



12-1-2006

Geosciences Newsletter - 2006

Department of Geosciences

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https://scholarworks.wmich.edu/geology_news/3

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Mohamed Sultan, Chairperson

Dear friends,

This has been an exciting and productive year for Geosciences. In 2004/2005, the Geosciences Department faculty completed an extensive revision of existing graduate programs. These revisions are now in place (starting Fall 2006). Now incoming students can - for the first time - take full advantage of our faculty expertise and departmental facilities by specializing in geochemistry, geophysics, hydrogeology or sedimentation/stratigraphy, the four core areas of study. Previously, we offered PhDs in Hydrogeology only. Now, admission requirements require a common core of prerequisite knowledge and at the same time accommodate scenarios to accept students with backgrounds in disciplines other than traditional geology. A new [MA](#) Earth Sciences program has been developed to attract 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 so that students can plan their programs efficiently and graduate in a timely manner.

In Fall 2005, we started concentrating our efforts on our undergraduate programs. These programs were revisited to ensure that our students are getting quality education and acquiring the skills needed in the current market. We reexamined the curriculum to remove redundancies in courses, introduced programmatic course

requirements that emphasize field work, and installed safeguards to ensure that our students graduate in time. These changes are now being examined by the College Curriculum Committee and we predict they will be in place by Fall 2007. We also examined General Education offerings across the campus and noted deficiencies in areas of interest to the students, namely in the general areas of Planetary Geology and Earth Hazards. Only weeks ago, our proposal for teaching two new General Education courses addressing these deficiencies was unanimously approved by the Committee for Overseeing General Education (COGE). Planetary Geology and Earth Hazards are in WMU's course catalog and will be the only two new General Education courses to be introduced on the level of the College of Arts and Sciences in the academic year 2006/2007. Dr. Robb Gillespie led our efforts to introduce "clicker technology" in our entry level classes. We noticed a dramatic increase in student participation in class discussions, attendance, and overall performance. We acquired, 3-D visualization tools (GeoWall) that is now being used in some of our entry level labs. All of these initiatives are meant to help our undergraduate students better understand the material presented to them in classes and perhaps attract some of the uncommitted students to go into Geology.

We had the Grand opening of the Michigan Geological Repository for Research and Education (MGRRE) on October 13th 2006, a successful culmination of a 25-year dream. The preceding day, we invited the donors to see for themselves what we were able to accomplish with their generous contributions and to see first-hand the unique data and expertise assembled at the facility. Over 200 spectators attended these two remarkable events - amongst them were key legislators, industry leaders, major donors and research colleagues. This facility is quickly becoming the premier source of subsurface geological data in the State. MGRRE scientists are currently working on a diverse suite of projects including

increased energy recovery, reduced green-house gases, and education from K-12 through graduate research. The value of the collections, programs and faculty expertise has been shown by more than \$3 million in research funding in the last 5 years alone, by private industry donations of over \$900,000, and Federal earmarks of \$580,000.

Our research activities continue to flourish, Johnson secured new funding from NSF for experimental investigation of U(IV) Organic Aqueous Complexation; Michelle secured NSF funding to study Chesapeake Bay Impact Structure; Sultan extended his UNDP funded research on the assessment of alternative renewable water resources for an additional year and joined a team of researchers led by Mark Jenness in a successful proposal, funded by the Jet Propulsion Laboratory to evaluate the educational programs centered on Mars Missions.

Our Spring and Fall Alumni gatherings offer great opportunities for us - the faculty, students, and staff - to meet with you and hear your success stories and for you to find out about our ongoing activities / plans for the future. We are looking forward to seeing you here again in the Spring. Mark your calendar - we are meeting on April 20, 2007.



Dr. Sultan in the field.

faculty news



Dave Barnes

Hello friends and alumni of the Geosciences program!

2005-06 has been a real turning point in the history of the Geosciences Department at WMU. The realization of Bill Harrison's 25 year dream of a major, institutional subsurface data repository for the State of Michigan has arrived in the form of the Core Research Laboratory, a major component of the new Michigan Geological Repository for Research and Education, MGRRE. Tremendous credit is due to Bill's efforts through the years along with the fundamental contributions of Linda Harrison, Mike Grammer, and our Chairman, Mohamed Sultan in recent years to bring this dream to reality. We now have a first class research facility to continue our work with characterizing and understanding the various important subsurface geological resources of the state of Michigan.

Our new facilities have been a tremendous resource contributing to the success of several research initiatives in the last year. Our continuing work with fracture related, hydrothermal dolomite reservoirs, funded by DOE, continues to be very rewarding and successful. Talks and posters by Robb Gillespie, Mike Grammer, Bill Harrison, and our students at AAPG National and Eastern Section meetings in the last year have drawn a lot of attention and apparently spawned significant new exploration activity in the basin. I am especially proud of the great work done by our undergraduate research assistants, Josh Kirschner and Amanda Wahr in support and material contribution to these efforts.

Research funded by DOE for investigation of Geological Carbon Sequestration potential in Michigan as part of the Midwest Region Carbon Sequestration Partnership (MRCSP) has also been a very important part of our array of active research programs. Several significant reports and presentations at professional meetings have resulted from this work. In the last year we (Grammer, Harrison, and I with able assistance by Kirschner and Wahr) have collaborated with project management personnel at Battelle Memorial in the configuration and implementation of a pilot CO₂ injection project in Northern Lower Michigan. Along with an important corporate collaborator, Mr. R.G. Mannes of Core Energy LLC, Traverse City MI, we are in the midst of testing the potential for CO₂ injection and permanent storage in Devonian strata, the Sylvania and Bois Blanc (that's "Bah Blow" to the uninitiated) in northern Michigan. I returned just yesterday from the drill site where the first cores in Northern Michigan in these Devonian units at the injection test well were recovered. This study is being conducted in conjunction with ongoing CO₂ enhanced recovery activity by Core Energy in subjacent depleted Niagaran reef reservoirs. We continue our interest in documenting the potential for stacked saline reservoir and CO₂/Enhance Oil recovery sequestration targets in the state with our Battelle and Core Energy collaborators.

Last but not least is the successful work on bedrock aquifers in central Lower Michigan, the Tri-Counties area in and around Mason MI. Niah Venable successfully completed her MS degree including thesis work presenting the most comprehensive work with Pennsylvanian strata, the Grand River and Saginaw formations, in this area to date. This work has drawn the attention of Water Resources geoscientists at both the MDEQ and USGS in Lansing, as possible geological input for regional ground water model and local contaminant hydrogeological studies. Amanda Walega, a current graduate student, is in the midst of continued work on characterization of the flow properties and constructing a local ground water models with the important Pennsylvanian core materials we have curated at the Core Lab.

Over all a very busy and rewarding year, Best wishes to all.



Dan Cassidy

After three years in Canada, it's nice to be back in the Geosciences Dept. at WMU. In the last three years I've shifted my research emphasis somewhat from biological soil treatment to chemical oxidation of organic contaminants (permanganate, Fenton chemistry, persulfate, ozone). I had the opportunity in Canada to work on several contaminated sites using chemical oxidation, which I found very educational. Being predominantly a lab person, it is interesting and rewarding to see my lab work actually play out in the field. I have also started doing some anaerobic treatment of industrial by-products and wastes to produce biogas (methane and carbon dioxide). But in general, I am still doing about the same old thing.

The department has a few new faces since I've been gone, and they are a welcome addition. Still it is nice to find things here largely unchanged. See you all around!



