

CONTACT

Volume 15, No.1

October 2005

Points of Interest

- 2005 Science Symposium a Success!
- New BA in Geology Offered.
- Wheaton Responds to Hurricanes
- Jim Clark's Sabbatical Search Begins.

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A Year in Review...

Greetings to you all from Wheaton's Geology Department! Current with this writing are three majors issues (four, if we include the Iraq war) taking center stage in the news: petroleum supplies and prices, the Indian Ocean tsunami, and the destruction of Hurricane Katrina and Rita. An American would have to be completely isolated from the media or perhaps less than seven years old to be unaware of these concerns. However, how many of us realize the essentially geological context of all three issues?

Wheaton College Geology may be experiencing the paradox of the worst-of-times along with the best-of-times. There certainly are more opportunities for the department's faculty and students than ever before. Grad school, research, internship and employment placements have never been more available. We are even experiencing a mini-revival in the number of Wheaton Geology grads completing doctoral degrees. You will read of some of these below. Note that *The Wheaton Record* features a cover story on Sept. 16th printing that "Recent alumni face difficult job market". This is certainly not true for us. Geology has never been more relevant to life in all realms. The 2005 annual Science Symposium hosted by the department was a strong demonstration of that. The negative side of the situation is that we are at a twelve-year low for geology majors (13 at present). While that is not a disaster, some much larger schools are in an even sadder condition, there is tremendous potential for improvement. We are truly stretched to the limits of our energy and imagination in trying to attract majors. As always, your ideas and prayers are greatly appreciated. One would guess that reality will catch up with public perceptions at some point not too far in the future.

Optimism comes from various sources. A surprise phone call came last spring with an invitation for Geology faculty and majors to be guests at the *Chicago Natural Resources Conference and Exhibition*. After investigating the nature of this conference, Jeff Greenberg, Department Associate Steve Moss and student Taylor Shipman attended the event and were rather amazed. Some forty companies participated in staffing displays and giving presentations on a full array of geological resources, from oil/gas to diamonds, in addition to all sorts of metallic and uranium deposits. The conference had two objectives, to solicit investors and to recruit resource professionals. This second focus was certainly not expected. There has been a profound thirty-year stagnation in employment among economic geologists and other mineral industry professions, such as mining engineers. Most universities have divested themselves of departments that trained for careers in the extraction industry. Petroleum employment has hung on at a level well below the exploration boom up through the 1970s. Until very recently, the global mineral market has stimulated very little interest in the academic community. The new boom seems to have taken almost everyone by surprise.

We are no longer fully naïve concerning the sharp increase in petroleum prices. The Far East, with China at its heart has become an awake and very hungry giant. The new middle classes of Chinese society want cars. The demand for fuel is accelerating at a tremendous rate. At the same time, huge amounts of all sorts of raw-material commodities are being drawn to the east, in direct competition with demand in the US and Europe. Over the summer of 2005, news services announced that concrete and other building materials were in short supply and only available at dramatically higher cost. Gold prices are at a 17-year high; platinum has gone from \$270/oz to about three times that over ten years. Silver has doubled in value in only two years and may soar

A Year in Review cont...

upward if the world market only changes a bit. In the Chicago area, the increased demand for industrial minerals has stimulated the new excavation of three underground crushed-stone mining operations. All indications are that people will be paying more for basic construction materials as well as fuel. This may be bad news for many, but it also may ultimately be good news for the role of geology in its global context. This newly recovered status in resource geology adds additional emphasis to the key position geology has in environmental and community transformation work. These issues will not go away. The **Affiliation of Christian Geologists (ACG)** convened at the Geological Society of America annual meeting in Salt Lake City, with the purpose to discuss the implications of the global resources market. Somehow, we as disciples of Jesus need to be informed about and ready to act upon important developments. Below, Steve Moshier describes such a response to the hurricane destruction along the Gulf coast. Jeff Greenberg also includes a very rough draft of an appropriate desire titled, "A Vision" in the section below (see Joel 2:28!).



Demonstration of equipment in the Wheaton Quad outside of Breyer Laboratory.

Jeff's Journal...

