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Mohamed Sultan, Chairperson

Dear Friends and Alumni

Three years have passed away since I joined the department of Geosciences at Western Michigan University. The experience was quite rewarding for me and a pleasant one as well. At the time, our faculty and staff made a decision to take a good look at all aspects of our educational, research, outreach, and financial activities for the purpose of designing comprehensive and wholesome programs to enhance and advance all such activities. They set up achievable goals and went at it systematically, and methodically. We started with our graduate program, the one that needed the most attention. We now have a rigorous, structured, and comprehensive program that is attracting high caliber students nationally and internationally. Applications doubled and our students are graduating in record time; We are now seeing Master students graduating in two years and PhD students shooting for four years or less. That was quite difficult to do under the old system. Having a dedicated and meticulous graduate advisor such as Carla Koretsky on board can only help the students. Employment has never been better for geologists and our students are finding high paid jobs as they leave. I am starting to see resentment from faculty as they find out how much their students will be making. We are actively recruiting students in national and regional meetings, sending our own graduate students as ambassadors for the department. A new policy is now in place to encourage our students to participate in national

meetings; we partially fund the travel and accommodation costs for any student who is presenting in National or regional geologic meetings. Over a dozen of our students took advantage of this new policy last year. One of the indicators of the productivity and excellence of our students is the awards they won last year: (please list names of awards & recipients)

Over the past few years we watched enrollment numbers for our majors slowly decline, partly due to the overall trend of decreasing enrollment observed campus wide. Nevertheless, we took a number of initiatives to address this issue. Michelle Kominz led our efforts in streamlining the curriculum and restructuring the program. We realized the importance of the students receiving the best advising. Two of our most qualified instructors Michelle and Heather were put in charge. Michelle advising majors in Geology, Geophysics, Hydrogeology, Geochemistry, and Earth Science Teaching (majors and minors) and Heather advising our majors in Earth Science Teaching. Moreover, we have Duane assisting students who have not yet declared a major. We made an Open House and invited first year undecided WMU students and High School students and participated in all recruiting events on campus that were arranged by the College (e.g., major excitement) or by the central administration. To increase the visibility of our department, we acquired a one ton Copper Boulder that is now residing at one of the entrances to Rood Hall. It was lifted from the bottom of Lake Superior and donated to the department. We have started a project to develop new active and static displays in our Hallways in Rood Hall that better reflect on the diverse ongoing research activities in the department. This project will be completed in Spring of 2008. Our efforts paid off, our numbers are on the rise this year and we reverted a four-year decline. Our majors are 82 compared to 70 last year.

Our research productivity continues to grow. A number of new grants were secured, Michelle Kominz received NSF funding to study Chesapeake Bay, MGRRE received a 200k grant from DTE for the development and implementation

of k-12 educational and outreach activities, any others ? and my group received NATO funding (100k) to assessment of alternative renewable water resources in Sinai and USAID funding (200k) for similar applications in the Quetta region in Pakistan. Only a few days ago, we received the good news that NASA will be funding (450k) our integrated project that combines gravitational measurements extracted from GRACE sensor together with other traditional data sources (geophysics, geochemistry, modeling) to examine storage variability over the Nubian Aquifer in northern Africa.

MGRRE, the Michigan Geological Repository for Research and Education is taking off. It is now a showcase for Western Michigan University, a successful and conscientious model for development of natural resources while protecting our delicate environment. Only a year after the dedication, it is now the largest repository for subsurface data in Michigan holding over 250,000 linear feet of cores from oil, gas, water, and mineral wells. With the data, facilities, and talented faculty at MGRRE, it is becoming the expert house in many relevant disciplines such as basin analysis and carbon sequestration.

We want to continue to grow on all fronts, education, research, and outreach and we would like to provide specific services for our students that will advance them academically and personally. We realize that given the difficult financial conditions WMU is enduring, it is unlikely that we will be able to get all the additional resources we need from the administration to achieve our goals. We are launching a three-year initiative to raise our endowments to \$300,000 that will bring an anticipated revenue of ~ \$15,000 a year. The revenues will support a wide range of student activities including but not limited to, travel expenses to geologic meetings, student scholarships, summer field camps, student research, departmental seminar speakers, student recruiting activities, and outreach and visibility exercise. The process is underway, a Geosciences endowment was created, faculty and staff are taking monthly deductions of their pay checks that goes into the Geosciences endowment, and faculty will start teaching short applied courses in their respective fields to industry/

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individuals with a part of the revenue going back into the Geosciences endowment. We would like to invite you, the alums and friends of geosciences to be part of this initiative by contributing to our Geosciences endowment.

We are keen on connecting with all of you. We sent you a post card a few weeks ago to update your contact information. If you have not received it, then we don't have you on our mailing list or your address must have changed. Please take a minute to update your information on our web site (<http://www.geology.wmich.edu/alumni.htm>). We are looking forward to having you back on campus during our upcoming Spring banquet. It will be a great opportunity to meet with our students and faculty and to hear from you about your achievements through the years.



Dave Barnes

Dave Barnes is on Sabbatical Leave for the 2007-8 Academic year. It is a great opportunity because several ongoing research projects: *Fracture Related Dolomitization in the Michigan basin*, *Subsurface Geology of the Dundee Fm*, *Carbon Geostorage in Michigan*, and *Pennsylvanian Bedrock Aquifers in Central Lower Michigan*, are all in the active-research, paper-writing, or submit-a-proposal-stage. Activity at the Michigan Geological Repository for Research and Education (MGRRE) is at a high level as we move forward on our troika of activities including Subsurface Data Repository, Michigan Subsurface Geological Research, and Education/Outreach. The emergence of Carbon Geostorage (permanent storage of anthropogenic CO₂

in geological media) as a major national initiative with substantial opportunities in Michigan and many geological research aspects has me jumping. We continue in our study of regional Carbon Geostorage characterization in Michigan, funded by DOE and lead by Battelle Memorial. We are also involved, most recently, in a research/feasibility study of CO₂/Enhanced Oil Recovery and Carbon Geostorage in Michigan related to several large, industrial CO₂ point sources. This funded project is directly in line with the sabbatical leave proposal that was granted by the University to investigate "Integrated Energy Systems" the possibility of co-location of large Industrial CO₂ point sources with Carbon Geostorage and CO₂/EOR opportunities.

We have several papers published or in press this year: a couple in an AAPG Special Publication on *Carbon Sequestration in Geological Media*, and an update paper on coastal change studies in the National Journal: *Shore and Beach*. Amanda Walega and Amanda Wahr make good progress on MS projects.

Teresa is finalizing a children's book manuscript (with illustrations) and spends regular time in her caboose; Brendan is a 3rd year sculpture student at the Cleveland Institute of the Arts; Lily is a 2nd year Psychology/Criminal Justice dual major at WMU; and Nick plays A LOT of guitar.

Best wishes to all.



Dan Cassidy

Hello All:

I have now been back in the Department of Geosciences for a full year, and things are going great. I really appreciate the changes that have come about in our department, and I can see how we are one of the few thriving departments in the College, which is a testament to our new leadership and our faculty members. Last year I taught Geology 1000 (Earth Studies) and various graduate and undergraduate Hydrogeology

classes (Introduction, Contaminant). Last year we started to make important changes to Geology 1000, under the leadership of Duane Hampton and Robb Gillespie, and I believe these changes will increase our enrollment and modernize the topics covered (e.g., global climate change, alternative fuels, etc.). I have maintained my research activities in surfactants and chemical and biological oxidation of contaminants. I am proud to announce that Abe Northup defended his doctorate with flying colors, and is still working with us on publications. His research showed that bio degradation can and does take place at the same time as chemical oxidation, which is creating a great deal of interest in the remediation community because it dispels the old notion that chemical oxidation of contaminants sterilizes the soils for future biological processes. His research also showed that surfactants are produced during the chemical oxidation of hydrocarbons, which is going to change the way we design and implement in situ chemical oxidation applications. Kalamazoo is the same nice place I remember, and I consider it a privilege to be back with old and new friends and colleagues. I will look forward to seeing you all during the course of the year.



Ron Chase

Greetings to all! Here I am in my 35th year at WMU and still feel as though I just arrived (until I look in the mirror). As our cadre of departmental alums continues to grow, there are increasing numbers of people to hear from. Please contact me at ronald.chase@wmich.edu if you get a chance.

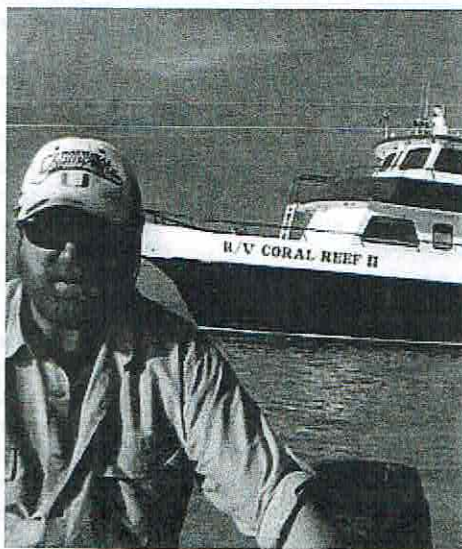
The Lake Michigan coastal slumping project which I share with Al Kehew is still going strong in spite of a funding hiatus created when the U.S. Army

Corps of Engineers (our grant provider) was directed by government powers that be to divert all non-construction monies to hurricane Katrina purposes. We recently obtained some re-start money and hope to be back in the fold for the next fiscal year. To date we have defined the principal causes of coastal bluff erosion, invented a new ground survey system for the monitoring of slope movements, created a geometric method for the construction of displacement cross-sections that does not require direct depth measurements, and shown that the removal of perched ground water beneath the bluffs can substantially stabilize the slump movements. My Ph.D. student, Rennie Kaunda (now employed by Golder Associates in Reno, NV), also contributed a dissertation that pioneered the use of Gaussian quadrature and artificial neural network modeling in the evaluation of internal deformation and depth-to-slip for any active soil-based landslide that is properly monitored. These techniques are new to the field of slope engineering. All of the above contributions have been published or are in review and have been presented in many venues (including international conferences at Vail, CO, Italy, and soon in Norway). If the Corps of Engineers keeps its pockets open and we continue to develop and publish results as in the past, we are scheduled for grant funding through 2009.