Ron Chase

Greetings to all loyal alums! As you have probably surmised from other parts of this newsletter, our department

had a really good year in 2005-06. With the establishment of a new Core Lab facility, the return of Dan Cassidy, the graduate curriculum revisions, the various research grants and publications among our faculty, etc., things look very good. As an old timer among a crowd of dynamic young people, I am proud to be a part of the system and to have watched it grow.

Speaking of growth, the landslides on the Lake Michigan coast continue to move, but more slowly than before. Al Kehew and I are now conducting the pumping operation that will dewater the coastal bluffs for a second winter-spring time frame (the first being 2004-05). Two years ago our dewatering slowed the slope movements by about 400 percent. We will soon know whether our previous success was a fluke or a repeatable phenomenon. Our sponsor, the U.S. Army Corps of Engineers, continues to be very pleased with our results, continues to fund the project and plans to through 2009, and is beginning to use our technical suggestions in other coastal erosion projects. During the past year our results have gone into three refereed publications, three abstracts of scientific presentations, and one technical report. With displacement and water level data currently being logged hourly from 77 tilt meters and 30 piezometers, we will gather data over the next three years that will provide fodder for yet more publications. With many thanks to our digital modeler, Rennie Kaunda (Ph.D. candidate,) and our soil shear strength tester, Amanda Brotz (M.S. candidate), both of whom have been supported with federal research grant funds, the erosion control study remains a top priority among USACE-funded research projects.

On the personal front, I continue to teach the petrology end of our curriculum plus the Upper Peninsula geologic mapping courses. The students are few, but very enthusiastic. I have not played my beloved games of tennis for the past year because of a rotator cuff tear in my forehand shoulder that has been surgically repaired and slow to heal. One can tell by the current size of my waistline that I am not my normal in-shape self. I feel great while working in the field but mysteriously have difficulty with domestic chores, gardening, and other honey-do items. Speaking of honey, my wife, Chris, continues to survive as my spouse, the house business manager, the mother of four distant sons, and a new grandmother. Karl is now married (Sandy) and the associate director of sales for

Hotel 71 on the loop in Chicago. After 12 years of living in Seattle, Andy is back in Kalamazoo to seek his fortune and move on. Scott is still a foot and ankle surgeon in the Indianapolis area where he and wife (Colleen) recently provided us with a granddaughter named Madeline. Jamie is still a litigator in D.C. associated with the law firm of Baker-Botts and his wife (Kate) is an estate attorney for a rival firm.

Overall, life is very good. The research is humming, the students are as much fun as ever, and the family is doing very well. In a few months the body will be good also. I hope all is well with you also. Please E-mail if you get a chance at ronald.chase@wmich.edu. I would love to "hear" from you.

Alan E. Kehew

Greetings everyone,



Wadi Isla, South Sinai.

The past year has been a transitional one for me, mainly due to the completion of two long-term projects. Last year was the final year for USGS STATEMAP glacial mapping projects. In all, we mapped St. Joseph, Van Buren, and half of Allegan Counties since 1995. That work formed the basis for several papers that came out over the past year and are in various stages of publication at the present time. Two of these were published in *Quaternary Science Reviews* last December, with Andrew Kozlowski (PhD, 2005) and I as senior authors, and several other present or former graduate students as co-authors. Andrew's paper was part of his dissertation work. We also have an article in the upcoming *Encyclopedia of Quaternary Science*, a 4-volume Elsevier tome which should be a very good reference on all aspects of the Quaternary for the next few years. Our paper is on

"Glaciofluvial landforms of erosion", including both proglacial and subglacial types. Koz and I, along with two other outside co-authors also finished a paper on proglacial megafloods from the Laurentide Ice Sheet, which is for a Cambridge University Press volume on megafloods on Earth and Mars. That paper is still in review.

With the end of the STATEMAP program, mapping must now come under the EDMAP program, which is primarily for training student mappers. Caleb Woolever, a current MS student, and I have one of those projects underway in Barry County looking at an esker at the base of a tunnel channel. I am also supervising Nathaniel Barnes' thesis project which is focusing on the organic carbon content of glacial drift.



Glacial geology class students describing core during Rotasonic drilling on an esker in Barry County.

The other project that came to an end earlier this year was the WMU-Egyptian collaboration with Suez Canal and South Valley Universities funded by the US Dept. of State. Several papers should eventually come out of that, including one on the geophysics of the El Qaa Plain in the South Sinai by Bill Sauck and several Egyptians and one on flash floods from Wadi Isla in the same area. The picture at the beginning of this section is me beside a boulder transported by these awesome floods. A third possibility is one on stable isotopic data from the Qena area in Upper Egypt, when Jenny McCrary's thesis with RV Krishnamurthy is completed. Our last trip on the project was in Dec., 2005. One of the highlights was climbing Mount Sinai, which Bill and I did with our Egyptian colleagues. The goal is to watch the sunrise, as seen below, so you have to start at around 2 AM and stumble up the trail in the dark, along with

faculty news

several hundred tourists, camels, and vendors hawking blankets, food etc. It was quite an experience. Now that the project is over, I have to start thinking about looking for some new funding to continue work in Egypt.



Sunrise from Mt. Sinai.

I am still involved in the major bluff recession project that is headed by Ron Chase. That project is going quite well, and I am sure that Ron will update you on it so I won't try to duplicate his story here.

A huge albatross was removed from my neck when I finally finished the third edition of *“Geology for Engineers and Environmental Scientists”*, published by Prentice Hall. The revision had been going on for about two years and combined with the other three projects, brought me dangerously close to a padded cell on several occasions. Now things are a little more normal and I am trying to be more realistic with time commitments.

The past year was also a busy one for conferences. The spring was particularly hectic, as I attended both the North Central and Northeast GSA meetings, the NGWA Groundwater Summit in San Antonio, and the Friends of the Pleistocene in North Dakota. This fall, I attended a really good field conference in Finland. It is put on by a group of glacial geologists from countries around the Baltic Sea, much like our FOP group. I attended their meeting two years ago in Latvia, so this year I knew most of the people and it was a great time. I was the only American on the trip. The picture shows one of a group of giant potholes we visited that were eroded by subglacial meltwater.



Hemming's Churn, a giant pothole near Sukulanrakka, Finland. The pothole widens with depth and the walls are covered by spiral grooves formed by abrasion from grinding stones carried in a circular eddy in the flow. The grinding stones are about a foot in diameter.

On the teaching front, I am now doing GEOS 1000, Earth Studies, for the second time. Much to my surprise, I actually enjoy it. Attendance is up due to our use of “clickers”, which are remotes that each student brings to class and uses to answer questions that we put in power point presentations. The software for these gadgets can create a bar graph we can flash on the screen immediately with their responses to true/false or multiple choice questions, for example (as well as clandestinely recording their attendance). About 10% of their grade is based on these points and they catch on pretty fast that if they aren't there with their trusty clicker they don't get any points.

Kay and I still go to Maine for part of every summer, where we have several rental cottages. Sometime in the next few years we plan to start building a house there to live in when it's time to stop slaying the dragons. My retirement plan needs some serious help from the stock market, however, to make this happen anytime soon. This summer we had a very nice overnight visit from Dick and Ginny Passero. Retirement is certainly agreeing with Dick because he doesn't look a bit different than when he left Western.