There is a saying that, "whatever does not kill you, makes you stronger". I doubt the wisdom in that, but I do hope it applies to the stress of travel. This last year, especially over the spring and summer, has been a substantial challenge to my endurance. My wife and I have been flying to Miami every few months to be with my ailing elderly father. I also had excursions to Norway, Israel, and South Africa with minimal rest between. After the 34-hour return ordeal from the RSA in June, I drove out to the Science Station a week later. I am not complaining. Each experience was wonderful in its own way. Trips to Norway and Israel were to participate in meetings of the International Board of the Caspari Center ministry to Jewish Believers in Jesus.

I rented a car in Norway and suffered the shock of parking, highway toll and petrol costs. In return, I was able to enlist Dr. Gunar Raade, the Curator of the National Geology Museum as guide in showing me the local geology of Oslo. He even took me to see the field area where Viktor Goldschmidt (the "Father" of modern geochemistry) completed his dissertation study. Afterward I drove south along the coast and collected amazing samples from the Grenvillian-age high-grade metamorphic terrain and from the famous Fen carbonatite complex. A snow cover of six inches in March made the exploration a bit more challenging.

Wife Diane and I were blessed with three days to explore northern Israel before the board meeting. We stayed at a field school near the border with Lebanon on the Mediterranean coast and at a very nice and inexpensive hotel in Tiberias on the Sea of Galilee. Our itinerary included many biblical sites: the Greek Temple at Banias or Caesarea Philippi (where the Jordan begins as a spring flowing off Mount Hermon), one of the suspected sites of Christ's baptism, the house of Peter and synagogue at Capernaum. We had previously spent time at Herod's Caesarea and upon Mount Carmel. We saw and appreciated the role of volcanic activity in shaping the land. At Qumran, we saw the amazing strain gauge of earthquake rupture preserved in the steps of a cistern. It is likely that I and perhaps Diane as well will return to Jerusalem for the 2006 Caspari board meeting. People should understand that traveling within Israel is quite reasonable in terms of expense and probably safer than participating in a meeting in downtown Chicago. Go if you can.

My trip the South Africa, as mentioned above, was to oversee the work being done by our students. I am awed by what God did through Andrew, Deb, and Jed (formerly in Geology) in their time among YWAMers and the needy of Pellsrus Township. My role was to generate ideas for study and to keep the work on track. Much more could have been done but will have to wait for another time. I wish we had more students available to continue the good start. One project that has potential but no one to get it going is brick making. Decent housing is lacking for millions in South Africa. Using local geologic materials to create low-tech, low-cost brick would provide a godly service. I'll keep praying about that; please join me. One week before I joined the team in Pellsrus-Jeffrey's Bay, I taught a class in geoscience and environment for YWAM students in Capetown. There are many worthy projects that could be undertaken by our students among the needy in Capetown as well. I must thank the Faculty Development Fund and Faculty Missionary Project for providing (Continued on Page 7)

"I drove south along the coast and collected amazing samples from the Grenvillian-age high-grade metamorphic terrain and from the famous Fen carbonatite complex."



Jeff Greenberg enjoying the view out at Cape Point, South Africa.

Clark's Capers...

Ministering to the water needs of developing countries is still a major interest of mine. Through the generous support of the Timothy Project and the Senior Scholarship Award I accepted the invitation of EEMET to travel to Chad during Spring Break. I welcomed the help of Steve Moss ('99) and Tanya Thomas ('99), who works with World Relief, while on the trip. EEMET is an NGO consortium of Evangelical Christian churches in Chad that is concerned with both the physical and spiritual health of their nation. Pastor Bako, who had attended graduate school at Wheaton, was our host. The goal of the trip was to help with water related issues. The issues we dealt the most with are due to the crisis of Sudanese refugees flooding into eastern Chad because of the civil war in Sudan. A UN HCR airplane flew us from the capital of Chad to the Treguine refugee camp where 14,000 refugees lived. The water situation in the camp had been perilous. It wasn't until a month before our arrival when a British NGO, OXFAM, installed pumps and water reservoirs that provided adequate water for the refugees.