On the teaching end of things, I still handle optical mineralogy, petrology/petrography, the Upper Peninsula field methods courses, and an occasional slope stability course. I still love my job and totally enjoy my students. Although the dreaded "r" word occasionally looms in the background, I have not yet wanted to think about it. My various arm injuries I have mentioned in previous newsletters have almost healed. I am starting to venture into a new activity that I once did on a regular basis. Until 35 years ago, I doubled as a semi-professional French horn player (an unknown fact to my colleagues) and was principal horn in several community orchestras as I traveled through my earlier career. After unsticking the valves and slides, I am now squawking out some notes in preparation for private lessons and an eventual comeback, much to the annoyance of my wife and the neighbors.

My family is doing just fine. Chris (wife) is still in good health, baking cookies for departmental seminars, and devoting much of her time caring for a ditzy husband

who can recite countless facts about landslides of the world but can't remember a simple grocery list. Lucky her! Karl (oldest son) is still the associate sales manager for the Hotel 71 on Wacker Drive in Chicago. He and wife, Sandy, are expecting their first child in December (my third recent grandchild). Andy (number two) is currently in Kalamazoo in search of himself and is a wonderful companion and great volunteer helper on my coastal erosion project. Scott (number three) continues to operate on people's feet and ankles. He and wife, Colleen, and one-year-old daughter, Madeline Grace, live just north of Indianapolis. The medical practice Scott has been associated with is currently reorganizing and he is moving up. Jamie (number four), wife Kate, and six-month old son, Joseph Andrew, still live in Alexandria, VA. Jamie practices law in DC with the firm of Baker Botts and has been active recently in some relatively newsworthy trials.



Mike Grammer

Dear Alumni – the past year has been busy as usual with research, teaching and my continuing work with the MGRRE facility. On the teaching end, I continue to teach Historical every Spring, and this past year I also taught a graduate level Advanced Stratigraphy/Sequence Stratigraphy class, a special topics course for graduate offer students and am currently teaching Sed/Strat while Dr. Barnes is on sabbatical. Following the Sequence Stratigraphy class, I along with Bill Harrison and Dave Barnes took the group of 9 students, including a visiting student from Laval University in Quebec, to the Guadalupe Mountains of W. Texas

and New Mexico for a 9 day field trip to these world class exposures. Side trips to White Sands, NM and a visit with the alien fraternity in Roswell rounded out our trip.

Last Fall I spent 10 days in Brazil at the invitation of Petrobras, teaching short courses in Carbonate Sequence Stratigraphy/Reservoir Characterization and Hydrothermal Dolomitization at Petrobras' offices in Rio de Janeiro and at the Federal University in Curitiba. Visits to see outcrops of hydrothermal dolomite in spectacular pre-Cambrian stromatolites, some core work with offshore rocks, and 4 additional talks filled up my time pretty well and kept me off the beaches at Copa Cabana and Ipanema.

I continue to co-lead the week-long field seminar to the Bahamas for AAPG every summer under the official title of Sequence Stratigraphy and Reservoir Characterization of a Modern Carbonate Platform – next year will be our 10th year anniversary with this trip. This past Spring I also co-led a week long field course for Nautilus Geotechnical out to the Paradox Basin, again with a sequence stratigraphy and reservoir focus. Both of these areas, along with S. Florida and the Guads are the key areas for our annual comparative sedimentology field trip – generally alternating between modern and ancient exposures on alternate years. As always, you are welcome to join us at any time.

Because of the time I spend working with the folks out at MGRRE as we continue to try and get the facility up and running, most of my research efforts rely heavily on a great group of students. Unfortunately (for me anyway) they are doing so well that it is tough to keep them in town. This past summer, all went away for professional internships in Texas. Amy Noack went with EOG Resources in Midland, Audrey Ritter was with Occidental in Houston, Jessica Crisp with ExxonMobil in Houston, and Jennifer Schulz with EOG in Corpus Christi. At the time of this writing, Amy has accepted a permanent position with EOG, Jessica with XOM, Jennifer has another internship from EOG and Audrey is away on a week-long field seminar/interview with ExxonMobil. They are all very focused and will undoubtedly be very successful in their professional careers, and with any luck, we will get a few more presentations and publications from them before they leave WMU.

The current group of students is all working on various projects that take advantage of the cores and other data

stored at MGRRE. Amy is working on correlating pore system architecture to petrophysical response (primarily sonic velocities), in Silurian pinnacle reefs. Audrey is following up on Tony Sandomierski's sequence stratigraphic framework in the northern Silurian Reef trend and comparing/correlating it to Belle River Mills field in the south. Jessica is doing a rock-based, 3-D depositional and reservoir model of the Ray Reef Field, also in the southern trend of the pinnacle reefs using the Petrel software suite which Schlumberger graciously donated to us this year (~\$1.2 MM). Jessica is also working with Jill Haynie, a Ph.D. student at the University of Colorado whom I am working with and who is doing a petrophysical-based model of the Ray Reef field. Undoubtedly, we will have some great new insight into how these important reef systems formed in the near future. Jennifer is starting a project looking at the famous Albion-Scipio field to see if she can tie the distribution of hydrothermal dolomite and reservoir potential to primary facies and vertical stacking patterns in these Ordovician carbonates. Incoming MS student Emily Hartwick, already working for Wolverine in Grand Rapids, joined the group this Fall and will be working on an outcrop-based reservoir model of eolian sandstones in the 4-corners area of Utah.

As always, we look forward to visiting with any of you who happen to be in the area. The MGRRE facility is definitely worth a visit if you have the chance and we can always put the students on alert to share their research efforts with you as well. All's we need is 10 minutes notice and the students can (will) be ready — builds character don't you know. Cheers!



Fira, the largest town on Santorini, with the caldera wall and drop off to the center of the caldera on the right. I stayed in the Hotel Loucas in the foreground



Alan E. Kehew

Dear Alums and Friends,

Wow, it seems like we just finished last year's newsletter, but somehow it is time to do it all over again. Most of my non-teaching time last fall was spent working on two papers, one on tunnel channels of the Saginaw Lobe for a volume of papers that the Geological Survey of Finland is publishing, and one on catastrophic floods along the margin of the Laurentide Ice Sheet that will be part of a collection of papers on megafloods on Earth and Mars that Cambridge University Press is publishing. The tunnel channel paper (tunnel channels are large valleys eroded by meltwater under a glacier) was co-authored by Andrew Kozlowski, one of our recent PhD students and now a colleague working as a research scientist at the New York State Museum and Geological Survey. The megaflood paper was co-authored by Andy again, Mark Lord, my first PhD student at U. of North Dakota, now at Western Carolina U., and Tim Fisher, at U. of Toledo.

Spring semester was occupied by teaching geomorphology, finishing the megaflood paper, and working with several grad students. One of them, Caleb Woolever, and I presented a paper on his thesis work on eskers in Barry County at the Michigan Academy of Science, Arts and Letters meeting in Big Rapids. Another thesis that was wrapped up during the spring was Nathaniel Barnes' excellent study of the origin of iron in the glacial drift aquifers of southwestern Michigan. A paper from that work has just been submitted to *Journal of Ground Water*. Alan LeFever, a new MS student, has started a project on drumlins.

I also spent a lot of time during the spring getting a paper ready to present at the 4th International Paleoflood Conference in Crete, which was held in June. I know, it was a tough assignment,

but someone had to go. Since I had never been to Greece before, I spent a few days in Athens and 2 days on Santorini before going to Hania, Crete for the conference. The volcanic island of Santorini (see photos below) has to be one of the most spectacular geological sites in the world. The towns hang down from the top of nearly sheer, 1000 ft. cliffs formed when the center of the volcano collapsed into the sea to form a caldera during the eruption of 1450 B.C. Exposure of the stratigraphy on the caldera walls is awesome, capped by pumice containing huge boulders from the 1450 B.C. eruption. Crete wasn't bad either, although the heat during the entire trip was hard to take. It was over a hundred degrees most days and it made the three days of field trips a lot less pleasant than they would have been otherwise. One national park in a gorge that we were supposed to visit was even closed because of the heat. It's no wonder that there were so many wildfires later in the summer. The heat was so extreme that we were forced to make frequent stops at tavernas for shade and fluid intake.

There were about 40 participants from North America, Europe, the Middle East, and Asia. The paper that I presented at the conference and that will hopefully be published, is on flash floods in the Sinai and it was greatly enhanced by some of the hydrologic modeling that Adam Milewski, one of Mohamed Sultan's PhD students, contributed.

One pleasant surprise this summer was the resumption of glacial mapping under the USGS STATEMAP program. I was able to map two quads in Barry County with the Michigan Office of Geological Survey in Lansing. Hopefully I'll be able to continue with this in the future.

At the end of the summer, Kay and I went to Maine for our annual visit. As usual, we spent most of the time working on our two cottages, one of which is being remodeled in kind of an endless process that started a year ago. The anxiety caused by the escalating cost of this work just about ruined the trip for us. Youngest daughter Liz, who got married in a small ceremony last November in Key West, had her official reception in August at her mother- and father-in-law's house in Maine. It was quite an event, with about 200 people. Luckily the weather cooperated and everyone enjoyed it. Then it was back to Kalamazoo for the fall semester. Kay is back at Michigan Career and Technical Institute for

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another year teaching certified nurse aid courses. I am teaching hydrogeochemistry along with a new section of physical geology for engineers. I am excited about this because I can use my own textbook for the first time since I have been at Western.

Best wishes to everyone until next year.



Exposure of 1450 B.C. pumice at the top of the caldera wall. This eruption buried several minoan villages on the island and has been linked by some to the demise of the Minoan civilization in Greece.



A typical view of the caldera wall, with villages perched on top, taken from a small active volcanic island (last eruption in 1950) at the center of the caldera. This part of the caldera wall is mainly composed of basalt flows. Other parts have thick pyroclastic deposits.