Kay has just started a new job as a nurse-aid instructor at the Michigan Career and Technical Institute in Barry County. She is pretty excited about this because it is what she really likes to do and it will give her some time off for trips to Maine in the summer. By the time you read this, our youngest daughter Liz will have gotten married. This is a multi-venue event with the wedding in Key West, Florida over

Thanksgiving break and a big reception next summer in Maine, where she and fiancé Jason live. So, with the last of our three daughters married, Kay and I will begin a new chapter in our lives—it's called Chapter 11.



Michelle Kominz

Hello, alumni and friends of Western Michigan University's Department of Geosciences. Time flies when you are doing geology. Even if you never get to see any rocks...

Classes continue. After teaching my graduate Basin Analysis class and Ocean Systems last fall, I had the shock of being on the cutting edge of new technology – Quizdom Instant Response System (clickers) in my Spring Ocean Systems class. For me this meant that all lectures (previously taught off of the web) needed to be taught in a power point format and then transferred into the Quizdom, PC-based program. This proved to be a 60-hour/week job. However, by the end I was averaging about 17 instant-response questions per lecture (75 min lectures) and the tool was forcing a degree of participation and interaction never before seen in this large lecture class. Needless to say, I did not get a lot more done last spring than teaching the one class.

This fall I am teaching Introductory Geophysics again. However, this time instead of Applied Geophysics I am teaching Whole Earth Geophysics.

Although this is my passion, I have neither taken nor taught such a class before so, again, everyone is suffering: me, my TA (Travis Hayden), and my students. The students are suffering the additional issue that they must receive a BA or better in the class to use it as a "core" requirement in the new MS Geology program. So it is an interesting experience, to say the least. I suspect it will be several years before the "bugs" are worked out.

Meanwhile, research continues (mainly in the summer). My main focus lately has been working to generate programs to allow Kisa Mwakanyamale to analyze the stretching history of passive margins in the Indian Ocean, her thesis and a portion of my NSF sponsored research to determine the volume of the oceans over the last 150 m.y. In the spring, Travis, Kisa and I attended the North Central GSA meeting in Akron Ohio giving posters on our latest findings. Travis updated his work on the Late Eocene Chesapeake Impact event to present his results as a talk at the National GSA meeting in October. In September I went off alone to Giens, France to a Sea Level conference/workshop. My goal was to get the Europeans excited about their commitment to run a mission specific drilling leg of the IODP (Integrated Ocean Drilling Project) off the coast of New Jersey in the very near future. Whether or not I succeeded remains to be seen. But I did get people excited and I pretty much stole the show by explaining how their data can be used to quantitatively estimate past sea level change. I remain in limbo regarding two more future projects. I am a zero - \$ scientist on the Andriill (Antarctic) drilling projects. I am awaiting the retrieval of core and data before beginning my science. Also an IODP (proposal to drill in the Canterbury Basin, New Zealand is awaiting ship scheduling.

The 2005 - 2006 ski season was pretty sad. The snow accumulation was so light that our race league was only able to race 4 of the normal 7 Thursday nights. They actually had to set up two courses on two slopes to allow us to get enough races to add up results for the season. Meanwhile, my house now has tile in the kitchen instead of wall-to-wall carpet. It is, perhaps, reasonable to suggest that I was not born to be a home-restorer.



Carla Koretsky

It has been another busy year at WMU! My research group has been actively presenting their results at many national conferences. In February, Terri Shattuck, MS student, described the results of her studies of metal distributions around modern and ancient shrimp burrows at the American Society of Limnology and Oceanography meeting in Honolulu, Hawaii. Not a bad place to visit for a week in early February! Terri also presented her research at the American Chemical Society national meeting in Atlanta this past March, along with undergraduates Chris Landry and Tracy Lund. Chris won the best student paper award for his talk on Co adsorption on mixed mineral assemblages. It is nearly unheard of for this prestigious award to be won by an undergraduate student. Well done, Chris! Tracy Lund finished up her work on Cu adsorption this summer and began working on her PhD in geochemistry at Arizona State University, which she chose after receiving very competitive offers from several of the best graduate programs in geochemistry in the country. We all wish Tracy good luck! Soumya Das, PhD candidate, presented a poster on his work on Pb adsorption, which I understand was very well received, at the recent Geological Society of America in Philadelphia. It's no wonder it seems busy in my lab these days. In addition to Soumya, Terri, Tracy and Chris, Melinda Schaller (Kalamazoo College undergraduate) is finishing up a senior honors thesis on Cd adsorption, Trevor Whitlock (MS student) is just beginning a project on Ni-EDTA complexation with aquifer sediments, Lauren Beuving (MA student) is looking at acid volatile sulfides in marsh sediments, Melanie Haveman (MS student) is starting a project to examine the influence of invading purple loosestrife on wetland sediment geochemistry and Dahlia Sultan

(high school intern) is measuring metal uptake by various types of wetland plants.

I also did quite a bit of traveling this past year, including an interesting trip to the Netherlands to participate as a member of the "opposition" (somewhat like being an outside committee member in the US) for a PhD defense at Utrecht University. In the Netherlands, the PhD defense is a fascinating affair, conducted in public with all participants wearing full regalia. The defense takes place with much pomp and circumstance in a beautiful old building (which another member of the opposition informed me was the very building in which the modern Netherlands was "born" during the signing of a treaty several hundred years ago) in the old part of the city. I also spent some time on Sapelo Island, a barrier island off the coast of Georgia, where I frequently go to conduct field work. This time, the field work was completed with six students as part of an intensive six week graduate/undergraduate field course in Wetlands Biogeochemistry. We had a fantastic time – in addition to doing lots of interesting science, we had the opportunity to feast on fresh grilled shark. The shark was courtesy of our UGA Marine Institute dormitory neighbor, who caught the ~5 ft shark in the same shallow waters where most of my class had been swimming just a little earlier!

This is my seventh year at WMU, and I am looking forward to being away on sabbatical next semester. I'll be spending part of my time with Drs. Mandy Joye and Christof Meile at the University of Georgia Marine Sciences department, and part of my time doing laser ablation ICP MS at Utrecht University in the Netherlands with Philippe Van Cappellen. Of course, with 9 students in the lab, I will also be spending plenty of time right here in Kalamazoo, getting caught up on research. Until next year – best wishes to all!

faculty news



R.V. Krishnamurthy

During the past year the stable isotope lab got a fresh look after the asbestos removal activities. The sample preparation systems got a thorough revamping with the old extraction benches being replaced by spanking stainless steel. Indeed this meant several months of hibernation as far as research was concerned. To make amends, graduate students Tsigabu and Steve put in extra hours and are fast approaching their graduation goals. Tsigabu's work provided interesting insights into the way carbon isotopes are discriminated by iron reducing bacteria. He showed that the process of this discrimination during iron reduction could be modeled as a well-known Raleigh distillation process. He presented his work in national meetings and also submitted a manuscript for publication. In addition, Tsigabu has expanded his research activities to other areas, which involve collaboration with Dr. Carla Koretsky and the department of Chemistry. Steve obtained a second round of funding from Michigan Space Consortium (a NASA affiliate) for his research dealing with late glacial climate change in the Himalayas. I had the privilege of giving an invited colloquium at the Center for Marine Research, University of Pondicherry as part of a visit to inspect their laboratory facilities.

On the home front, daughter Sowmya graduated from the Ross School of Business (University of Michigan) with honors and began working at the Big Apple in an entertainment industry. My son Rohan, a Heyl Foundation Scholar at Kalamazoo College continued to travel

across the country performing at various venues. He was also selected by *USA Today* in its All College Academic Second Team, the only such selection from the state of Michigan this year Percussive Arts Society's Thomas Siwe Scholarship the Lilian Pringle Baldauf prize for music, two years in a row.