Steve and I ministered in the surrounding Muslim villages while Tanya interviewed the women in the refugee camp. During the fall and spring I had worked with Rick Page on the construction of a cheap, portable seismic refraction device. This proved useful in determining the depth to bedrock in dry wadis where village hand-dug wells had dried up. We taught Sambim, the minister of urban development for EEMET, how to use the equipment and left it with him for future use. We also observed that groundwater in many regions throughout Chad can be reached through drilling with a hand auger. We were able to send one to Sambim upon their return to the states.

This past year the geology department became the recipient of a three year grant from the National Science Foundation (NSF). The first summer working on my NSF grant was very successful thanks to the able efforts of Taylor Shipman ('06) and Kevin Befus ('08). Their work combined my model of earth glacio-isostatic processes with GIS analysis of the Great Lakes topography and bathymetry to predict paleo-hydrology of the Great Lakes during the past 20,000 years. They were able to use GPS in the field to test their predictions of locations of ancient lake shorelines in eastern Wisconsin. Taylor presented an oral paper at the North Central GSA meeting in Minneapolis describing early successes in predicting the development of a glacial lake in Oshkosh, Wisconsin. The \$105,000 NSF grant will support 2 students each summer for the next 2 years. The goal is to expand upon Taylor and Kevin's work to include the entire Great Lakes region. In the process, the thickness history of the last ice sheet and the mantle viscosity under the region will be better understood. Simulation of the dramatic outburst floods occurring when the ice dams failed will be better represented through the modeling efforts.

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Student News

This summer many of our majors were (and some still are) on assignment throughout the world. We are honored to have three HNGR (Human Needs and Global Resources) interns serving this year. Jay Mehta is working with our friend, Dr. B.E. Vijayam in India. The internship involves duty with *Progress*, an organization of earth scientists reaching out to the poor. In the next issue of *CONTACT*, Jay and the other two interns will provide a brief glimpse into their experiences. Matt Soerens is working in Nicaragua with *World Relief*. His internship has focus upon micro enterprise ventures in the work of community development. Matt is a double major with International Relations and desires to realize development work by integrating disciplines. Josh Cook is placed within the heart of Caracas, Venezuela. His internship is with *Innerchange* in an effort to make relationships among young people living in a very risky environment.

Two Geology majors, Andrew Luhmann and Debbie Zylstra, were supported by the college's SMP (Student Missionary Project) to spend June and July in The Republic of South Africa. Their time was spent in doing research and service projects as part of community transformation. They worked under the supervision of YWAM (*Youth With A Mission*) scientist, Rudi Seebach and Jeff Greenberg. Rudi designed a series of projects to improve the life of people and the environment in a poor AIDS/HIV-ravaged township. Even though the time was short, Andrew and Deb, one other Wheaton College student, and Rudi were able to see significant and hopefully, sustainable (continued on Page 4)



Dr. Clark outside of Chad with Steve Moss in the Treguine refugee camp.

"Their work combined my model of earth glacio-isostatic processes with GIS analysis of the Great Lakes topography and bathymetry to predict paleo-hydrology of the Great Lakes during the past 20,000 years."



View from the Big Horn Mountains during Geology field camp at the Black Hills

Student News (continued from page 3)



Students visiting Jewel Cave as part of their Black Hills summer experience.

results from their efforts. The study and outreach are being presented at the annual meeting of *The Geological Society of America* in October (see abstract below). Eventually, the entire package of projects will be published in an international journal as well as in Seebach's Masters of Environmental Management thesis through Rhodes University in the RSA.

Jim Clark's continuing research on global climate change issues involved two more students this summer. His ongoing relationship with NOAA and NASA via research grants is a tribute to his expertise and an honor for Wheaton Geology.

Geology major, [Erik Nimlos](#) is spending the summer and fall of 2005 in New Zealand. He is among several foreign students granted the opportunity to attend a special geology-volcanology school. Erik will graduate in May 2006, likely with a desire to spend more time nearby volcanoes in his graduate work.

Congratulations to the Geology and Environmental Science 2005 Graduates!