Michelle Kominz

I can't believe another year has come and gone and more of you than ever know who I am! Wow. It was a busy year, 2006-2007. This job keeps me on my toes, not necessarily young, but on my toes.

Fall 2006. This was an exciting time for Geophysics. You may not think that geophysics is exciting but it is. The department has just decided that we need a whole earth introductory geophysics class rather than the exploration geophysics class that I taught at UT Austin or the near-surface exploration geophysics class that I have taught several times here at WMU. No, we need a whole earth class. So, I needed a new book, a new outline, and a new approach. I have been hearing for years that the new pedagogy (a word that makes my insides turn over and has something to do with "edu-speak") for physics is to have the students read the book and spend class time working the homework. Okay, say I, let's try. This is a senior level class or beginning graduate students, so independent work should be possible, thought I. So, I gave the students the text to read and assigned homework, with a first effort due after a week and a second due several days later and quizzes after each chapter. I think it's fair to say that we all hated it: my TA, Travis, my one senior geology major, my 5 first year graduate students, (who, by the way, needed to achieve at least an AB to get credit from this class as a "core class" in the new MS curriculum, or an A for the one PhD candidate) and myself. But we all learned a great deal about whole earth geophysics, so everyone seemed to

forgive me and maybe it was okay in the end. Of course we still got to run a magnetic survey, climb the Everett Hall stairwell with the gravity meter and run a refraction survey near the Goldsworth Pond, so some of the fun part remains in the class.

Spring was Ocean Systems time, returning to the Quizdom excitement that I enjoyed the previous spring. Quizdom is the company that makes the instant response system that our department has adopted for our large enrollment classes. This forced me into power-point presentations, which will help in the long run. The Quizdom system still only works with PC's so I am wasting one of the departmental laptops to have the ability to teach my class. Of course, that is what we are here for, isn't it? To teach. The students like the instant response system and so do I. It works very well with my relatively Socratic pedagogic approach (that word again!). I like to ask the students questions and this way everyone is forced to try to answer. It is a chance for early feedback and, perhaps, even, for an early wake-up call that Ocean Systems is not trivial. The toughest part for me, now, is keeping up with the new data that comes out almost daily on global warming. There is no longer a controversy regarding the reality of global warming among the faculty in the geosciences department and, I suspect, the validity of global warming is not even a surprise for my ocean systems students any more. But there is no reason to forego a reasoned argument with tons of backup information.

I also had the privilege of teaching the geological communications class in the spring. This class included healthy mix of undergraduate and graduate students who attended the Departmental seminars to get a feeling for scientific talks and then helped each other make excellent presentations to their peers (in the case of the undergraduates) and at seminars and or in proposal presentations and even in scientific meetings in the case of the graduate students.

Meanwhile I was wearing several additional departmental hats. Mainly I was holding the place of "graduate advisor" for Carla Koretsky who was off on a well-earned sabbatical. That gave me the privilege of helping to start the new MS and PhD programs. Be sure to check out our web sites to see all the new hoops that we have put in place for our students. But, best of all, the PhD is no longer "in Hydrogeology" it can be in any of 4 general

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areas. Of course we began the program with a group of smart and ambitious students who have been very patient as we shift, with them, into our new program.

I also had the chore of pushing the changes in the undergraduate curriculum that we agreed upon last year through the paperwork of the college of arts and sciences and beyond. An example of the changes is the fact that our new course, Integrated Earth Systems Studies is now required for all of our majors, except geophysics and geoscience education majors (although the word is that all education majors who take the class pass their Michigan Certification Exams). As another example, the field requirement has become more flexible allowing geology majors to take advantage of our hydrogeology field program if it is more appropriate to their program than the UP field class. The bottom line for me is; my work with the new curricula has landed me in the position of Undergraduate Advisor for 2007-2008. Wish us all luck with this new program!

Finally, I did manage to do a little science in 2006-2007. Mainly, I have been lucky to have two hard-working master's candidates. They are both finishing up their research. Travis Hayden has a manuscript submitted to *Geology* on the effects of the Late Eocene impact in the southern Chesapeake Bay. The coolest thing about his work is that the model that we thought we would prove with our analyses was 180° off of what we found. Science happens when you learn something new. Travis has decided to stick around as a new PhD student starting in the Fall of 2007. He will be studying tectonics in Antarctica working with data from drilling that was done last winter and this upcoming winter. Kisa Mwakanyamale is finishing up her analysis of the impact of passive margin extension in the Indian Ocean on global sea level. She will begin a PhD at Rutgers University, Newark NJ in the fall, studying near-surface geophysics.

Science trips? I was invited to a sea level conference out of Aix in southern France in late September 2006. I tried to put my teaching first, but my colleagues would not take no for an answer. That turned out to be a great meeting and resulted in submittal of a manuscript, to Basin Research summarizing sea level estimates derived from 7 on-shore boreholes in the New Jersey and Delaware coastal plains. I also ended up going to the Fall AGU in order to meet and

greet my fellow Basin Research editors in December. At that meeting I convinced them to take on the Aix special volume on Sea Level to which the above manuscript was submitted. I have learned quite a bit about what is moving and shaking in the field of basin analysis through my job as editor. Now it's time for my co-editors to learn about sea level change research. In May I met the Andrill (Antarctic Drilling Project) scientists at their post-drilling workshop. I had managed to get involved as a zero-time, zero-science member of the team, since my work generally begins when the primary scientists have finished gathering and processing the data. Much to my surprise there already seemed to be enough results for some preliminary work so I returned to WMU and solicited Travis' involvement as a PhD project. We are awaiting the results of a quick proposal submittal but will travel to Santa Barbara for the last week of August to attend and participate in the International Symposium on Antarctic Earth Science. I spent the summer writing my paper, programming in expectation of more papers, and working with Kisa and Travis on their theses.

It has been a busy and productive year. I hope you all have had at least as much fun as I have.



Carla Koretsky

Greetings friends and alumni! It is very hard to believe that the 2007-2008 academic year will soon begin. I have tremendously enjoyed my semester of sabbatical (Spring 2007) and the subsequent summer months. As usual, my students and I did quite a bit of traveling over the past year. During the sabbatical semester and this summer, I spent some time with Dr. Mandy Joye, in the Marine Sciences Department of the University of Georgia. During that time, I got up to speed on the use of a new instrument that I have recently purchased. It is a microelectrode system that allows very fine (micron scale)

measurements of pH, dissolved oxygen, dissolved sulfide and some other parameters in pore waters. I will receive further training on this instrument for a few days in Aarhus, Denmark (where the microelectrodes are manufactured) at the end of August. I have also spent some time in the saltmarsh at Sapelo Island, "playing" with my new toy. I plan to use the microelectrodes to look at the influence of roots and macrofauna on shallow marsh geochemistry. In addition, a short trip to Utrecht University before the start of the next semester will allow me to make "laser ablation ICP MS" measurements of trace metals surrounding modern and fossilized macrofaunal burrows.

My students have been very busy this year as well. Lauren Beuving completed her MA Earth Science in fall 2006 and Chris Landry completed his BS Geology/Physics in spring 2007. Chris is completing research in my lab until fall 2007, when he will begin work on a PhD in Geological Engineering at Penn State. Another undergraduate in the lab, Melinda Schaller, recently completed her degree at Kalamazoo College. She received special honors for the senior thesis work she completed in my lab. She will continue to work in the lab part-time for this summer and the coming fall, with plans to go to medical school next year. Melanie Haveman is continuing her MS work investigating the influence of the exotic invasive weed, purple loosestrife, on the geochemistry of a local marsh (Kleinstuck Marsh). She presented preliminary results at the Biogeochemistry of Wetlands meeting in Annapolis, MD last April. Angel Cuellar has been working on this project with Melanie, and plans to finish up his BS Geology in fall and enroll in our MS Geosciences program to continue his geochemistry research. Trevor Whitlock, MS student, is trying to understand how Ni and Cu move through contaminated aquifer sediments from a Michigan site. Trevor will present his recent results at the upcoming GSA conference in Denver. Melinda, Melanie, Angel and I will also be presenting talks and posters at GSA. Terri Shattuck and Soumya Das are finishing up their MS thesis and PhD dissertation, respectively. Soumya plans to begin a postdoc at Rutgers University with geochemist Nathan Yee starting in September. Needless to say, I am very proud of all of these students and their impressive accomplishments!!

As if all of these students have not been keeping me busy enough, I

decided to teach a middle/high school teacher workshop on Environmental Science this summer. I have just finished that up, and it was a great week for myself and the 19 teachers enrolled in the workshop. We had a chance to see some fascinating sites, including the Kalamazoo Wastewater Treatment Plant, the Cork Street Landfill (thanks to Carolyn Rutland) and the Green Roof recently installed on the top of Battle Creek's police station.

Finally, I was sincerely touched to receive two awards this year – the WMU Emerging Scholar Award and the Geosciences Alumni Council Faculty Achievement Award. I would certainly not be in a place to receive such honors if not for the efforts of my students and colleagues, all of whom make WMU an outstanding place to work. Thank you, all!



R.V. Krishnamurthy

It looks like the circle made one complete round during the past year with two students Tsigabu Gebrehiwet and Steven Beukema graduating with their PhD degrees. Happily for the three of us, both of them found employment even before completing their degree formalities, Steve taking up a job with the Michigan Department of Environmental Quality and Tsigabu joining the well-known petroleum geology group at the University of Oklahoma. Tsigabu also received an award from the National Association of Black Geologists and Geophysicists. This will enable him to attend a meeting to be held on the 18th of September through 22 in Phoenix, Arizona. The departure of these students has resulted in a temporary vacuum at the Stable Isotope Laboratory and hence the reference to "the circle having made one complete round". No doubt working in the Stable Isotope Lab is demanding and not for the weak minded, but the rewards are rich as shown by the several students who have been associated with it. Hopefully, after a lull,

steam will pick up and the daring ones will take advantage of our world-class facility.