Heather Petcovic

Hello Geosciences friends and alumni! The past year has been both busy and exciting, both from a professional perspective and due to the arrival of my daughter last November. Watching a new baby grow and change, learn to roll, crawl, stand, walk, and talk has been a marvelous 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 revised and tested the content and format of several earth science courses for future elementary teachers. I have completed a research study related to the new course, examining how well students understand the course content, and how the course has helped prepare them to become better

science teachers. I am currently writing up the results of this study with an expected publication next year.

I also have completed 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.

I once again had the pleasure of accompanying Ron Chase and the GEOS 4380/4390 field course to the Michigan Upper Peninsula this summer. As always, the company was terrific and the scenery was spectacular. Thanks to Chris Jones and the rest of the 4380/4390 crowd for making it a great trip!

At the recent Geological Society of America (GSA) meeting in Philadelphia, I presented work on the geoscience education course that I teach. I also became the Chair of the GSA Geoscience Education Division. The Division believes that every geoscientist is an educator, at least some of the time – whether in the classroom, out in the field, in a park, or at a child's school or youth organization.

The coming year promises to be full and exciting. I have recently taken over the duties of advising for the earth science teaching undergraduate major, and look forward to working with our future secondary teachers. I plan to continue my research related to geoscience education as well as on the flood basalts in Oregon and Washington. Additionally, I am involved with outreach and educational initiatives related to the new MGRRE facility and am working to increase ties between the department, local schools, and local earth science teachers.

UPDATED!

Please take a moment to browse through our updated website. Faculty member, Johnson Haas, spent a considerable amount of time making a new website for the Department. He did a great job!

<http://www.geology.wmich.edu/>



William Sauck

Hello former students and friends! Fall 2005 semester got off to a start with GEOS 5600 (Introduction to Geophysics). This past academic year I was also responsible for seminars and the Geologic Communication classes. September - November were also the last 3 months of the post-doctoral visit of Dr. Jorge Porsani (Univ. of Sao Paulo) whom I hosted since July. During September and October I was involved with Dr. Mike Nassaney (Anthropology) in an investigation of the Ft. Miami site in St. Joseph, so Dr. Porsani and Nathan Brandner got about 5 days of field experience with GPR and Magnetometer while helping me on that project. PhD student Laura Smart got her remote monitoring system up and running in November. It began to provide a substantial data stream from 4 multi-level resistivity probes and a number of thermistors. It provides a sampling of 96 electrode positions and 16 thermistors every 4 hours, with the interval reduced to 3 minutes when triggered by a rain event.

From Dec. 4 - 14, I made my 3rd trip to the Sinai of Egypt, continuing with the gravity surveying to outline the groundwater basin along the coastal plain of the SW Sinai. We continued the collaboration with Dr. Farouk Soliman and Dr. Mohamed Rashed of Suez Canal Univ. Both have also visited WMU. This trip was followed by a 15 day trip to Sao Luis, Brazil with Elen for Christmas, where we also made a little more progress on the construction of our beach house.

Spring term was time for the GEOS 6500 course (Ground Penetrating Radar), and the continuation of seminar,

GEOS 4600 / 6600. In early April I went to the SAGEEP (Symposium for the Application of Geophysics to Engineering and Environmental Problems) meeting in Seattle to present a paper co-authored by student Laura Smart, and Drs. Porsani and Nassaney. This was a description of the archaeological geophysics being done at Ft. Miami in St. Joseph, MI. Laura also presented a poster on her geophysical monitoring system. In May, Keith Johnson defended his MS thesis.

In May, I was able to attend the Spring Am. Geophysical Union meeting in Baltimore, where I presented a poster summarizing the developments of the conductive model for hydrocarbon spills. Laura Smart presented early results from her geophysical monitoring system in an oral paper.

From June 5-15, I accompanied our Chairperson, Mohamed Sultan, to Egypt. We spent a day at Cairo Univ where I gave a seminar, and where we conferred with the co-PI of Dr. Sultan's Eastern Desert project. Then we took two Jeeps and proceeded to investigate 19 sites in the Eastern Desert / Red Sea Hills that had been chosen on the basis of remote sensing interpretations of intersecting fracture/shear systems as potential locations for fracture aquifers in bedrock. The geophysical ground-truthing was primarily by VLF profiling, using the radio signals from distant submarine communications transmitters. We covered many hundreds of km in 4-WD in wadis during those 6 days. Fortunately, we finished before the real heat of summer arrived, but did spend time in places where



"Just run a VLF transect up and over that ridge and I will drive around and pick you up on the other side."

it had not rained in 5 or more years. Seeing desert gazelles in their native habitat was a special treat in this hyper-arid land. From June 19-22 I was able to attend the bi-annual international GPR symposium (GPR2006), which fortunately was nearby in Columbus, OH.

As if that were not enough travel, I had accepted an invitation to help Texas A&M archaeologists (thanks to a contact via Tim Dellapena) with a pre-excavation geophysical investigation at an archaeological site in American Samoa. The island was Tutuilla, the largest of the 5 islands that make up American Samoa. This trip was from June 24 to July 7, and was very successful at orienting their excavations by locating a house floor living surface buried 1.5 meters. We camped near the beach with the constant roar of the surf crashing on the reef. This was another exposure to a very different culture.

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 side, we now have a second grandson. Christine finished her 4th year of graduate work in Clinical Psychology at Clark Univ. in Massachusetts. Carolyn (mechanical engineer) continues with SABO USA at their Plymouth, MI office. She and brother Eric are living in a condominium on the south side of Ann Arbor. Eric is a Junior in M.E. at U.of M., and also worked as an intern at the GM engine plant last summer. Elen made it through a third year without a surgery, still gives lots of dinners, and also travels as much or more than I do. It was a busy year!

Geosciences Dept Staff

Kathy Wright *Administrative Assistant Sr.*

Beth Steele *Newsletter Editor Office Associate*

Michael Durham *Technician*



Robb Gillespie

Cheers to all alumni and friends. It's been another fantastic year!

The big news, of course, is the new Core Lab (MGRRE – Michigan Geological Repository for Research and Education). Bill and Linda Harrison, along with Mike Grammer and a cast of student helpers, did an unbelievable job getting the new facility put together and getting everything moved over from the old Core Lab. They have just recently incorporated the core collection from the University of Michigan. This move more than doubles the size of the core collection. MGRRE is now “the place” to go in Michigan when you want to look at subsurface data, and I have already logged a fair amount time there this summer.

Dr. Chris Schmidt and I co-led the Geology Club field trip to Baraboo, Wisconsin last fall to see “the classic” structural and glacial geology of that area. This completed another one of those “life-circles” for me. Baraboo was where Bob Dott led the University of Wisconsin historical geology class for a field trip in 1968, giving me my first taste of real-life geology beyond the textbook. Not too much has changed there. A few paths have been moved, but the geology is still all the same (surprise!). The biggest change turns out to be me. Bob Dott is now retired (although as active as ever) and now it's my turn to introduce students to the excitement of geology at its best. Dr. Schmidt brought us all up to speed on the structural aspects of the area, I pontificated about the glacial and geomorphic aspects, and fun was had by all around the campfire. It was a great trip.

