. Every month, we hold student run seminars to encourage learning about what our department faculty, alumni, and students are doing in the geologic community in terms of research and other activities. I would encourage anyone who is interested in giving an informal talk to please contact us. We wanted to let everyone know a few things about this coming semester:

- Weekly meetings will be held on FRIDAYS 1120 Rood.
- Our first student run seminar will be short lectures by students, giving talks about the geology experiences they had over this summer. If you are interested in participating in this student seminar, please let us know.
- If you are interested in giving a talk at any of the remaining student run seminars, please let us know.
- WMU Geology shirts and mugs are still available.

Geology Club Officers,
Danielle Odette, Trevor Hobbs, Chris Varga, Josh Kirschner

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 2005, first on April 15 and then again on October 28. 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 on discussions of bringing Geoscience Alumni back to Western to share in the current activities of the Department. Two Committees were charged to review what factors will entice Alumni to return to their college and what can the Advisory Council do to assist the Department in meeting this challenge. The Council Committees identified two approaches, first to create a large network of alumni and friends that will support and communicate the status of the Department programs and second, recommended more activities to showcase the students and the Department today. To accomplish these approaches, the Council Committee proposed an expansion of the Advisory Council and to create a group of involved Geoscience Alumni and friends, termed an Alliance to assist in the promoting the Department. More information will be provided in the future as the Council formulates a plan for implementing greater communication of the Department successes to the Geoscience Alumni and friends.

The Council was also pleased to hear of the success of Dr. William Harrison and the Department as the University secured the new core repository facility. The Council continues to support the Core facility and will work with the Department and Dr. Harrison in making the WMU repository the premier destination facility for Geoscientists to review and evaluate the Michigan geologic cores stored at the facility.

Dr. Lloyd Schmaltz was recognized for his service on the Advisory Council and was elected to Council Emeritus status to honor his continued contributions to the Department and students. Dr. Schmaltz, retired Chairman, will continue in a volunteer role supporting the Core Lab.

The Council also supported an effort to preserve the tuition status of the Hydrogeology Field Course, the premier hydrogeology course in the Midwest, if not the United States. Congratulations to Paul Goudreault, the College of Arts and Sciences, Geosciences Department, Alumni Achievement Recipient for 2005. As Alumni and friends, we enjoyed his presentation of achieving success in the Geosciences.

We also thank American Hydrology and Mick Lynch for hosting the annual Homecoming Pot Luck dinner for alumni, faculty, students and friends and we were pleased with all those that attended the event. 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. We look forward to sharing our efforts to communicate the success of the Department and Students and meeting alumni and friends at future Department events.

John A. Yellich
Chairman

Thomas C. Kamin
Secretary

department updates

The asbestos abatement project brought us the opportunity to arrange things a little differently in the Department. Pictured is the Departmental computer lab, the conference room separated from the copy room and new cubicles for the graduate student offices!



Nathaniel Barnes, MS Candidate

I got to this department last year fall, with vim and vigor. However, before I could settle, the semester had already started. Combining that with a change of environment (food, friends etc) was a bit of a struggle. The fall semester came to an end only for me to find out about a tailgating spring semester. I can not explain why, but I was so impressed about seeing and touching my first snow in my life, but this was only temporary, as the goodwill turned into depression somehow around February. I must confess that beyond all these experiences, I have enjoyed my stay here in Kalamazoo and I have adjusted greatly.

Luckily for me, I have started working on my research with Dr. Kehew on "Stratigraphy and Organic Carbon Content of Glacial deposits in the City of Portage, MI". He has been a nice person to work with. Basically, I am describing and characterizing units of four Rotasonic cores, I am also analyzing the cores texturally by sieving and by settling velocities based on Stokes law to determine the percentages of gravel, sand, silt and clay. Very soon, I will be busy in Haenicke Hall working on the OC variations in the cores.

Hopefully, I should be discussing our results with you in the next newsletter. I wish everyone a wonderful moment.

Soumya Das, PhD Candidate

Hi there,

It is nice to say hi to all of you again. My heartiest welcome to the newcomers to the family of rocks and fossils. Last year was a really busy academic year for me. Taking classes and teaching petrology labs kept me busy. I went to India in this summer had really nice time over there by eating traditional homemade Indian cuisine and spending good time with my family and friends. I got married on June 12 in India. The name of my million-dollar bride is Anushna (means calm and quiet). I will go back in India end of this November and bring her over here during first week of January. I miss her too much - so does she. I can't wait to meet her again and bring her over here in United States. I came back in U.S during end of July and took 3 weeks of Hydrology field camp as a student and being a T.A. for rest of the other three weeks. That was a very hectic schedule for 6 weeks. I will be teaching optical

mineralogy this fall. It will be a great experience for me to teach a class just by myself. Thanks to the department of Geosciences for giving me this wonderful opportunity and also thanks to Dr. Chase who actually recommended my name for that.