Two of our special people graduated last December. [Lori McGuire](#), our *Gerald Haddock Outstanding Geology Major* awardee, is currently working at home in Georgia in support of her family. [Lindsey Christiansen](#), is beginning her grad school geology research at the University of Minnesota. [Peter Stewart](#) is currently working at Morton Arboretum in Lisle, IL. May graduates include [Tim Bayley](#) and [Chelsea Lautz Bayley](#) who are working with *Teach for America* in serving intercity children in Phoenix. [Ginny Hargrave](#) entered the hydrogeology program at New Mexico Tech to complete her master's degree. She has expectations to take her skills back home to Kenya in service. However, she may also decide to go on to undertake a doctoral program first.

Department Changes

This last academic year featured the comings and goings of two special people in the position of Department Associate. Circumstances made it impossible for Katie Lethe to continue beyond the Christmas break. The Lord's grace provided the department with favorite son, Steve Moss for another semester filling in as Katie's replacement. Steve and Katie follow the earlier service of Lacy Noetzel Smith in the associate's role. Each of the three was of our own grads, and each brought wonderful vitality to the office. Unfortunately, Steve too was called away after only one semester. However, the good news is that he took a splendid offer from the University of British Columbia to go and do research for a doctorate (see below), and the Lord has again shown His love in providing yet another dynamic grad to become the fourth associate in department history. Our new colleague, Nicole Titus should be with us for a longer tour of duty. She does her own introductions below.

We need your help (actually, we continually desire your input). In particular, we are looking for a **leave replacement** for Jim Clark over the entire 2006-2007 school year. Jim will describe his sabbatical goals, and of course, he will be sorely missed. If you or someone you know is interested in joining Steve, Jeff, and Nicole for one year, please let us know. Right now it appears that teaching assignments will include one or two half-semester general education classes (*Earth Resources and the Environment* for sure), A half-semester introduction to soils if possible, and courses of the candidate's interest that match departmental needs. A PhD is preferred, but qualified folks with a master's degree are also considered. The person hired will need to be in agreement with Wheaton's Community Covenant.

"Jim Clark's continuing research on global climate change issues involved two more students this summer. His ongoing relationship with NOAA and NASA via research grants is a tribute to his expertise and an honor for Wheaton Geology."

Doc Mo's Memoirs

Highlights of the 2004-2005 year? In September my friend James Hoffmeier (Trinity Evangelical Divinity School) and I traveled to Grenoble, France to the Egyptology Congress. We presented two papers on our work at Tell el-Borg in the Sinai. His talk was about forts and pharaohs. My talk was on mud and shells...leading to new paleogeographic reconstructions of the region during Bronze-age. Jim was bemused that I attended so few talks at the conference, but I had two days in the French Alps and a delightful meeting with two carbonate sedimentologists at the local university. In the spring I was drafted to prepare fossil tests for the NE Illinois regional Science Olympiad at College of DuPage and the IL State Science Olympiad at The University of Illinois at Urbana. All the best specimens from our collection were arranged in stations set up in a room to be studied by teams of middle school and high school students. That was fun, but hard work. I left the States again before exam week in late April for three weeks to visit our study area in the Sinai. Papers had to be graded in flight and exam scores emailed via the internet café in Qantara, Egypt. Special thanks to Steve Moss back in Breyer Lab for helping me out!

I have a new geologist colleague from the Egyptian Geological Survey who is an evangelical Christian! We had a good, hot time digging pits in the ancient Ballah Lake beds, just east of the Suez Canal. I should say that we hired two local men to dig for us, but we got pretty dirty jumping in the pits for samples. At Tell el-Borg I helped exhume some horse skeletons and witnessed the discovery of limestone blocks with inscriptions revealing the name of our fortress-city. At least, that is what they tell me since I don't read hieroglyphics! You can learn more about our work at www.telleborg.org.

In June, my son Zachary and I traveled to Honduras on a church youth mission trip. We worked for a week hauling rhyolite porphyry boulders and repairing roads near the city of Danli.

The 2005 summer session in the Black Hills was highly successful. We had a great staff and eager students in Biology and Gen Ed nature courses. The back wall of Boardman Dinning Hall was paneled with natural pine boards to highlight our growing collection of taxidermy. Last year our Maintenance Director Bob Schryvers prepared a mountain lion that was donated to the college by the South Dakota Department of Fish Game and Wildlife. This summer we acquired a bobcat that Bob prepared. He also donated a bison skull. One night there was a severe lightning storm and a tree just across the property boundary on National Forest property was struck. The fire was contained by local and Forest Service fighters, but it made the evening memorable. Next summer the Geo majors return for Field Geology.