The WMU Student Chapter of the American Association of Petroleum Geologists (AAPG) designed their field trip around the beginnings of the oil and gas industry in the early Pennsylvania oil fields. This is an area that I am very familiar with and have written a number of articles about. We visited the Drake Well replica on the original discovery site, the Drake Museum, The Blood Farm (field), Coal Oil Johnie's Homestead, The Gradon Well (first dry hole), the McClintock well (oldest producing well in the world), Pithole (abandoned boom town) and numerous other fields, wells and other oil industry attractions around the Titusville and Oil City region of western Pennsylvania. The discussions tied together geology, business, history and sociology as we set the stage, and followed the development, of an entirely new industry at a time of great social migration and national unrest as the Civil War began. The trip was truly a “liberal arts” type of field trip, hopefully giving those students interested in a petroleum geology career an appreciation for the roots of the industry.

Drs. Mike Grammer, Dave Barnes, Bill Harrison and I continue working on the U.S. Department of Energy (DOE) fractured dolomite reservoir grant. I have been focusing my work on cores from the Albion – Scipio field, Michigan's only super giant field having produced more than 100,000 barrels of oil. I spent most of my summer at the new MGRRE facility examining and describing Trenton – Black River cores. The core lay-out room at the new facility is one of the best I have ever seen. It's a far cry from the old, cramped area we had over in the old Core Lab facility in West Hall. Two of our graduate students, Jessica Crisp and Amy Nowak, helped by deciphering my cryptic core descriptions and entering all the data into the computer. Together, we were able to produce some great displays and posters to use at this year's AAPG Eastern Section Meeting. We are fortunate to have a great group of students working with us on the project, and we couldn't do it without them.

The AAPG Eastern section meeting in Buffalo, New York was hectic but productive. Mike Grammer, Bill Harrison, Dave Barnes and I all presented papers. Four of our students (Jessica Crisp, Amy Nowak, Amanda Weher, and Josh Kirshner) presented poster sessions which were all well received. All of our students participated in job interviews which resulted in two summer internship offers and one job offer. All the students

did exceptionally well. Western Michigan University geoscientists created a big “presence” at the meeting. And almost everyone got to see Niagara Falls.

This semester I am teaching 2 sections of Ocean Systems GEOS 3220, and, for the first time at WMU, teaching Physical Geology (Intro for Geo Majors) GEOS 1300. I'm lucky to have Trevor Whitlock as Teaching Assistant for GEOS 3220, along with Amanda Walega and Chris Jones as Teaching Assistants and Lab Instructors for 1300.

Heather Petcovic, Chris Schmidt, Mohamed Sultan and I proposed 2 new geology courses, “Earth Hazards and Disasters,” and “Planetary Geology.” These proposals have been winding their way for the last year through the various mandated University channels attempting to win approval. Finally, last week, the Earth Hazards proposal was approved and signed by the Provost, and the Planetary proposal was approved by the University Curriculum Council and is now on the Provost's desk ready for signature. These are the first new courses to be approved by the University in over 2 years. So I guess I know what I'll be doing some of this summer as I prepare to co-teach these new offerings.

Tres Rios Resources, Inc., the small Texas based oil and gas company I'm associated with, is literally “pumping” along. Being on the oil producing end of things has taken a little (very little bit) of the sting out of high oil and gas prices during this last year.

The new house continues to be a black hole for anything resembling currency. This summer's big project was to install an underground sprinkler system throughout the yard along with landscape lighting in the front area. I finally did finish my 2004 to-do list, but I have fallen shamefully behind on the 2005 list, and the 2006 list is just wishful thinking at best. It should only take three to four more years of work to get to the point we wanted to be at when we “finished” the house four years ago. And “fun-with-leaves” is now in full swing.



WESTERN MICHIGAN GEOSCIENCES ADVISORY COUNCIL

Greetings to Alumni, friends, Faculty and Students,

The Geoscience Advisory Council welcomes eight new members, and the establishment of the Geoscience Alliance. The Council had an exciting and busy year, and is pleased to announce the following accomplishments. At the request of Dr. Mohamed Sultan, the Council members formalized organizational guidelines, and established the Geoscience Alliance as an affiliate of the Council.

The Alliance will consist of **all** Alumni and friends who wish to maintain the associations and friendships established during their time at Western. Both Council and the Department hope that the Alliance will play a significant role in providing opportunities for alumni and friends to maintain a positive and enduring relationship with other alumni, with friends, with students, and with the department faculty. It will also act as a mechanism for identifying opportunities for members to volunteer support. The Council recognizes that there are many who would like to maintain contacts with fellow alumni, associates, and friends, and believes that the Alliance can act as the vehicle to keep those relationships vibrant. Alliance membership is open to anyone who has either attended classes, graduated, or otherwise supports the Geosciences Department, and is maintained by showing an active interest in, and support for the Department.

In order to facilitate the continuing evolution of the Council, and the introduction of new members, revisions to and formalization of organizational Guidelines were completed. Existing members were asked to restate their personal commitment to the Department and University by renewing their membership on the Council. The renewals were accepted by the Faculty. New members were invited to join the Council and they also expressed their willingness to support and serve the Department. The new members were accepted unanimously by both the Council and the Faculty, and were recognized at the Fall Council meeting at Western. The new Council was presented at the Grand Opening and Dedication celebration of the Michigan Geological Repository for Research and Education facility.

Below are the names of Council members. The Faculty and Council will be presenting programs and recommendations for activities, both on and off campus, that will allow all Alliance members to maintain involvement and reestablish their WMU associations. Look to mailings and/or emails announcing future activities.

Sincerely,

John A. Yellich, Chair

Thomas C Kamin, Secretary

Re-instated Members:

- | | |
|---------------------|---------------------|
| 1. Jerry Aiken | Tucson, Arizona |
| 2. Doug Daniels | Portage, Michigan |
| 3. Paul Daniels | Kalamazoo, Michigan |
| 4. Hal Fitch | Lansing, Michigan |
| 5. John Fowler | Parma, Michigan |
| 6. Jeff Hawkins | Kalamazoo, Michigan |
| 7. Thomas C. Kamin | Flower Mound, Texas |
| 8. Ron Parker | Seattle, Washington |
| 9. Thomas Straw | Evansville, Indiana |
| 10. John A. Yellich | Thornton, Colorado |

New Members:

- | | |
|--------------------------|---------------------------|
| 1. Tim Delapenna | Galveston, Texas |
| 2. James J. Ferritto Jr. | Cadillac, Michigan |
| 3. Kim L. Finkbeiner | Kalamazoo, Michigan |
| 4. Michael S. Kovacich | Ann Arbor, Michigan |
| 5. Andrew Kozlowski | Mifflinburg, Pennsylvania |
| 6. Richard Laton | Fullerton, California |
| 7. Carolyn Rutland | Kalamazoo, Michigan |
| 8. William K. Steinmann | Kalamazoo, Michigan |



2006 Geophysics Class running a seismic refraction survey.

Michigan Geological Repository for Research and Education (MGRRE)



Bill Harrison

Dear Geoscience friends,

We hope this newsletter finds you well and in good spirits for the upcoming holiday season. We at the Core Lab, now a part of the Michigan Geological Repository for Research and Education, are all settled in our new building and really excited about the progress here.

We moved in February of this year and have remodeled, equipped and furnished the repository. We held our Open House on October 13 and hosted about 200 people. The night before that, we welcomed 80 people to a dinner for major donors. At those events, we thanked the many donors who gave or pledged almost \$1 million dollars and our representatives who sponsored our receiving about \$600,000 in Federal funds. It felt like a family celebration of a twenty-five year dream come true. Those are two days that Linda and I will remember for a long, long time. Most of you know that my wife Linda has been the administrator here for 13 years and we sure wouldn't be where we are without her dedicated work. She's also our major Core Lab fundraiser and camp photographer.