I am working with Dr. Koretsky on lead adsorption on single and mixed mineral assemblages. She is really helpful all through my research. I have finished working on single mineral adsorption experiments with HFO (hydrous iron oxide) silica, and kaolinite as well as with the binary phases. 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+}) varied from $10^{-4}M$, $10^{-5}M$ to $10^{-6}M$. The results I have gotten so far are very promising. Upon successful completion of this project, data will be generated which will allow quantitative prediction of the adsorption of lead, on single mineral surfaces as well as on mixed mineral assemblages (such as are found in natural systems) as a function of pH and total metal concentration.

This year I presented a poster in Goldschmidt Conference in Moscow, Idaho in May. It was also a nice experience to attend an international conference like Goldschmidt. I am also giving an oral presentation of my research in GSA annual meeting, which will be held in Salt Lake City, Utah in October. Thanks to Dr. Koretsky for her financial support to attend both these conferences. That's all I have from here. See you guys around.

Tsigabu Gebrehiwet, PhD candidate

Selam Geosciences community,

Selam means greetings, in this context as it has another meaning (peace) also, in Tigrinya (Eritrean language). I hope you all had a successful year. I don't believe that this is my fourth year here at Western. Time goes so fast! That means I will be on the Alumni side of the Geosciences club soon. For me, this year has been a wonderful year as I was able to present my research at the 15th Annual Goldschmidt Conference, Moscow, ID. The conference was great experience for me as it was my first major conference to attend and to present orally. The title of the presented abstract was "Isotopic fractionation of carbon during microbial reduction of iron under anaerobic

conditions". We have also submitted an abstract for poster presentation (Title: "Carbon Isotope Fractionation in Biotic vs. Abiotic Anaerobic Conditions") to this year's annual Fall AGU conference in San Francisco, CA. Hopefully I will be able to meet some potential research collaborators or post-doc position providers or employers. We are also in the process of writing a paper for publication of the research presented at the Goldschmidt Conference.

Having said that let me brief you about our ongoing research. Since last year's newsletter, Dr. Krishnamurthy and I together with Drs. Koretsky and Haas have been experimenting to develop a working experimental setup for quantifying the reduction of iron using stable isotope fractionation of carbon in anaerobic environment. The conditions at which metals get reduced in subsurface environment vary based on the availability of nutrients, buffering agents, and types of organisms involved. So, in the current research we are trying to quantify the effect of media composition and microbial organism types involved on the carbon isotope fractionation during the oxidation of organic substrates coupled with the reduction of iron. We will carry out this research using *Shewanella Putrefaciens* and *Geobacter Metallireducens* which are two of the most common and well studied bacteria. The reduction of iron specifically play vital role in the cycling of carbon and other nutrients such as nitrogen and phosphorous. As you all probably know, our isotope geochemistry laboratory was not functioning for the last five months due to the asbestos abatement of Rood Hall. As a result of this, our experimental work has been on hold and currently we are trying to put our lab back to normal to start the next phase of our research. So if you come to visit the isotope geochemistry laboratory, you will see a new look laboratory.

On my personal life, I am having cheerful life with my fiancée, Saba Tesfazghi. Saba is about to finish her masters in accounting this coming December and also getting ready to take her CPA exam in the mean time. Socially, I had a wonderful opportunity to know and work with six guests from Egypt during the summer hydrogeology field camp. Saba and I got the opportunity to visit the Mackinaw Island with Dr. Kehew and the Egyptian guests. It was great trip and we

graduate student news

enjoyed it as it was our first time to northern part of the state. As usual my three years stay at WMU has been joyful and challenging. I am sure this fourth and hopefully the last year of my life as a student will be more challenging and intriguing. I hope I was able to give as much news as possible and I wish you all to have a wonderful and successful year!

Rennie Kaunda, PhD Candidate

Hi everyone,

It's hard to believe another year has gone by already. This was a very busy year for us monitoring and reading all the instrumentation at Lake Michigan in this great coastal erosion mitigation adventure. Results looked promising as the data began coming in. There were significant reduced displacements at one of our target sites.