Summer is Goldschmidt Conference time and this summer was no exception. In the past I have facilitated my students to present papers at this most prestigious geochemical conference. This summer it was held in Cologne, the beautiful German city and was attended by more than 3500 participants from 68 countries. Since there was a special session on hydrogen isotopes and the session chair requested that I present a paper, the invitation was too inviting to refuse. Luckily, I could conduct some new experiments on hydrogen isotope ratios in Acid Volatile Sulfur and present the data. Only at the meeting I realized the potential of expanding this work despite some strong protest from a few traditionalists. At the meeting, it was a pleasure to revive old contact and have dinner with Prof. Gerald Wasserburg of CalTech, probably the greatest isotope geochemist the world has seen. Prior to attending the conference, I could also respond to an invitation from the University of Helsinki to visit them and give a seminar. This also enabled me to see parts of that spectacular Finnish city and its most charming people.

One of the fulfillments of academic life is to know that one's students keep in touch with you even long after they have left. Barring a few cases, I am one of the lucky ones indeed. Ahmed Murad is a good example. Ahmed, now the chair of his department in UAE keeps me posted on all the developments and it does appear that he has become a national celebrity! I was also pleasantly surprised to run into Dr. Madhav Machavaram, my first PhD student who has moved from UC Berkeley to the Univ. of Cincinnati, managing an environmental program for the EPA. Dr. Eliot Atekwana, yet another student that I am proud of has moved as an Associate Professor to the Oklahoma State University and is establishing a vigorous isotope geochemistry program. Dr. Norman Lovan has assumed a managerial position in a local environmental company and continues to collaborate with me scientifically.

It is not often that one gets to meet with the President of the largest democracy in the world. During the summer I had one such opportunity when my musician son Rohan received an invitation from Dr. Abdul Kalam, the President of India to visit the Rashtrapathy Bhavan for a one on one meeting and performance. Dr. Kalam,

regarded as the father of India's space and missile programs is also a connoisseur of the arts. It was a humbling experience to be sitting with him in his official office and discussing various topics for 30 minutes. Being the President's guest, my son and I made full use of the ten days in Rashtrapathy Bhavan, India's version of the White House. The Rashtrapathy Bhavan with more than 400 rooms and built totally with stones (no metal of any kind has been used) is the largest Presidential palace in the world and we could see why. The comfort and hospitality of the Rashtrapathy Bhavan more than mitigated the 120-degree heat index outside in the city of New Delhi. Daughter Sowmya, having completed her BBA from the Ross School of Business (Univ. of Michigan) has taken up her first job with William Morris Agency, a big name in entertainment industry in New York. The job has given her glimpses of the lifestyle of the rich and famous, to say the least!



Heather Petcovic

Hello Geosciences friends and alumni! In the past year I have watched baby Jessica grow from an infant into her own little person. It is hard to believe that she will soon be entering the "terrible twos." The past year has been busy and exciting, both personally and professionally.

I continue to work with future teachers of earth science at all levels. In addition to teaching the department's Earth Science for Elementary Educators course,

faculty news

last fall I became the undergraduate advisor for the Secondary Earth Science Education major and minor. These programs prepare our students to teach earth science in middle or high school. I have enjoyed getting to know these students who have an important role to play in educating future generations about the geosciences.

I have also been working with graduate students who wish to pursue careers in college teaching. A new doctoral program in the Mallinson Institute for Science Education, where I hold a joint appointment, is designed to prepare students to teach in science disciplines – including earth science – at community colleges and other teaching-oriented institutions. Our first students were enrolled in this program last fall, and include a doctoral student in earth science.

Based on the work I have done with future teachers, I was invited to be a co-convenor of an NSF-sponsored workshop entitled "Geoscience Courses that Prepare Future Teachers." The workshop explored the ways in which geoscience teacher preparation courses are being designed, with goals of making recommendations of best practices available to other geoscience educators, and building a community of faculty involved in earth science teacher preparation. Twenty-three educators gathered at Carleton College (MN) in May for this workshop; a workshop report will be coming out in a future edition of EOS, the AGU newspaper.

In addition to teaching undergraduate and graduate courses for future teachers, I am collaborating with Dr. Gillespie on a new general education course. "Earth Hazards and Disasters" enrolled its first students this fall; the course is an exploration of the science and societal impacts of the major geologic hazards (impacts, earthquakes, volcanoes, floods, tsunamis, landslides, and hazards related to global climate change). Although we enrolled a small class this fall, we hope that "Disasters" will become a course that brings students into our department.

My main research focus this year has been a project aimed at comparing the strategies used by students and professional geologists during geologic field mapping exercises. With a grant from the WMU FRACASF program, I collected data from students and several

professional geologists as they completed day-long mapping projects during the department's U.P. field course. By comparing the strategies, behaviors, and thought processes of the students to the professionals, I hope to understand where the "gaps" are between student and professional thinking in the field. This understanding will lead to additional research to design teaching methods that help students cross the "gap" toward more professional thinking in the field.

After the research project, I remained with the field course to lead students through the Keweenaw Peninsula, from Marquette to the Porcupine Mountains and up to Copper Harbor. Despite the 90+ degree temperatures, a raging thunderstorm, and the swarms of black flies we enjoyed the scenery and the geology. I have never before had a class that had to be pried away from the mine dumps! Once again, thanks for making this a highlight of my summer.

The coming year promises to be busy with teaching, my activities with the Geoscience Education Division of the Geological Society of America, and with ongoing research projects.



William Sauck

Hello again! Fall 2006 semester began with teaching a section of Geos1000 (Earth Studies). I co-hosted a visiting post-doctoral fellow from Cairo University, Egypt, Khalid Essa, who arrived in September and stayed at WMU for this entire academic year.

From Dec. 14 - Jan. 4, Elen and I made our nearly annual trip to Brazil to be with family for the holidays. More progress

was also made on construction of our beach home near Sao Luis.

Teaching assignment during Spring term was another section of Geos1000. By this point we were quite accustomed to using the Quizdom radio-frequency responders (clickers) in that class. They are the basis for attendance and for 15% of lecture points. On Feb. 28, Laura Smart defended her Ph.D. dissertation, and I was very happy to present her at the April graduation. During Spring break in March, Elen and I made a very interesting trip to Portugal. While there we visited one of the oldest Universities in Europe, Coimbra. Additionally we stopped at the Universities in Aveira and another in the ancient walled city of Evora. Later in March I gave a seminar at MSU. In the first week of April I went to the SAGEEP (Symposium for the Application of Geophysics to Engineering and Environmental Problems) meeting in Denver to present a paper co-authored by archaeology colleagues from Texas A&M about our geophysical discoveries on American Samoa in 2006.

From May 5-18, I again went to Egypt. I spent two days at Cairo Univ where we prepared equipment for the field, and then took the night train half-way up the Nile valley to Qena. After two days in Wadi Qena we were joined by Dr. Sultan and proceeded to investigate numerous sites in the Eastern Desert/ Red Sea Hills that had been chosen on the basis of remote sensing interpretations as possible fracture aquifers in bedrock. The geophysical ground-truthing was primarily by VLF profiling, as we had done on a similar trip the year before with support from the UN Development Program.

In late May, Elen and I were able to attend the Spring Am. Geophysical Union meeting together in Acapulco, where I presented a paper related to the work in the Eastern Desert of Egypt. Elen also presented in the meteorology section.

I taught the Geophysics module of the Hydrogeology Field course during Summer II as usual, and then went with Elen in late August for only two weeks to Belem and Sao Luis, Brazil.

On the family side, Christine finished her 5th year of graduate work in Clinical Psychology at Clark Univ. in Massachusetts. Carolyn (mechanical engineer) continues with SABO USA at their Plymouth, MI office, and travels the world on short notice. She and brother Eric are still in their condominium on the south side

of Ann Arbor. Eric is a Junior in M.E. at U of M., and worked at Toyota Engineering during the Spring term on a co-op program. He also spent 3 weeks of June in Iceland. Elen made it through a fourth year without a surgery, still gives lots of dinners, and also travels as much or more than I do. She did, however, participate in two clinical trials of experimental drugs for her liposarcoma during the first half of the year. Unfortunately, neither had any positive effects, and the second made her so sick that it took most of the summer to recover. It was another busy year!

term-appointment



Robb Gillespie

Cheers to all alumni and friends. It's hard to believe that another fun-filled, action-packed year has gone by already.

My second home, the Michigan Geological Repository for Research and Education (MGRRE) facility is quickly evolving as the premier Michigan subsurface data source thanks primarily to the hard work of Dr. Bill and Linda Harrison, and Dr. Mike Grammer. Sue Grammer has joined us this year directing the newly developed K-12 outreach program. We know Sue will be here for at least the next 3 years thanks to a newly awarded DTE grant for her work. Dr. Dave Barnes, Bill and Mike are busy working on the CO₂ Sequestration grant. But the disappointing news is the premature finish of the DOE Energy grant we were all working hard to complete. Federal funding was cut, and all energy grants were ended, regardless of progress or value. However

we did receive funding for two of the three years originally promised, good research was accomplished, and a number of students gained valuable experience and were supported in their studies. This just leaves more time to win a new grant – uhh, right?

The newly approved "Geological Hazards and Disasters" (GEOS 1500) course takes flight for the first time this fall semester. I'll be doing the lectures and Dr. Heather Petcovic will be doing the discussion section. I am really looking forward to co-teaching this course with Heather. She specializes in science education, so I'm hoping to learn a few new teaching tricks that I can use in my other courses as well. I've been busy all summer putting together the semester's new power point lectures, and I still have a ways to go. Besides our new "Disasters" course, I'll also be teaching Ocean Systems (GEOS 3220), Physical Geology - Intro for geo-majors (GEOS 1300), and Earth Studies - Intro for general education students (GEOS 1000). Our "Planetary Geology" course was approved by the University, but we have postponed offering it until we can develop funding to support the effort.