We know that many of you are among our supporters—we hope you know how much we appreciate your help. If you haven't already done so, please visit us. This place is everything we had hoped for.

Yes, we still need donations and if the holiday season finds you in a charitable mood, please think of us. We need funds to properly care for all the cores and well records we are bringing in. Some are in sad shape. We also need operating funds. Linda has her tin can handy and would be glad to talk with you—just call 269-387-8633 or email her at

linda.harrison@wmich.edu. There are some great tax benefits to making a gift to us.

In addition to bringing over all the collections that were at West Hall, we brought in the University of Michigan's entire suite of cores, cuttings, thin sections and well records. For several weeks I rode over to Ann Arbor with the moving crew to pack that up, bring it back and repack it here. Major thanks go to Mike Grammer, Linda, our talented work-study students and dedicated geology students for long dirty days of reboxing and repalletizing those samples. We were sweat brothers and sisters after that. Mike Grammer and I got lots of experience in riding the forklift.

Mike is in Brazil right now visiting Petrobras (National Oil Company) and delivering five lectures about our work on dolomite and his modern and ancient carbonate research. He and Bill also recently held an all-day carbonate reservoir characterization workshop in the new lab. It was attended by twenty-five industry geologists and engineers and was very well received.

We had a very strong representation at this year's Eastern Section AAPG annual meeting in Buffalo. Eleven oral and poster presentations were made by the Core Lab/MGRRE group including myself, Mike Grammer, Dave Barnes, Robb Gillespie and students Josh Kirschner, Amanda Wahr, Jessica Crisp, Amy Noack and Audrey Ritter. The students also participated in the AAPG Student Job Quest with poster presentations and multiple job interviews. Several offers of summer internships have already been made. Good luck to all the students!

Mike, Bill, Dave and Robb also prepared posters (with student help) for the meeting-long Core workshop at Eastern Section AAPG. We also shipped core from five wells to be displayed there.

Now we are scheduled to bring cores from Wayne State, then the Bureau



Phil, Bill, and Dave

of Economic Development in Texas, then from the State of Michigan's collection in Marquette. Our goal is to make all Michigan



Bill and Dave Barnes studying cores.

cores/cuttings and well records available here under one roof by the end of next June. Our chiropractor is counting on it.

Mike, Dave, Robb and I are still working on the DOE-funded dolomite project. And the CO2 sequestration work is growing everyday. We just visited our CO2 demonstration well and collected 180 feet of core from the Amherstberg and Bois Blanc formations. Linda blew a lot of pixels taking photos that day. We looked like mud puppies after we left—but happy mud puppies!

We welcomed Sue Grammer, a scientist by training and K-12 specialist, to MGRRE this year and she heads up our K-12 teacher/student outreach program. She's off to a great start and writing proposals.

We've had the pleasure of hosting some of our alumni for visits here, now that they are out there in industry. We're so proud of you. We hope to see more of you in the year to come.

Let us wish you a rewarding and peaceful Holiday season and good health for the coming year!



Participants examining cores in a PTTC Workshop - Carbonate Reservoir Characterization

AAPG Student Chapter

The Western Michigan University AAPG (American Association of Petroleum Geologists) has many exciting opportunities for Graduate and Undergraduate students here at WMU. We have members from multiple departments here on campus, including Geosciences, Geography, Biology and Earth Science Education. This December Geosciences and Earth Science Education students will be leading a rock workshop at St. Augustine to educate their students about geosciences. This is an excellent opportunity for education students to receive in-class K-12 experience. A Resume Workshop is planned for early next semester led by faculty and graduate students which will help students prepare a professional resume for different types of jobs. During the Spring 2007 semester the AAPG Student Chapter will host an Interview Workshop to help prepare students for professional interviews which will be led by faculty and graduate students as well. Due to the success of our Spring 2006 field trip to learn about Early Pennsylvania Oil Fields, we are currently discussing potential destinations for our Spring 2007 field trip.

The AAPG Student Chapter is also running a used ink-cartridge and used cell phone donation fundraiser. The fundraiser is hosted by Funding Factory and the money earned is used towards K-12 education outreach and field trip costs. There is a donation box located in the WMU Geology Department copy room where any used cell phones, ink-jet, and laser-jet cartridges can be placed. We would like to thank everyone who has donated cartridges and cell phones to us already. We appreciate the support!

If you are interested in participating in any of the AAPG Student Chapter events or wish to receive more information about the student chapter, please feel free to email us! We are now a registered RSO with WMU and our email address is: rso_aapg@wmich.edu. Also please feel free to email us for ink-cartridge and cell phone pickups!

Thank you very much!

The AAPG Student Chapter



AAPG Pennsylvania Field Trip

Geology Club

Things have been fairly quiet for the Geology Club during the Fall Semester. I fully anticipate an increase in membership before our spring trip in April. Currently, we are entertaining two different trip ideas. One possible destination is Seattle and the other is the South Carolina/Georgia Appalachian region. The club has started to plan the 3rd annual silent auction and raffle, which will be held during the alumni reception at the end of spring semester. We are involved in a number of different activities including: student run seminars, elementary outreach with local schools, providing field experience for our members, and facilitating working relationships with faculty, alumni, and students. If anyone is interested in giving a talk at a student run seminar please contact Josh at j3kirsch@wmich.edu or just stop by a meeting. Meetings are held in room 1120 Rood Hall on Fridays at 11:00. We still have a few of last years T-shirts as well as coffee mugs available to help support the club and show off your WMU spirit. We are in the process of designing a new T-shirt, which should be available at the spring auction.

Geology Club Officers - Josh Kirschner, Julie Nowakowski, Zach Champion, Dan Kroll

Geosciences Open House

The Department of geosciences at Western Michigan University hosted an open house on October 16, from 3 to 6 p.m. for high school and middle school teachers, college-bound students and current WMU students. The City of Kalamazoo was co-host of the event.

The Department presented short talks; a video on careers in geology /earth science; power point presentations from our student organizations (Geology Club and AAPG student chapter); and tours of the James H. Duncan Mineral Collection, Geology Museum. A variety of posters showing the collaborative research activities of the professors and undergraduate students graced Rood Hall along with several displays. Teachers and students were able to look at the displays of the Seismograph, Rock thin section and polarizing microscope, Wetlands biogeochemistry summer field course and hydrogeology summer field course, drilled cores by the Michigan Geological Repository for Research and Education (aka. The Core Lab), Basin dynamics, Glacial deposit mapping in Michigan. Slides related to tectonics in Argentina were also shown along with pictures and film of a huge copper boulder recently raised from the depths of Lake Superior and in residence at MGRRE. Demonstrations of ground penetrating radar and magnetometer were held on the east lawn. Remote sensing applications in geology and environmental science and the GEOWALL (display of geological phenomena in 3D) were also demonstrated for those who were interested.

The City of Kalamazoo had a display of materials for teaching about groundwater and surface water. They demonstrated 3D models showing the interaction of ground and surface water and had a short DVD for viewing.



Soumya Das
PhD Candidate

Hello everybody,

My heartiest welcome to all new faces in our department. Last year was a very busy academic year for me. Doing research and teaching optical mineralogy - both lectures and labs - kept me busy. I went to India and got married on November 28. I came back to the U.S with my wife during the first week of January and started working as a T.A. in Petrology as usual. I was also a T.A. for three weeks of the Hydrogeology Field course during the summer.