The year started with a big bang sending me spiraling along the halls of Rood Hall taking Dr Sauck's Reflection Seismology and Dr. Kehew's Hydrogeochemistry. Field work and research work also kept me occupied to maintain balance in the force. By early October wedding bells rang, and Dr. Chase was kind enough to let me take some time off to go for my honeymoon. He however gently reminded me that my research responsibilities would be waiting to give me a warm welcome once I got back. Jami and I had a wonderful time in Cincinnati and Kentucky, my first time to venture into that part of the South for an extended period of time.

When I got back it was soon open season, and the bluffs were fair game. The pumps were turned on and we began measuring the water flow, displacements, borehole inclinations, soil temperatures and weather parameters. By spring time I had enrolled in a GIS class and a Soil Physics class. Also field work was a boxing match as the bluffs and freezing temperatures came out swinging. I almost thought I was out for the count at one time when I got locked out of my truck in freezing temperatures but a cop came to my rescue.

The rest of the year zoomed by with lightening speed. I applied for a GSA student grant and got it. To zap my brain cells into action for the summer I enrolled into a Numerical analysis (math) class. I also went to St Louis Missouri to a National Defense Industrial Association (NDIA) conference to give a talk about our bluffs project. Also my wife and I took a week off to

visit friends in Texas. Right now I'm getting back into the swing of things for this next school year, and also getting ready for a talk at the GSA conference in Salt Lake City. If you want to know more or get an update of what I'm up to please drop me a line at rennie.kaunda@wmich.edu.

Haile Mengistu, PhD Candidate

Hi Dear Geology Communities,

I renamed myself Haile, because I thought it is easier to pronounce and write. However, people are questioning me as to whether this name is final or not. I told them that it may or may not be final owing to some conditions! (kidding).

I am excited about this year because it is time to think of and formulate what I will be doing upon completing my study here at Western. My first part of research if finally completed, presented and hopefully will be published soon, which will be great for me and my career. I have been waiting so long for the new ICP-AES to come, thanks to the hard work of Dr. Koretsky and Dr. Haas, it seems that we are finally closer than any other time to have our own instrument. Once it starts running, hopefully we will be generating data, that would lead me to completion of my dissertation, of course with the continuous help of my advisers.

Last but not least, I would like to thank my advisers (Dr. Haas, Dr. Koretsky and Dr. Kehew), Dr. Hampton and the entire geology community for every kindness they have shown me. It has been fun working with graduate student Jason, and everyone in the department.

Thanks!

Tony Sandomierski, M.S. Candidate

Wow! I can't believe another year has already passed. My family, yet again, has been blessed with another great year. I will be starting my job with ExxonMobil December 1st. The Carbonate Sedimentology Laboratory had an excellent trip to the Bahamas this past spring. I don't know how Dr. Grammer does it, but the trips keep getting better and better. The new core lab research facility is better than the original plans that were drawn up for its construction. Earlier this month, many students from Western

presented posters at Eastern Section AAPG at Morgantown, West Virginia. Western Michigan University was a Tour de Force at the meeting with all the posters being well-received.

On the home front, my wife finally has her bachelor's degree in mathematics (I guess it tells all of you who the smart one is in the family...it's my wife!). Hunter will be turning three soon and is just plain fun. He's highly talkative...I don't know where he gets that from (it's not my wife).

I'm sure this year will be even better. I wish all of you good luck!

Amanda Walega, MS Candidate

Greetings WMU Geosciences Community. I am currently working on my first semester as a graduate student WMU. It has been an exciting adventure as I make the transition back into the academic field. I am in the process of developing a research project for my thesis. Nothing has been decided yet, but I am hoping to get a chance to research a topic pertaining to either groundwater or surface water. I hope everyone has a wonderful year.

CONGRATULATIONS!

Congratulations to Brian Bird and his wife Kelly! They welcomed daughter Blake Caroline on October 24, 2005!

Geosciences Dept Staff

Kathy Wright *Office Coordinator*

Beth Steele *Newsletter Editor*
Office Associate

Michael Durham *Technician*

**2005
Geosciences Department
Awards**

**Graduate Research and Creative
Scholar Awards**

Soumya Das
Suama Ndengu

**Graduate Student Teaching
Effectiveness Award**

Jason Spanier

Senior Honor Awards

Earth Science
Erin Dempsey

Earth Science Education

Kevin Kahmark
Kurt Rizley

Geology

Tracy Lund
Audrey Ritter

**Advisory Council Field Camp
Scholarship**

Nathaniel Barnes
Kayleigh Lim
Amy Noack

Laton Field Camp Scholarship

Nathaniel Barnes
Kayleigh Lim
Amy Noack
Danielle Odette

**W. David Kuenzi Memorial
Scholarship**

Steve Beukema
Soumya Das
Haile Mengistu
Adam Milewski
Laura Smart

Lloyd Schmaltz Award

Danielle Odette

**Distinguished Student Service
Award**

Danielle Odette

**The Kalamazoo Geological and
Mineral Society Scholarship**

Danielle Odette

**Undergraduate Research and
Creative Activities Awards**

Chris Landry
Tracy Lund

Recent Graduates

Bachelor's Degree Recipients

Earth Science Majors

Christopher G. Estkowski
John M. Kertis
Philip J. Klassen
Holly T. Marzolf
Amy J. Patzer
Mike N. Rasmussen
Sarah E. Warren
Shawn J. Winter