I am currently co-authoring a textbook supplement entitled "The Geology of Michigan and the Great Lakes" with Dr. Bill Harrison and Dr. G. Michael Grammer. It will be a 32 page introduction/summary of the regional geology that will be packaged with all the geo-textbooks that THOMSON BROOKS/COLE sells in Michigan and the surrounding areas. They are developing a complete series of these regional works, covering the entire United States, as a means of bringing the local geology more into focus for students in those areas. The Michigan and Great Lakes region was one of the last to be done, and we found ourselves in the perfect position to develop it due to our MGREE resources. The manuscript and illustrations are due at the publisher on September 1st, and it is scheduled to be introduced and promoted at the GSA meeting in October. And as usual, with only two weeks to go, there's still lots to do.

I have been asked to participate in three additional Masters Committees. Audrey Ritter, Amy Nowak and Jennifer Schultz are all working hard in their respective programs, and I'm more than happy to be of help (or at least, so they hope). All three are away this summer working at oil company internships in various parts of Texas, and one has

already received a job offer upon graduation. It's really satisfying to see our students successfully move ahead after all their dedicated, hard work. It will be a busy year moving those Masters degrees toward completion.

The ongoing saga of the 1.2 ton "Michigan Copper Erratic" has reached a milestone. After more than two years of negotiations, contracts, funding, designing, landscaping and stand construction, the copper erratic now stands outside the entrance to Rood Hall (near the Lee Honors building). The Geosciences Department plans to have a formal dedication ceremony in the spring of 2008 when the Departments' external advisory board meets. Before then, new displays are planned in the Rood Hall corridor between the outdoor copper erratic display and the "Schultz Geological Museum" at the front lobby in the building. The story of the copper erratic will be unfolded and pictures of its discovery and recovery will be displayed. The geology of Michigan will be laid out in rich detail, showing not just the science, but also the proud contributions that geology has made to the growth of Michigan, the nation and even the world. It will also show the bright opportunities it presents in Michigan's future, and how students can take advantage of the jobs Michigan geology represents.

Dr. Chris Schmidt and I plan to repeat our successful field trip to Baraboo, Wisconsin. It will be sponsored by the Michigan Basin Geological Society (MBGS) and anyone that is interested is welcome to attend. It was originally scheduled for the third week in September, but it turned out that this conflicted with the Eastern Section, American Association of Petroleum Geologists (AAPG) meeting in Lexington, Kentucky. So, we have postponed the trip until the weekend of October 13 – 15. Chris plans to have his structural geology students along, and the trip is open to all MBGS members and WMU Geo-alums. Please drop us an e-mail (robb.gillespie@wmich.edu) if you are interested in attending, and would like more information.

Tres Rios Resources, Inc., the small Texas based oil and gas company I'm associated with, is still "pumping" along. Production has, as expected, dropped a little bit. But as we all know, the price of oil is up. So the monthly production check has stayed about the same. Somehow, it all seems to be about a break-even sort of deal.

The new/getting-older house continues to be a black hole for everything resembling currency. Maintenance issues are now being to appear and the projects increase in number as time goes by. This summer's big project was to install the remaining landscape lighting in the front yard. I'm trying to eliminate those winter-time, snow-encrusted extension cords for the outdoor Christmas decorations, so I'm installing additional underground wiring and outdoor plugs along the driveway by the trees. Where are those helpful Christmas Elves when you really need them?

Congratulations to faculty member, Carla Koretsky! She was selected this past year to be one of the first recipients of the Emerging Scholars Award. As the Western News describes it, the award was established to acknowledge the accomplishments of academia's rising stars, celebrating the contributions of faculty who are in their first decade of their WMU careers and who have achieved national recognition as well as demonstrated outstanding promise to achieve renown in their continuing work. We're very proud of you, Carla!



The MICHIGAN COPPER ERRATIC 2,240 Pounds (1.12 Tons)

This large piece of native copper, shaped like the state of Michigan, was formed as hot, copper-rich water flowed through fractures in the Precambrian volcanic rocks of Michigan's Upper Peninsula more than a billion years ago, and deposited masses of pure copper within the fractures.

Glaciers, advancing and retreating through the region about 35,000 years ago, eroded the ancient volcanic rocks and the copper veins in them. When the glaciers melted about 10,000 years ago, pieces of copper, such as this specimen, were left strewn along with other glacial deposits throughout the region.

Shortly after the glaciers retreated, the first Native Americans entered the Lake Superior region and used this "float" copper for implements, ornaments, and weapons. These same early people also discovered the parent copper veins and started mining copper in what, thousands of years later, became the world famous Michigan Copper District of the Keweenaw Peninsula.

Discovered by Brian Schulze
Lake Superior

45 feet water depth
1 mile offshore Eagle River, Michigan

Recovered in 2006 by Brian and Paula Schulze,
Don and Katie Anderson, Ben, Kristie and Bella Bigari

More information and other displays can be seen in the:
Schmaltz Geological Museum
Geosciences Department – Rood Hall
~~(enter through doors to left)~~

Recovered from the Great Lakes Bottomlands - On loan from the State of Michigan,
Michigan Department of Natural Resources

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Barnes

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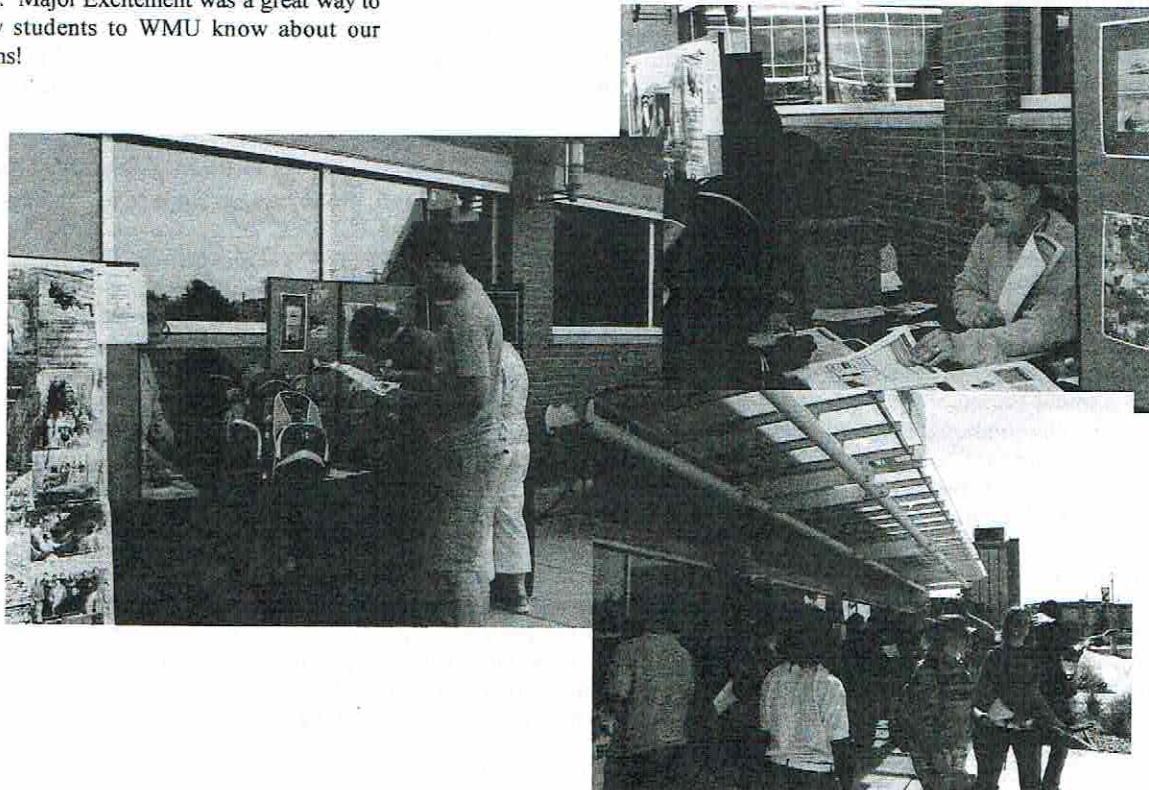
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Grants

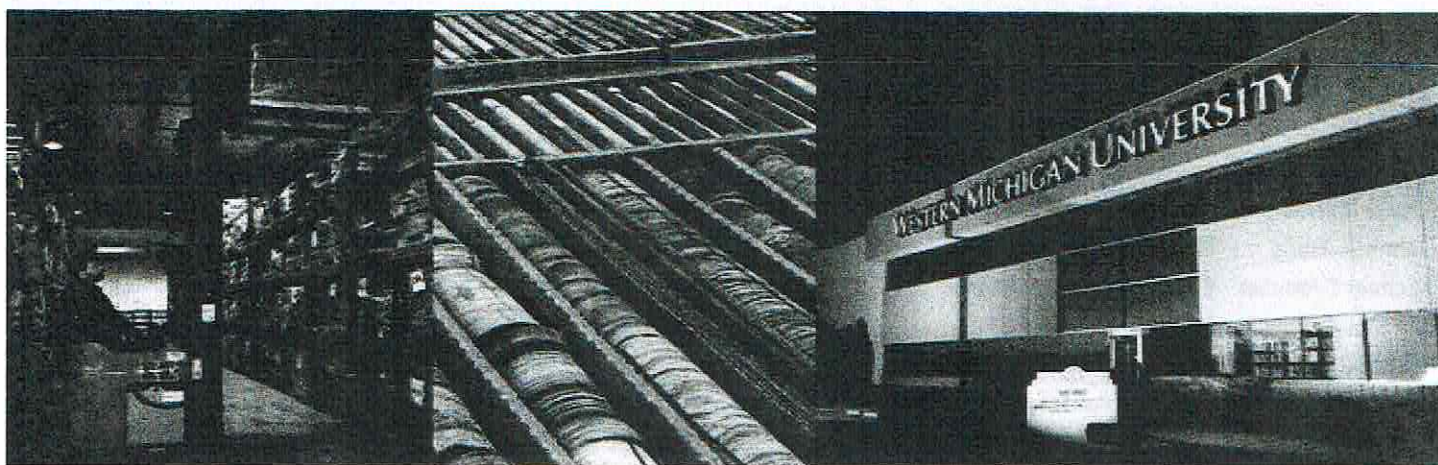
Project Director	Title	Sponsor	Funding Source	Dates
Alan Kehew	BTFLEX Fluctuation	Kalamazoo Community Foundation	Other	11/06-12/07
Carla Koretsky	CAREER	National Science Foundation	Federal	8/04-7/08
David Barnes	MW Carbon 2	Battelle Memorial Institute	Other	9/06-8/08
Johnson Haas	Organic Aqueous Complexation	National Science Foundation	Federal	9/06-8/08
Michael Grammer	Energy/Resource Center	U.S. Department of Energy	Federal	11/04-6/08
Michael Grammer	PTTC	Petroleum Technology Transfer Council	Other	10/97-9/08
Michael Grammer	Dolomite Formation Study	U.S. Department of Energy	Federal	11/04-9/07
Michelle Kominz	Chesapeake Bay Impact 2	National Science Foundation	Federal	8/06-9/07
Michelle Kominz	Have Ridge Volumes Changed	National Science Foundation	Federal	7/04-9/07
Mohamed Sultan	Pakistan-US S&T	The National Academy of Sciences	Federal	3/07-1/10
Mohamed Sultan	Monitoring Cyanobacteria Year	State University of New York	Education Inst	9/04-8/08
Mohamed Sultan	Renew Ground Water	United Nations Development Program	Foreign	10/06-9/07
Mohamed Sultan	Sinai Egypt Water	NATO Science Program	Foreign	2/07-11/07
Mohamed Sultan	Mesopotamia Database	National Science Foundation	Federal	9/04-8/08
Mohamed Sultan	Renewable Groundwater Resource	National Science Foundation	Federal	6/05-8/08
Ron Chase	Monitor Allegan Shoreline	Army Corp. of Engineers	Federal	6/06-12/06