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 the binary phases. I am on the verge of finishing my lab work. I will start writing my dissertation soon and am hoping to graduate in spring 2007. I used sodium nitrate as the 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 gotten so far 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.

This year I presented a poster at GSA in Philadelphia. I received some very good feedback from different workers. I also interviewed with a few Universities and Colleges. Overall it was a great experience. That's all I have got from here. See you guys around.

Zhanay Sagintayev
PhD Candidate

Hi America,

I am a PhD student from Kazakhstan. My name is quite complicated for most Americans, so you may simply call me by using one letter "J" - hopefully it will make your life easier. In addition to learning the culture of the US, I am learning real geological science subjects, including hydrogeology, geophysics, remote sensing and GIS. I am hopeful that this knowledge will be useful for the development of projects in my country, Kazakhstan. My country contains many American oil companies, mostly from Texas, which take advantage of our natural resources for the benefit of the US, and hopefully for the benefits for my country as well. One of the biggest problems of such economical development for my country is pollution - both water and air pollution (thanks to the rocket station Baikonur).

Kazakhstan also experienced an ecological Aral Sea disaster (from the former Soviet time) - desertification of the central region. Pollution in the Caspian Sea is a connected problem.

In addition, one of the biggest nuclear companies in the world, Gogema of France, is using in situ leaching technology to extract nuclear from earth. This company with a small group of local Kazakh companies inject acids into the earth and pump liquid with nuclear components. According to their promotion this is the best and cleanest technology of the world, and the local people should be happy to drink artesian water.

My concerns about pollution in Kazakhstan motivated me to study Geosciences at Western Michigan University (WMU). WMU has very strong team - top experts in hydrogeology, interdisciplinary projects with remote sensing and GIS applications. Moreover, it seems to me that there is a big potential to develop business projects in environmental geology. I studied Kyoto protocol mechanism and I am a project manager for implementation projects based on this mechanism. The Geosciences Core Lab is working on the geological carbon sequestration projects for the Michigan region. These types of projects could be applicable for Canada, and the former Soviet (Russian) group of countries - which are members of the Kyoto Protocol.

I hope to use my knowledge of geology to influence companies residing in Kazakhstan to create much more environmentally friendly technologies, to spend more on remediation or to be more proactive, and to use more monitoring tools. Remote sensing, GIS are such helpful tools to use in geology.

The Remote Sensing Lab in the Department of Geosciences at WMU has developed many interdisciplinary projects; it is an excellent chance for me to be involved on the Cape Cod project, which is studying human distortion of this peninsula, geology changes, and dune movement.

I am thankful for the knowledge which scientists from the Geosciences Department has given to me. I hope to team with WMU researchers on projects which can be very useful for people without harming our earth.



Amanda Walega
MS Candidate

Greetings to our WMU Geosciences Community. I am currently working on my second year as a graduate student at WMU where I am in the process of completing my thesis research project and course work. My thesis project investigates the flow properties of 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 hope everyone is having a great year.

graduate student news

Kayleigh Lim MS Candidate

This is the day I have long been waiting for- my graduation. I have finally finished up my thesis and defense after being at Western for 5 semesters. I would like to take this opportunity to thank all the faculty, students as well as the staff members that have given me support. Special thanks to my academic advisor, Dr. Johnson Haas and his lovely wife, Dr. Carla Koretsky. They have been most helpful in the past two years in instructing me, from simple laboratory procedures to complicated chemistry theories. I could not have achieved what I have today without their help and support. Let's talk a little bit about my thesis project. The main objective of my project is to study the surface chemical behavior of uranium dioxide. As we all know, different chemical processes control the stability, bioavailability and transportation of chemical species in groundwater. Uranium dioxide, which is sparingly soluble in groundwater, can be a host to adsorb various dissolved chemical species, and thus immobilize them. My project specifically studies the adsorption of Pb, Cd and La onto UO_2 , and determines the thermodynamic constants that control these processes. These derived constants will be useful in contaminant transport modeling, especially in areas where spent nuclear fuel and uraninite are major concerns.

Being part of this geology family has been amazing. I have known people from different fields of geology, people from different parts of U.S. and people from different countries of the world. I will definitely miss being here. Thank you, Western Michigan University.



Graduate Student Nathaniel Barnes and his new daughter, Immanuella - born September 3, 2006



Graduate Students - Audrey Ritter and Chris Varga - were blessed with new daughter, Emma, in June 2006.

HYDROGEOLOGY FIELD COURSE

The Department of Geosciences will be offering it's 20th Annual Hydrogeology Field Course. The course is tentatively scheduled for Summer 2007 - July 9 through August 18.

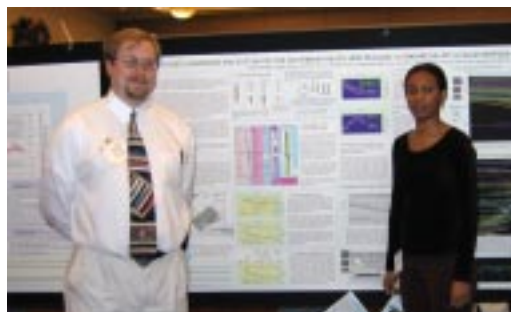
The Field course consists of a series of six one-week modules taught six days per week (Monday through Saturday). Each week counts as 1 credit hour and can be taken for graduate or undergraduate credit. The classes emphasize state-of-the art techniques for sampling, monitoring, and evaluation of ground-water systems. Particular consideration will be given to contaminated systems, aquifer testing, and selected geophysical techniques. Students gain hands-on experience with the latest in field equipment - as well as seeing demonstrations given by manufacturer's representatives.

This is a great experience for students, please check out the website and let people know about it!

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



Alan LeFever and Adam Milewsky at GSA in Philadelphia, PA



Travis Hayden and Kisa Mwakanyamale presenting their poster

**2006
Geosciences Department
Awards**

**Graduate Research and Creative
Scholar Awards**

Richard Becker
Niah Venable

**Graduate Student Teaching
Effectiveness Award**

Travis Hayden
Adam Milewski

**Senior Honor Awards
Earth Science Education**

Terry Hamka

Geology

Danielle Odette
Amy Noack

**Advisory Council Field Camp
Scholarship**

Joseph Idzior
Christopher Jones
Adam Milewski

Laton Field Camp Scholarship

Nathaniel Barnes
Angel Cuellar
Joseph Idzior
Christopher Jones
Joshua Kirschner
Adam Milewski

**W. David Kuenzi Memorial
Scholarship**

Soumya Das
Christopher Jones
Adam Milewski

Lloyd Schmaltz Award

Joshua Kirschner
Haile Mengistu

**Distinguished Student Service
Award**

Christopher Jones
Adam Milewski

**Undergraduate Research and
Creative Activities Awards**

Joshua Kirschner

**Lauren D. Hughes
Environmental Scholarship**

Nathaniel Barnes

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

Angel Cuellar

James Duncan Award

Joshua Kirschner

Recent Graduates

Bachelor's Degree Recipients

Earth Science Majors

David Bernhardt
Bruce Bowers
Bradley Buswell
David Fellows
Terry Hamka
Andrew Henderson
Morgan Hobbs
Trevor Hobbs
Camille Hudson
Steve Mouton
Daniel Norris
Charles Palosaari
Kurt Rizley
Trevor Smith
Andrew Urquhart

awards & graduations

Geology Majors

Jessica Crisp
Lawrence Leonardi
Tracy Lund
Nikki Mckenna
Amy Noack
Danielle Odette
Judd Olson
Joshua Stewart
Wade Strickland
Christopher Varga

Geophysics Majors

Kimberly Brosnan

Hydrogeology Majors

Benjamin Offrink
William Patzelt
Kevin Smith

Master's Degree Recipients

Earth Science

Jason Spanier
Niah Venable

Geology

Nathan Brandner
Keith Johnson
Nakul Manocha
Abraham Northup

Presidential Scholar

Tracy Lund

alumni news

Roger Bajorek

BS - 2003

I've been living in *beautiful* Montclair, New Jersey since June and I've been employed with TRC Raviv Associates, Inc. in Millburn, NJ. It's been great so far! We're working on huge projects all over the state. Landfills, power plants....I'm into all kinds of good stuff. Living so close to New York City has its advantages too.