Geochemistry Majors

Keith A. Boneburg

Hydrogeology Majors

Krystle L. Nichols

Master's Degree Recipients

Earth Science

Edith J. Johnson
Amanda L. St. Amour

Geology

Brian C. Bird
Scott J. Kendzierski
Eric M. Larsen
Kennedy Mwanda
T. Noah Ndenga
Suama N. Ndengu
Gregory C. Young

Ph.D. Degree Recipients

Andrew L. Kozlowski
Linda P. Nicks



Danielle Odette being presented the Presidential Scholar Award by University President, Judith Bailey, and Dr. Thomas Amos, Faculty Senate President.

alumni news

Gloria Britton, MS 1997

Just thought I'd update you all as to what's happening here. I have finally been able to change departments and am now in the Earth Science department at Cuyahoga Community College. I have floated between 3 of the 4 campuses. My mailbox is at the largest, West campus (and the most preferred). Since we have a new departmental chairman, I have been able to go from teaching one lab per year (total) to full time! Unfortunately, there isn't any tenure tracks though (except the Dept. Chair). He and I have been busy revamping the department's curriculum, text/lab books, and starting new courses! I even get to choose my own courses (and times)!

I am creating new Distance Learning (internet) courses, which I teach. So far, I have: Physical Geology, Physical Geography Lab, Geology of National Parks [for Distance Learning]. For another campus, East, I am in development (Distance Learning) for two Physical Science (Liberal Arts majors) survey courses: Earth and Earth Lab. These two courses I am using Prentice/Hall's Earth by Tarbuck and Lutgens series. I will be teaching on campus (West) Physical Geology and accompanying lab this fall also. We just adapted the AGI lab manual (Pren/Hall) for the lab.

I have become the unofficial "computer (geek) trainer" for the distance learning courses in my department! I still don't know how to create Power Point though! -- That is coming the fall for the on-campus courses. We have one room in our house that now has a bookcase (floor to ceiling) full of 3-ring binders of course lectures for each course I have taught! Thank you for showing me, when I took Environmental, how the organization of the binders would keep the lecture material organized.

On another note, we went to the Grand Canyon for 3 weeks this summer. Walt did the Rim to Phantom Ranch to Rim hike (crawl). I got helicoptered to the Havasupai Falls as bribery! Mom had a stroke last summer but is still able to drive. Hope everyone is well. I see the department is thriving! Please tell everyone I said "Hi"!

Baraka Kinabo, MS 2003

Fellow Alumni and friends

My name is Baraka Kinabo. I was a master's student in Geophysics at WMU from 2000 to 2003. From WMU, I came to the University of Missouri in Rolla (UMR) where I am now a second year PhD student in Geophysics in the Department of Geological sciences and Engineering working with Dr. Estella Atekwana.

My research interests are in studying the rift initiation and development process using potential field methods (gravity and magnetic methods) and remote sensing techniques. I have been very busy for the entire time I have been at a student at UMR. Publications (I have submitted two papers for publication) and teaching are some of the things that keep me busy. However, it has a very beautiful ride so far here. Foreexample the last two summers I have spent time in Africa attending conferences and doing some fieldwork. In summer 2004, I was in Ethiopia for the International conference on East African Rift Systems meeting and in summer 2005, I was in Zambia doing fieldwork and later I went to Tanzania for the International conference on the East African Rift System. While in Tanzania, I had a chance to see my family again and ofcourse my beautiful girlfriend Victoria. To learn more about my research at UMR visit my website at <http://www.umn.edu/~bdk6x2>.