Major Excitement

Geosciences joined in the recruiting efforts on campus. Major Excitement was a great way to let new students to WMU know about our programs!



Michigan Geological Repository for Research and Education (MGRRE)



Dear Alumni - It has been another busy and productive year at the MGRRE facility as we continue our focus on efforts as a repository for Michigan subsurface geological data, a research center for various aspects of applied and basic geoscience, and adding to the education of WMU undergraduate and graduate students, professional geoscientists and the K-12 teacher and student community. We currently have some 250,000 linear feet of core material in our repository along with tens of thousands of "cuttings" samples, and thousands of wireline log suites, core analyses, maps, etc., and we are still growing. MGRRE is now "the" preeminent source for Michigan subsurface geologic data certainly within the State, and possibly the nation.

On the research end, we continue to work on reservoir characterization in several intervals in the State, with an approach geared toward better understanding of the three dimensional depositional systems represented. Dave Barnes is rapidly becoming the regional CO₂ guru and is involved with educating the public as well as being lead P.I. on ongoing research grants to study the geological constraints of carbon sequestration. Bill and Mike complete the faculty CO₂ research team. Eight graduate students are working on exciting topics including geological characterization for CO₂ sequestration, modeling porosity and permeability trends in Michigan aquifers, modeling the distribution of hydrothermal dolomite in several intervals, characterizing pore system architecture in carbonates and relating back to sonic velocities, evaluating the depositional history of Silurian reefs in response to sea level change, and 3-D modeling of pinnacle reefs using the \$1.1 million software package that Schlumberger donated to us earlier this year. More details on individual student activities can be found under the news from Mike and Dave Barnes.

Our technology transfer and education activities continue to grow as well. This year we hosted the American Petroleum Institute's first stop on a nationwide university tour, and had close to 200 people attend our 2 PTTC workshops this year. Mike and Bill taught two 1-day short courses in carbonate reservoir characterization at MGRRE. Robb Gillespie joined them in presenting an industry short course in Traverse City (AIPG). Mike presented short courses in the Bahamas (AAPG), Utah (Nautilus Inc.), the University of Nebraska and in Rio de Janeiro and Curitiba, Brazil (Petrobras). Faculty and staff together presented professional papers at both the Eastern Section of AAPG (6 papers) and the national AAPG (1 paper), and just recently at the national GSA meeting (3 papers).

Robb Gillespie, Bill and Mike (with the help of some fabulous photography courtesy of Linda Harrison) just finished a chapter on the Geology of Michigan and the Great Lakes that will be an insert into the new physical geology textbook published by Thomson. The insert it will be distributed along with every copy of the text sold in the State of Michigan. Robb has big plans to expand the chapter into an even more comprehensive Michigan Geology volume - we will keep you updated.

We have been fortunate to host several visiting dignitaries this year. A visit by interim President Haenicke in the Spring was followed by a visit from new President John Dunn the first week he was on campus. Other visitors included U.S. Congressman Fred Upton, State Senator Tom George, State Geologist Hal Fitch, several alumni (including the Departmental Distinguished Alumni Bob Garrison) and others from the WMU administration. Mike and Pres. Dunn were also invited to participate in an "energy roundtable discussion" hosted by Congressman Upton and including several CEO's and representatives from around the State as well as U.S. Secretary of Energy Samuel Bodman. We also hosted a number of distinguished researchers during the past year, including Dr. Charlotte Schreiber on her international IAS Distinguished Lecture series, Dr. Matthew Pranter and Ph.D. student Jill Haynie from the University of Colorado, Dr. Gregor Eberli from the University of Miami (FL) and other visitors from Laval University in Quebec, Grand Valley State University, Eastern Michigan University, Central Michigan University, and the Ohio Geological Survey.

Our burgeoning K-12 Outreach Program at MGRRE, directed by Susan Grammer, has also had a busy first year. We've hosted two teacher workshops, several fieldtrips and visited area classrooms. We also presented a joint workshop with an area teacher at the Michigan Earth Science Teachers' Association conference where participating teachers told us that they really wished they knew an earth scientist who could visit their classroom (volunteers gladly accepted if you are in the area!). We heard the same thing at the Michigan Science Teacher's Association meeting in Detroit, and we hope that some of those teachers will steer their students towards WMU's Geosciences Department. Several more classroom visits are planned for this fall and we are looking forward to beginning our new 3-year partnership with DTE Energy Foundation in January, 2008.

We wish each of you every success in the coming year. If you plan to be in our area, please come visit us and see for yourself what we are doing here at MGRRE.

Hydrogeology Field Course (HFC)

The summer months were once again consumed with a successful Hydrogeology Field Course. The HFC attendance grew in 2007 thanks in part to the new *Non-Resident Hydrogeology Field Course Scholarship*. This scholarship (supported by the Provost's office, Dean's office and Departmental funding) helped defray the added cost of tuition for foreign and out-of-state students enrolling in the hydrogeology summer field course.

The HFC continually strives to provide the students with state-of-the-art techniques for sampling, monitoring, and evaluating ground-water systems. With this in mind the field course purchased a new hand held water quality meter to stay updated with today's technology. The new meter, YSI 600QS, includes temperature/conductivity, dissolved oxygen, pH/ORP, and depth (0-200ft) sensors and allows the user to collect these parameters simultaneously in real time on its multi-parameter display.

The department has also invested in a new digital borehole logger. Purchased from Mount Sopris Instruments, the new Matrix-Portable Digital Logger will be introduced in the 2008 HFC. The Matrix Logger, with natural gamma-ray probe, will be replacing the department's somewhat antiquated Geophysical Borehole Logging System (SR-3000) by Keck.

The HFC continues to provide its students with the most modern and utilized equipment offered today. By updating our older equipment, purchasing new equipment and the continued support by those manufacturers that either donated or loan equipment to the program, the field course has been able to maintain its high standards.

The Department of Geosciences will be offering the HFC during the summer of 2008, tentatively scheduled for July 7th through August 16th. It is anticipated that enrollment in the HFC will increase in 2008 due to its new affiliation with the EUP (Extended University Programs). The HFC affiliation with the EUP will help maintain low tuition cost for all students (resident and non-resident) and allow the field course to stay competitive with other geological field course in the realm of tuition.

The HFC provides a great experience for students and helps provide them with a solid foundation for entering the work force. Please check out the website and let people know about the course.

<http://www.geology.wmich.edu/fhydro/index.htm>

What the HFC is all about:

The WMU Hydrogeology Field Course is a series of six one-week modules designed to emphasize state-of-the-art techniques for sampling, monitoring, and evaluating ground-water systems. Particular consideration is given to contaminated systems, aquifer testing, and select near surface geophysical techniques.

The course is conducted on and near the campus of Western Michigan University. Each module, which is taught six days per week, counts as 1 credit hour and can be taken for graduate or undergraduate credit. The objective of the field course is to provide students with hands-on field experience. With this in mind, classroom lectures are kept to a minimum and are given primarily to support field exercises.

Course Modules:

GEOL 5230: Hazardous Waste Operations and Emergency Response (HAZWOPER)

Instructor: *Dave Stegink, Environmental Consultant for Envirollogic Technologies, Inc.*

- OSHA 40-hour certified training - Emergency spill response
- Personal protection equipment



Dave Stegink overseeing the HFC students during a mock-decon drill - HAZWOPER 2005

GEOL 5240: Remediation Design and Implementation

Instructor: *Dr William Laton, California State University – Fullerton*

- Bioremediation
- Pump & Treat systems
- Remedial investigation
- Regulatory issues
- Air sparging
- Soil vapor extraction
- Feasibility study

GEOL 5250: Environmental Surface Geophysics

Instructor: *Dr William Sauck, Western Michigan University*

- Electromagnetic methods
- Shallow seismic methods
- Surface resistivity
- Ground penetrating radar (GPR)

GEOL 5260: Principles and Practices of Aquifer Testing

Instructor: *Dr Duane Hampton, Western Michigan University*

- Step-down pumping test
- Forty-hour pumping test
- Data processing
- Slug and bail tests
- Recovery test
- Measuring equipment

GEOL 5270: Principles of Well Drilling and Installation

Instructor: *Brian Bird, Western Michigan University*

- Hollow-Stem Auger
- Cable tool drilling
- Borehole geophysics
- Monitoring well design
- Rotary (mud and air)
- Direct push technologies
- Sample collection and log description
- Well installation and development