Breyer Happenings...

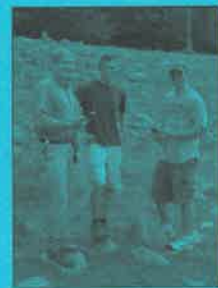
As a small family, we continue to really appreciate each other and all of you. You are still members of the department, even if the last you saw of Breyer Hall was in 1960. Perhaps the next time some of you visit, Breyer will be a memory only. There is a specific plan now to replace Breyer and to completely renovate Armerding. The new building is a very exciting prospect. The 1950s and 1970s facilities just don't represent what the sciences at Wheaton College are or should be. Modernization is a necessity and not a luxury if we are to fulfill our mission. You will learn more about the plans as details become solidified.

As most of you know, the college faculty are now given the go ahead to seek government funding support. We are quite thankful for the opportunity to compete for grants enabling research and other academic projects. The idea of tapping into National Science Foundation (NSF) support to enhance the Science Station is slowly taking form. There are different NSF grant initiatives that might apply to the Black Hills program. These include the acquisition of instrumentation specifically used in field studies, the development of a field natural history course for Native American students and teachers, a general upgrade of teaching facilities, and the establishment of a training center for technology appropriate in conducting community development (for example, water resources, alternative energy, housing, soil testing and management, brick making and other sustainable construction techniques). The Science Station is a wonderful blessing and should receive due attention from its stewards.



Doctor Moshier
in Tell el-Borg

"At Tell el-Borg I helped exhume some horse skeletons and witnessed the discovery of limestone blocks with inscriptions revealing the name of our fortress-city."



Dr. Clark with students Taylor Shipman and Kevin Befus conducting GIS analysis of the Great Lakes topography and bathymetry.

A Brief Review of the Wheaton College 2005 Science Symposium

The Symposium, **Geoscience in Global Ministry** concluded on April 1st after several "mini-events". On March 30th, Dr. Chris Walley from Wales offered a chapel presentation on the theology of Creation and our responsibility as caretakers. Later that day, Walley gave a retrospective on his experience in Lebanon as geology professor (American University of Beirut), and missionary conservationist (Ammiq wetland). War and religion/politics have been a major threat to the only remaining flyway "oasis" for birds migrating between Africa and east-central Europe.

The second presentation by Walley was preceded by an analysis of the past, present and future of energy economics and the relationship to world politics, geology and opportunities for Christian influence. The presenter was Alex Kulpecz, former executive and geologist for Shell Oil and now energy consultant/entrepreneur. Kulpecz indicated certain misunderstandings concerning the relationship between petroleum prices, supplies and government-versus-industry regulation. For example, rampant consumption, demand and shrinking supplies are mainly responsible for our concerns, as opposed to the common feeling that OPEC, energy companies and governments conspire to over price petroleum. In addition to the implied call for greater conservation, Kulpecz outlined ways that Christian professionals can serve to improve conditions and effectively convey the love of Christ for people of all cultures.

Professor B.E. Vijayam, distinguished geologist from Hyderabad India provided a comprehensive overview of his holistic development ministries, *TENT* (Christian NGO-None Government Organization) and *PROGRESS* (scientific/technical support for development organization). Vijayam emphasized how integral geology is to many aspects of meeting human needs and caring for God's good Creation. In particular, he demonstrated the importance of enabling women at risk in many cultures through education, organization and financial counseling. In one visual representation, he showed the small-scale exploitation of a very silica-rich rock by a women's cooperative. They mine the rock with simple tools and receive a good price for the optical-grade material. Other examples of ministry included hydrogeologic projects designed to provide abundant clean water for villages, to filter contaminants and avoid disease, and to redirect storm flow and avoid flooding. The multitude of given examples generated a great deal of questions and comments from the listeners. Most recently, Vijayam's ministries have focused attention on the massive rebuilding necessary around the Indian Ocean in the literal wake of the horrible Dec. 26, 2004 tsunami. The opportunities for missionary practitioners are tremendous.