Amy Nowakowski, BS 2004

I am currently working on my Master's degree in Fluvial Geomorphology at Colorado State University in Fort Collins, Colorado. My Master's project is funded by the Forest Service Fish Habitat Relationship Program in Denver, CO. My project, under the guidance of Ellen Wohl, will focus on the potential controls on large woody debris distribution along high gradient streams. This will include factors both external (forest type, fire history, land use history, hillslope stability) and internal to the stream channel (stream gradient, bed roughness, hydraulics, etc). I will compare managed catchments verses unmanaged catchments in the Bighorn National Forest, Wyoming. I also work as a hydrologist/fisheries biologist with the United States Forest Service in Sheridan, Wyoming under the Student Career Experience Program. This program allows me to complete my Master's while working for the Forest Service, helps fund my project, and provides permanent employment after completion of my Master's at CSU. So it looks like I'll be moving to wonderful Wyoming once again in a few years. It is great to be back in school, studying geology, meeting great people, and learning new things. Thanks again to all of you for your support and inspiration during the years I was at WMU.

Professional Meetings

Western Michigan's Geosciences Department was well represented this year at Professional Meetings around the country. In addition to faculty presence at these meetings, many graduate and undergraduate students presented their research to colleagues from around the world.



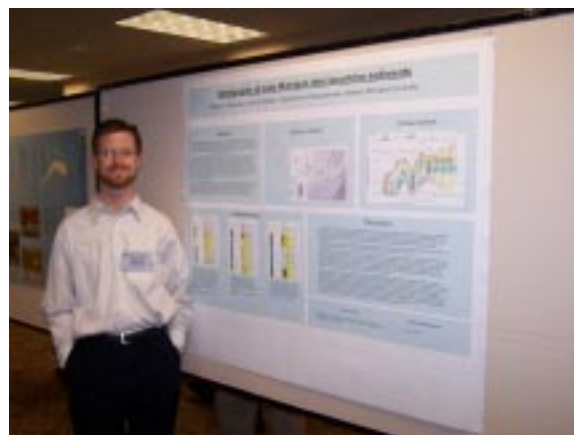
Students, Adam Milewski, Lauren Beuving, Danielle Odette, and Christopher Jones stand in front of their poster with Dr. Mohamed Sultan at the Geological Society of America annual national meeting in Salt Lake City, Utah.



Three graduate students, Richard Becker, Adam Milewski, and Nakul Manocha went with Dr. Mohamed Sultan to attend the AGU Spring Meeting in New Orleans and present the results of their ongoing research. This is Nakul with his poster.



Some faculty and students at the 15th Annual Goldschmidt Conference, Moscow, ID



Steve Beukema with his poster at the North Central Section GSA meeting in Minneapolis, MN.

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.



Paul Goudreault is President and CEO of Delta Environmental Consultants, Inc., a 700-person, employee owned firm with 42 offices throughout the United States. Delta provides environmental, health and safety consulting services to the chemical, petroleum, forest products, manufacturing and commercial industries. In addition, Paul is founder and President/CEO of Inogen Environmental Alliance, Inc., the first industry-wide business alliance of independently owned and operated environmental consulting firms around the world. Inogen has 2500 employees and 90 offices, delivering EHS service worldwide.

Paul has more than 20 years of environmental consulting and state regulatory experience, and his technical experience includes hydrogeology, limnology and computer fate and transport groundwater modeling. Since 1993, Paul has helped multinational organizations implement effective environmental, health and safety programs with the focus on building strategies to support liability management services to their company operations.

Paul has also been active in building and leading nonprofit organizations whose visions bring lasting improvements to the environment and people. In 1991, Paul was a founding board member of the Minnesota Environmental Initiative, an innovative organization focused on building partnerships among stakeholders in solving Minnesota's environmental problems. Currently, Paul is serving as Chairman of the Board for Greencastle Tropical Study Center, a nonprofit organization dedicated to sustainable and viable agriculture and the preservation of Jamaica's diverse ecosystems.

Paul lives in Wisconsin with his wife Katie, daughter Monet and son Adrien. He graduated from Western Michigan University with a BS degree in Geology and Earth Science in 1980, and received his MS degree in Geology and Geophysics from the University of Minnesota in 1985. Paul is an Adjunct Professor at the University of Wisconsin, River Falls, where he has taught classes in hydrogeology.



Dean Thomas Kent, College of Arts & Sciences, presenting Mr. Goudreault with his award.

Dr. Mohamed Sultan, President Bailey, Paul Goudreault and Dr. Ron Chase



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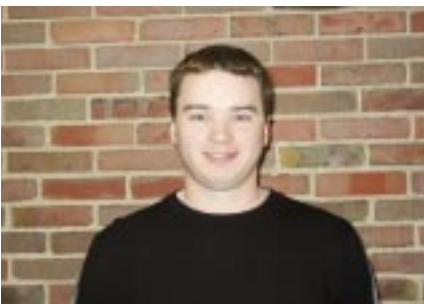
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