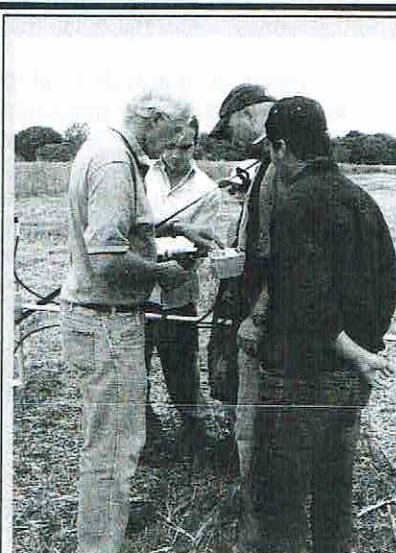
GEOL 5280: Principles and Practices of Ground-water Sampling and Monitoring

Instructor: *Dr Tim Clarey, Delta College*

- Quality control and assurance
- Vadose sampling (water, gas)
- Field hydro-chemical equipment
- Ground-water sampling
- Free product (NAPL) monitoring
- Field hydro-chemical analysis



HFC students touring a local Pump & Treat facility - Remediation 2004



Dr. Sauck instructing the HFC students on how to use the magnetometer - Geophysics 2007

Brian Bird demonstrating the (old) gamma logger to HFC students - Drilling 2006



Dr. Hampton explaining ground-water level meters to the HFC students - Aquifer 2006



Dr. Clarey and the HFC students performing field hydro-chemical analysis - Sampling 2005

Soumya Das
PhD Candidate

Hello everybody,

My heartiest welcome to all new the faces in the department of rocks and fossils. This year was a real busy academic year for me. I was working as a T.A. in Petrology as usual during spring. This was my fifth year TAsip in Petrology. I had fun and really enjoyed working with Dr. Chase during these past five years. I will be also TAing for the two weeks of Hydrology field camp during this summer.

I taught Physical Geology at Lake Michigan College during summer I as an Adjunct Professor. That was an excellent opportunity for me to gather real experience in teaching at Community College level. I had also another offer to teach graduate level Environmental Geochemistry and undergraduate level Environmental Geology courses at University of Michigan, Dearborn for Fall 2007. But I had to decline that offer as I have already accepted a postdoctoral research associate position at Rutgers University. This position will be starting from September 1, 2007. So, I will be moving to New Jersey soon.

I am working with Dr. Koretsky on lead adsorption on single and mixed mineral assemblages. I have finished working on single mineral adsorption experiments with HFO (hydrous iron oxide) silica, and kaolinite as well as with their binary and ternary phases. I used sodium nitrate as background electrolyte with constant (0.01M) and variable (0.1, 0.01 and 0.001M) concentrations and solute-to-solute ratios. Concentration of lead (Pb^{2+}) varied from $10^{-4}M$, $10^{-5}M$ to $10^{-6}M$. Results I have got are very interesting. 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.

I am on the verge of finish writing my dissertation and planning to defend on August 27. This would be my last year here at Western. It is really hard to say goodbye. I have really enjoyed here during the course of my study. I really appreciated the help I have got from this department for last five years. So, I might not be able to see you guys around, but I wish all the best for all of you. Hoping that you will enjoy here just as much as I did. Good luck with your studies here at Western.

Hello All,

Hello and Greetings to our WMU Geosciences Community. I am currently working on my fifth semester as a graduate student at WMU where I am in the process of completing my thesis research project (my course is completed-yeah). My thesis project investigates flow properties of bedrock core taken from the Saginaw Aquifer using sedimentary petrology, geophysical logs and localized conductivity measurements to generate an enhanced groundwater model for a portion of Mason, Michigan. I am looking forward to graduating and getting to put my newly learned knowledge into action and rejoining the "real world". I hope everyone is having a great year!

Amanda Walega
MS Candidate

I graduated last spring and just couldn't get enough of WMU, so I returned and am currently pursuing my Masters. I am working with Dr. Kominz in the field of geodynamics/geophysics. Specifically, I am continuing Kisa Mwakanyamale's work on estimating the amount of sea-level change caused by continental crustal extension and subsequent oceanic volume reduction. Kisa analyzed the Indian Ocean, while my task is to finish the rest of the world. Currently, Dr. Kominz's programs and the procedure only work for passive margin settings. If all goes well and I have sufficient time remaining after all of the divergent margins are completed, I hope to examine the effects of convergent boundaries. I also hope to work on a side project with Dr. Schmidt, which aims to investigate the relationship of magma emplacement and old faults. In other words, do the old faults control how the magma was emplaced?

Till Spring,

Josh Kirschner
MS Candidate

Geosciences Dept Staff

<i>Kathy Wright</i>	<i>Administrative Assistant Sr.</i>
<i>Beth Steele</i>	<i>Newsletter Editor Office Associate</i>
<i>Michael Durham</i>	<i>Technician</i>

Internships

Some of the Geosciences students had the opportunity to participate in summer internships with excellent organizations!

Amy Noack

EOG Resources

This past summer I took an internship with EOG Resources in Midland, Texas. On a daily basis I worked on developing oil and gas plays by interpreting and correlating well logs, looking at sidewall cores, examining thin sections, and mapping stratigraphic sequences. I was able to work on two different plays in West Texas and was able to propose locations for wells with the team I worked with. At the end of the summer, I received a job offer. I will begin work in July or August of 2008 immediately following my graduation with a Master's of Science in Geology from Western Michigan University



Shell Oil (Royal Dutch Petroleum): 2007 Gourami Business Challenge

In addition for interning for EOG Resources, I was invited to Houston, Texas for a week to spend with Shell. I worked on an imaginary oil and gas prospect on the imaginary island of Gourami. I worked closely with 90 other students which consisted of a few geologists, many engineers, human resources, finance, chemists, and marketing students. At the end of the week I presented our imaginary prospect to real Shell senior level management. I was also offered a job to work with Shell starting in August of 2008, but after a long and difficult decision, I decided to take the job with EOG Resources.



Jessica L. Wold

ExxonMobil Exploration Company

During the summer of 2007 I had the opportunity to intern with ExxonMobil Exploration Company in Houston, TX. The internship offer was the result of interviewing at the 2006 AAPG (American Association of Petroleum Geologists) Eastern Section meeting in Buffalo, NY where students had the opportunity to interview with several oil and gas companies from throughout the USA and Canada.

Working with the Caspian/Middle East UAE/Qatar/Yemen Group at ExxonMobil I completed a project which will assist the regional team gain a better understanding of the geology in my focus area. Multiple presentations about my research were given to my group as well as an overview of my thesis studies here at WMU. ExxonMobil has an excellent internship program where one of their goals is to educate interns and new hires on the many different job opportunities available to geoscientists throughout the company. Weekly presentations and field trips were arranged to introduce different aspects and specialization areas within the company and to ask any questions about careers with the company. My internship experience enabled me to work and learn from professionals who specialize in a range of areas and obtain an understanding of working in a professional environment

One month after the completion of my internship I received a job offer for full-time employment from ExxonMobil Exploration Company with an anticipated start date of August 2008.

Audrey L. Ritter

Occidental Petroleum Corporation

Occidental Petroleum Corporation (Oxy) operates primarily from their headquarters in Houston, TX. This internship was a three month experience working in Houston on an exploration project. The project was an evaluation of turbidites in the deepwater Gulf of Mexico. Basin modelling, stratigraphic cross sections and a literature review were utilized to infer trends within the reservoir. Initially, I was fearful of the topic because my research and interest has always been carbonates. The transition to siliciclastics went smoothly, and I figured out that as long as you are a good GEOSCIENTIST, no matter what the subject is, you will succeed. Currently, I am waiting for an anticipated job offer.



Jennifer Schulz

EOG Resources, Inc.

It has been a busy first year at depositional!! I joined Dr. Grammer's research group in the fall semester and started my Master's thesis research in the spring. Before the end of the spring semester I presented a core analysis with our research group at the PTTC conference, completed an independent research study on modern carbonate depositional environments, participated in a week long field trip to the Guadalupe Mountains in Texas, and landed a summer internship with EOG Resources, Inc. I spent 16 weeks this summer in Corpus Christi, Texas learning the ropes of working the oil patch. My project involved mapping a potentially by-passed sand play through well-log and 3-D seismic analysis. I presented an introduction to my project, on my second day of work, to the CEO, the executive management, and the entire Corpus Christi division! At the end of the summer I presented my final results and recommendations to the regional exploration management. I have also received an invitation to return to the Corpus Christi division of EOG Resources. So, it is shaping up to be another exciting year!!

2007

**Geosciences Department
Awards**

**Graduate Research and Creative
Scholar Awards**
Rennie Kaunda
Nathaniel Barnes

**Graduate Student Teaching
Effectiveness Award**
Travis Hayden
Christopher Jones
Abraham Northup

Senior Honor Awards

Earth Science
Jennifer Trout

Earth Science Education
Bonnie Cross
Amy Jeschke

Geology
Joshua Kirschner

**Advisory Council Field Camp
Scholarship**
Abou Aly El-Magd

**Jacob Koebbe Air Water
Compliance Group, LLC**
Ruth Nair

**Kalamazoo Gem & Mineral
Society Award**
Bonnie Cross
Audrey Ritter

Laton Field Camp Scholarship
Alan LeFever
Caleb Woolever

**Lauren D. Hughes Environmental
Scholarship**
Julie Nowakowski
Elizabeth Simkiw

**W. David Kuenzi Memorial
Scholarship**
Nathaniel Barnes
Richard Becker
Jessica Crisp
Adam Milewski
Caleb Woolever

Lloyd Schmaltz Award
Joshua Kirschner
Amanda Wahr

**Lloyd and Marilyn Schmaltz
Undergraduate Scholarship**
Julie Nowakowski

**Distinguished Student Service
Award**
Chris Jones
Adam Milewski

**Undergraduate Research and
Creative Activities Awards**

Best Seminar Award
Travis Hayden

Presidential Scholar
Joshua Kirschner

awards & graduations

Recent Graduates

Bachelor's Degree Recipients

Earth Science Majors
Lynn Bland
Michael Dear
Justin Hotovy
Stephen Kelley
Eric Stephens
Derek Stromsta
Amanda Wahr

Geology Majors
Joshua Kirschner
Audrey Ritter
Christopher Landry
Daniel Peabody

Hydrogeology Majors
R. David Eagle
Katherine Fletcher
Nick Shorkey

Master's Degree Recipients

Earth Science
Lauren Beuving
Nathan Bolles

Geology
Nathaniel Barnes
Christopher Jones
Koi Ling Lim (Kayleigh)

PhD Recipients
Steven Beukema
Tsigabu Gebrehiwet
Rennie Kaunda
Haile Mengistu
Abraham Northup
Laura Smart

alumni news

We are pleased to announce that previous graduate student, **Tsigabu Gebrehiwet**, has been awarded a scholarship from the National Association of Black Geologists & Geophysicists. Congratulations, Tsigabu! You've done a great job and we wish you well in your future career!