Thursday, March 31 featured two main presentations. The first was by Dr. Jack Sheaffer, on his recent water-recycling project in Morocco. Sheaffer is well known as technical advisor to U.S. presidents, for co-authoring portions of the *Clean Water Act*, for his publications and projects on flood proofing, and as the foremost proponent of the aerated-lagoon system of water recycling. His description of the engineered system for cities, towns and suburbs is most convincing in opposition to most conventional sewerage systems. Typical sewers and waste-water treatment are quite expensive and they return water to the environment by way of unnatural pathways, thus creating various problems. Sheaffer's systems use only natural methods to treat contaminated water and use the dissolved "pollutants" as resource through reintroduction on crops, lawns and back safely into the groundwater. On Friday afternoon, students, faculty and others interested visited two sites utilizing the Sheaffer system.

After dinner on Thursday, a panel on water resource ministry was convened with our Dr. Jim Clark as moderator. Panelists included, Patricia Klever, project manager for *LIFEWATER INTERNATIONAL*, an evangelical NGO that drills water wells and trains local people to drill and maintain their own water sources. Their work is especially strong in dryer regions of Africa. Dean Ekberg, Wheaton College Geology alum, quarry owner, and doctoral student at Northern Illinois University contributed his stories of missionary water-well drilling in Africa (Liberia and Zimbabwe) to the panel. Dean began his geological career as a petroleum geologist and was later called via faith into missionary work. Dr. Milovan Beljian, a private hydrogeology consultant completed the panel with his presentation of work in Jamaica. Beljian described the many sad environmental degradations, (continued on page 8)



Andrew Luhmann '06 and Debbie Zylstra '07 presenting summer research at Wheaton's fall poster session.

"Rampant consumption, demand and shrinking supplies are mainly responsible for our concerns, as opposed to the common feeling that OPEC, energy companies and governments conspire to over price petroleum."



B. E. Vijayam presenting at the Science Symposium hosted by the Geology department.

Jeff's Journal (continued from page 2)

my travel expenses. Both of these sources of support are made possible by the generosity of Wheaton College alumni.

Brother Steve Moshier and I shared instruction in teaching a section of introductory geology in the field at the Science Station. We had a delightful class of goofy people and were even blessed by one deciding to major in geology! The only bad thing about the Black Hills, is having to leave for Wheaton again. Two weeks out there is just not enough. This coming summer, we should have another good group of majors taking the field courses. We expect two students from Olivet Nazarene's program and one from Taylor's Environmental Science-Geology Track to join our majors. Come on out and visit.

As of Spring Semester, 2006, Steve will be the new Department Chair. Truly, 19 and a half years are enough for me in the chair's role. Frustrations with recruitment, assessment (whatever that is), and a lot of deep red tape have taken their toll. I will begin a heavier teaching load and learn to adjust to that. Please pray for Steve in the transition. Even a small department has big concerns and responsibilities. I thank all of you that have made any of the chair's hassles seem less significant, with your kindness and regular communication. With the completion of the new fundraising initiative on campus in about four years, there should be additional faculty positions in Geology and Environmental Studies available to diversify our curriculum and offer even more student opportunities for mentored research. Stick with us, and watch for exciting things to happen.

Among potential opportunities for me with students are projects just waiting for funding support. For example, the YWAM Kilimanjaro base in Tanzania has been given a piece of property contiguous with the existing Tanzanite gemstone mines. The base leadership is open to having us come and conduct an evaluation of mineral potential. If that had positive results, then a study and implementation of marketing could occur with the goal of using profits for the benefit of local people and ministries (and not exploitation for large foreign companies and wealthy individuals). Such a program is a dream for me, as you can see from the "A Vision" section below.