Nathan J. Brandner

MS - 2006

I was hired as a geologist by Barr Engineering Company of Minneapolis, MN. So far I have been involved in projects spanning the United States. I have traveled to Washington, Oregon, Michigan, within Minnesota, Wisconsin and will be traveling to West Virginia after Thanksgiving. Unfortunately, I just missed a project in Maui, HI in May of this year. I have been mostly involved in the geotechnical investigations in preparation for alternative forms of energy (giant wind turbine foundations). Specifically, I have been involved in the geophysical investigations using electrical resistivity, Multi-channel Analysis of Surface Waves (MASW), and Seismic Refraction. I have logged hundreds of soils borings beneath these massive wind turbines and collected many soils samples. I've also had the pleasure of being involved in assisting in overwater/underwater geophysical surveys using Electro-Magnetics (GEM2), and Electrical Resistivity (Supersting) in Petoskey, MI and St. Paul, MN. I've spent a small amount of time in oil refineries (an EM-61 survey) and on many other smaller project sites. We recently lost our Senior geophysicist to a South Carolina firm, so I am currently in-training to take on more projects and responsibilities in the geophysical realm. I am very lucky to have found an extremely reputable firm where I have the opportunity to pursue just about any path that I am interested in, not only geology. I have really had a great time doing what I love.

Ahmed Murad

PhD - 2004

I am now serving as Head of Geology Department at UAE University.

Jason Spanier

MS - 2006

Hello Geosciences Community!

I hope this note finds everyone well back at WMU!! As far as myself...things are certainly a bit different than they were this time last year. A week after graduation last April - I had the good fortune of landing the exact job that I was looking for. I eagerly accepted a position with an environmental and engineering firm in Pennsylvania as a project geologist. Finally, now that I'm no longer a student, my primary responsibilities consist of groundwater and vapor intrusion sampling/monitoring, hydrogeological investigations, Phase II investigations, and wetland delineations/assessments. All of which I strangely consider "lots of fun". Anyway, back in May I also received my wetland delineator certification from Rutgers and now I've begun the task of working towards PG licensure. Overall, things have been good and the transition smooth. I look forward to keeping in touch with the department. Feel free to email me anytime and do the same. Best of wishes! (jspanier@libertyenviro.com)

Greg Young, MS, 2004

Geologist

MWH Americas

I am working on drilling new production wells for the Cape Coral Facilities Expansion Program (FEP). This includes working with a drill crew and drilling water supply wells for the R.O. (Reverse Osmosis) Water Treatment Plant.

Specifically, I am the geologist on site to observe drilling operations. We drill the upper sections with the direct rotary mud method, set and cement casing (usually at about 400-500 ft below land) and finish the borehole in the Lower Hawthorn or Upper Suwannee Aquifers at about 800 ft with the Reverse Air Drilling method.

I look at and describe rock (cutting) samples from the borehole, do water quality analysis (Specific Conductivity, Dissolved Chloride (using digital titration method), Turbidity, Silt (using Silt Density Index, Sand (using a Rossum Sand Sampler) etc).

We determine at what depths to set casing, review borehole geophysical logs, develop the well with both air development and pump development methods, conduct packer tests, step-rate pump tests, and aquifer performance tests.

Every day I am writing in a field book about what is going on at the site, what we are drilling in, the results of my water quality tests, performing geophysical logs, etc.

All this info has to be put into a daily report that is emailed to various people involved in the project and entered into tables and spreadsheets so that the data can be analyzed.

After all of this is completed for a set of wells, I write a report for the City of Cape Coral about what we did. What the total depth of the wells was, what depth the casing was set at, results of water quality tests, results of aquifer tests, etc — Not at all unlike writing a thesis every year. I have been here two years and am finishing up my second report for the second phase of the project that I have worked on. And while all this is going on I have to keep up with what is going on in the field because phase three is starting at the same time.



Tim Clarey teaching during the 2006 HydroField Course

Outstanding Alumni Academy

The Department of Geosciences held an Induction Ceremony and Reception on October 13, 2006 to induct Timothy Clarey into our outstanding alumni and to showcase his distinguished career in the field of Geology.



The Department of Geosciences was pleased to name Dr. Timothy L. Clarey for our Alumni Award!

Tim Clarey has a significant history with WMU. He received his BS (summa cum laude) from our Department in 1982. After receiving a MS in Geology from the University of Wyoming, he came back and obtained a MS (1993) and a PhD (1996) from WMU's Department of Geosciences. Currently Tim is Full Professor and Chair of the Geosciences Department at Delta College. In addition to winning an award from Delta College for Excellence in Teaching, he has been named the 2006 Distinguished Graduate of Bay City Western High School for his achievements during a combined career as a petroleum geologist (Chevron) and college professor.

Dr. Clarey also manages to maintain active research interests and has published over 25 peer-reviewed papers and abstracts as well as authoring two books which are used for teaching. His current research interests involve studying the timing and causes of dinosaur extinction, and the geology of Wyoming. He has participated in several dinosaur digs - finding various bones, including Allosaurus teeth, Brontosaurus vertebrae, and a Stegosaurus plate.

The Department of Geosciences is very proud of our distinguished alumni, Dr. Timothy L. Clarey.

Dedication Ceremony Michigan Geological Repository for Research and Education (MGRRE)

An official dedication ceremony of the new Core Lab - MGRRE - was held on October 13, 2006.

Photos are courtesy of Linda Harrison.



Dr. Bill Harrison addressing the group.



Mr. Sam Steward



Dr. Michael Grammer



Thomas Kent
Dean, College of Arts & Sciences



Dinner for the Donors



Graduate students - Audrey Ritter, Amy Noack, and Jessica Crisp



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Manness family looking at cores



Bob Beam mingling in the library

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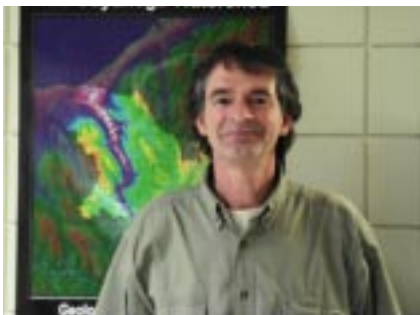
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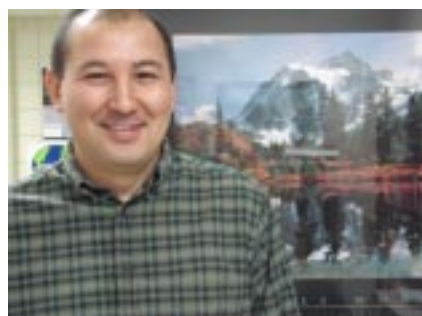
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