Greg Young
MS Degree, 2004

Hello Everyone at WMU Geosciences Department. I am currently working with MWH Americas on a series of ASR (Aquifer Storage and Recovery) well systems in Cape Coral, Florida. ASR wells have been used for a number of years in different applications. The City of Cape Coral will be using the wells to store water collected from their extensive canal system. Cape Coral has over 400 miles of fresh and saltwater canals. During the rainy summer season, the water will be collected from the freshwater canals and pumped into the storage zone to be used in the winter dry season for irrigation.

Each site consists of four wells. One ASR well, two storage zone monitor wells and one monitor well in the aquifer above to storage zone. The ASR wells are drilled to about 1200 ft, the storage zone monitor wells are drilled to about 1000 ft and the shallow monitor well is drilled to about 600 ft. In our case, the storage zone will be in the brackish Suwannee Aquifer. The brackish water will create an envelope around the freshwater in the horizontal direction and confining layers above and below the storage zone will minimize transport in the vertical direction.

During drilling operations, rock cuttings samples are

collected and the lithology is described. Specific capacity tests and water quality tests are also performed at regular intervals. For water quality, we measure specific conductivity, dissolved oxygen, chloride, pH and temperature. During various stages of the drilling, geophysical logs are run. The logs we use are the X-Y Caliper, Gamma Ray, Dual Induction, Spontaneous Potential, Sonic, Static and Dynamic Flow, Static and Dynamic Conductivity, Static and Dynamic Temperature and finally a Video of the borehole is taken. After the well is drilled, we perform packer tests on intervals we decide look promising for either confinement or storage. The packer test confines intervals so that we can measure water quality and drawdown on small areas of the well. The intervals are chosen by looking at the geophysical logs, the video and the lithology. The data collected during the packer tests is analyzed similarly to other pump tests. We use Aqtesolv software and a variety of methods in our analysis such as Theis, Cooper-Jacob, Hantush and Moench. Finally, a report is written and presented to the City of Cape Coral. After the months of hard work collecting and analyzing the data, this is the culmination of our efforts.

I just got back from a class in Fort Collins, Colorado at the In-Situ Headquarters where I met David Wardwell, a WMU graduate who is working for In-Situ. We were looking at pumping test curves and analysis methods using the Aqtesolv software.

I hope you are all doing well and studying hard. I am still studying as well and preparing to take the Professional Geologist test. Thank you to the faculty, especially Dr. Chase, for preparing me for my future. Take Care.

emeriti news

John Grace

Greetings to all Alumni & Friends. It doesn't seem possible, but it has been almost ten years since I retired from Western. I check up on the place occasionally to see if the University is still functioning without me and somehow it seems to be doing quite well; the Geoscience Department is doing very well indeed!

My life is now more or less in a routine - I volunteer regularly at the downtown and the Air History museum at the airport so this keeps me off the streets. I occasionally give talks on geology to local groups and now have gotten into puttering around the yard. My wife and I have decided that the cold Michigan winter weather is not healthy for the aged, so we have been enjoying the Island Of Eleuthera (in The Bahamas) for three months of the year for the past 6 years and will be doing the same again this year. Someday I'll get out to San Salvador to see what Mike Grammer has been up to.

From what I hear from Tom Straw is that all is well in New Harmony, Indiana and that he keeps his eye on the water level of the Wabash River. Dick Passero still lives in Connecticut and enjoys life on the east coast.

Best to all and keep in touch by email: john.grace@wmich.edu or drop me a line at my new address: 5180 Shane Street, Kalamazoo, MI 49009.

Mark your calendars!

**The Spring Meeting of the
Alumni Council & Alumni Reunion
has been scheduled!**

**We will be holding the Alumni Council meeting
on April 18, 2008 at the MGRRE Building.
Details about the Alumni Reunion
to follow at a later date.**

Where are they now?

Name: Nathaniel Barnes

Degree: MS

Position: Geotrans



Name: Chris Jones

Degree: MS

Position: Haley & Aldrich, Boston MA



Name: Steve Beukema

Degree: MS & PhD

Position: Michigan DEQ



Name: Rennie Kaunda

Degree: PhD

Position:

Name: Lauren Beuving

Degree: MA Earth Science

Position: Environmental Consulting



Name: Nakul Manocha

Degree: MS

**Position: BCI Engineers,
Lakeand FL**



Name: Soumya Das

Degree: PhD

Position: Post-doc at Rutgers University



Name: Laura Smart

Degree: PhD

Position:

Name: Tsigabu Gebrehiwet

Degree: PhD

**Position: Post-doc at University of
Oklahoma**



Outstanding Alumni Academy

The Department of Geosciences welcomed Mr. Robert K. Garrison as our outstanding alumni award winner on October 19, 2007.



Robert K Garrison earned his Bachelors of Science in Geology from Western Michigan University in 1974, he graduated Cum Laude and was a Waldo Sangren Research Scholar while in attendance. Bob went on to receive his Masters of Science in Geology from University of Cincinnati in 1977. He has 30 years of oil and gas experience with several different companies.

Bob started his career with Shell Oil Company where he was an Exploration Geologist from 1977 – 1980, he later worked for Supron Energy Corporation as District Geologist until its sale in 1982. After the sale of Supron, Bob and four others set up El-Can Exploration Company where he served as partner until 1985, later he and one of the original partners formed Batista and Garrison where he worked until 1988. Bob then worked as Division Geologist and later as Exploration Manager with Arkla Exploration Company until its sale to Seagull Energy Corporation in 1992 where he continued to work as a prospector until 1995. In 1995 Bob made one last move, to EOG Resources in Corpus Christi Texas. Bob was named Division Geologist in 1996, Exploration Manager in 1997, Vice President and General Manager in 1998 and Sr. Vice President and General Manager in 2005. In 2007 Bob moved to the headquarters staff of EOG Resources in Houston where he currently is serving as Executive Vice President of Exploration. Bob considers himself to be an "oil finder" first. Exploration geology has been his focus for the past 30 years.

Bob has multiple publications under his name and considers his strong suit to be clastic sequence stratigraphy. He is a Certified Petroleum Geologist with AAPG and the Texas Board of Professional Geoscientists, he is a member of the DPA of the AAPG, Corpus Christi Geological Society and has been an active scout and leader with the Boy Scouts of America since 1993.



Geosciences Community 2007

Back: Alan Kehew

3rd Row: Michael Grammer, Duane Hampton, William Sauck, Adam Milewski, Daniel Cassidy, Alan LeFever, Kirk Wagenvelt, David Barnes, Stephen Kelley, Joshua Kirschner, Trevor Whitlock, Ronald Chase

2nd Row: Caleb Woolever, Joe Idzior, Christopher Jones, Jennifer Schulz, Amy Noack, Tsigabu Gebrehiwet, Angel Cuellar, Robb Gillespie, Nathaniel Barnes, Carla Koretsky, Johnson Haas, Kathy Wright, Heather Petcover & daughter, Jessica

First Row: Ricky Becker, Dee Becker, Rennie Kaunda, Mohamed Sultan, Chris Schmidt, Beth Steele, Zhanay Sagintayev, Sara Snyder, Travis Hayden, Khalid Essa, Michelle Kominz, Abdou Aly El-Magd, Julie Nowakowski, Amanda Wahr.

I would like to first take this opportunity to introduce myself to you. My name is Nick McLaren and I am the Director of Development for the College of Arts and Sciences. As the Director of Development my goal is to help raise funds to meet the needs of our students, faculty, and staff for our college. It is important to remember, successful programs are built on more than talented students and faculty. With decreasing sources of funding, alumni and friends financial support is more important than ever.

The Department of Geosciences needs include travel funds for students to go to meetings, assistance for internship opportunities, to bring in speakers, to fund research, to support interviews and recruitment of faculty and students, to provide assistance for internship opportunities, and to support the research and educational activities of Michigan Geological Repository Research and Education.

The College encourages donors and friends to contribute to the department of Geoscience. Gifts to Western Michigan University can qualify for a deduction on your federal income taxes, if you itemize your deductions. Your total savings will depend on your federal tax bracket. Gifts to WMU also qualify for a credit on State income tax returns for Michigan residents. The credit is limited to the smaller of: 50% of your total qualifying contributions for the year, or \$100 if filing as a single or \$200 if filing jointly. Your total qualifying contributions include all gifts to qualifying Michigan public institutions. Charitable bequests play an important role in the development of Western Michigan University. Indeed, it would be difficult if not impossible to maintain our high standards of excellence without such thoughtful support. Also, as philanthropically minded people are aware, a charitable bequest is an effective estate planning tool and may create significant tax savings. Bequests are by far the simplest and easiest way to provide support. Naming WMU (and specific dept.) as a beneficiary in your will, trust or retirement plan for a specified amount or percentage will help insure the continuation of excellence. If you have made WMU/department a beneficiary, we encourage you to inform us so we can properly thank you for your support. It also enables us to better plan for the future. To learn more about Department of Geoscience and their priorities or to make a donation, please contact the Director of Development for the College of Arts & Sciences, Nick McLaren at (269)-387-4399 or nick.mclaren@wmich.edu and thank you once again for your ongoing support of Western Michigan University.



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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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Kalamazoo, MI 49008

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