I sputter along, trying to maintain a reasonable degree of "scholarly" activity that could result in publication. The RSA work of this past summer is one such project. There remains the complete write up of the study done with Katie Lethe and Tim Bayley around the Superfund sites south of Rockford, IL. Katie is taking the lead but I will organize the material and edit it for submission to a suitable journal. My manuscript, "The Hebrew Scriptures and Geology" is still undergoing editing before publication in a special issue of *The Journal of the Geological Society of London*. It seems like some of these endeavors take forever. I had sent two manuscripts to the *Journal of Geoscience Education (JGE)* for review and received them back with less than enthusiastic responses. I should keep at it until at least one these efforts is revised and resubmitted. I am third author with Steve Moshier on another potential article for the JGE on the history of geology at Wheaton College.

It is my present intention to work with Science Division colleagues in the submission of proposals to the NSF to support the Science Station. The processes of researching details and grant preparation should keep me busy. It is a good thing for many reasons that Steve will soon succeed me as Department Chair.

Clark's Capers (continued from page 3)

Finally, I intend to be gone next year on a year-long sabbatical leave. The hope is to combine several interests. About 8 months will be spent at the Water Management School of the Silsoe Institute north of London. This is a graduate program featuring water development in the two-thirds world. I will participate in their program and audit many of their 2-week workshop modules. For the rest of my sabbatical I will continue in my study of glacial-isostasy with special emphasis upon the inverse problem – predicting ice sheet thicknesses that are consistent with observed proglacial lake shorelines. In addition I am sure I will have fun inventing more cheap geophysical instruments and improving upon those already made.



Qumran 2005 - Strain gauge of earthquake rupture preserved in the steps of a cistern.

"With the completion of the new fundraising initiative on campus in about four years, there should be additional faculty positions in Geology and Environmental Studies available to diversify our curriculum and offer even more student opportunities for mentored research."

Wheaton's Response to Hurricanes Katrina/Rita



Donations for hurricane victims

Last year the tsunami in the Indian Ocean reminded us (1) that we live on a dangerous planet and (2) the importance of the earth sciences for understanding how these kinds of natural disasters happen. The tsunami happened during Christmas-New Years vacation, so students were well aware of the devastation by watching the recovery effort unfold on TV and other news media. Students mobilized to raise funds for tsunami relief.

This fall the students arrived on campus as Katrina was pounding the Gulf Coast. Most students missed live TV news reports, resulting in a couple of days delayed response on campus to the devastation and human suffering related to this disaster. Our chaplain and president used the chapel pulpit and professors their classrooms to share the breaking news with students. Soon, students were mobilizing again to collect supplies, raise funds and even organize teams to go and work in recovery efforts. A special meeting was called for all interested students and staff to talk about forming work crews that will go to the Gulf Coast over Thanksgiving Break. The teams will work with existing disaster aid and development organizations, like Samaritan's Purse, Habitat for Humanity, Red Cross and several local churches and denominational agencies. Two-hundred students and staff have committed to be involved with the recovery team effort from Biloxi, MS to New Orleans, LA.

Science Symposium (continued from page 6)

"Soon, students were mobilizing again to collect supplies, raise funds and even organize teams to go and work in recovery efforts."

including mining, deforestation, poor community sanitation, and various other sources of contamination that plague an island of such tropical beauty. The Jamaican capitol of Kingston represents a whole set of terrible conditions that beg improvement. Beljian serves the Jamaican people by sharing his expertise at different levels. He teaches Jamaican and other Caribbean professionals how to analyze conditions and plan the implementation of projects to repair the damaged environment. It is hoped that the training will multiply and eventually show a significant benefit to the natural systems and the humans that depend upon them. The panel's audience asked several questions that allowed the diverse perspectives to complement each other.

At 1pm on Wednesday and Thursday, demonstrations were offered to see how technology is employed by geoscientists in service. The Geology Department now has a drill rig as used by *Lifewater* in their work. The motorized rig and a hand-operated apparatus were on display in front of the science building. Jim Clark and students also demonstrated the use of simple geophysical instruments (of Clark's own fabrication) in exploration for groundwater. The seismometer and resistivity units were built for under \$250 each and could be used by national well drillers and NGOs instead of commercial units costing several thousands of dollars. Thursday afternoon, GIS (Geographic Information System; map-based spatial analysis) and GPS (Global Positioning System) technologies were demonstrated during a major poster/display session held at the Beamer Student Center. Map data were shown on both PC and hand-held computer platforms. Tremendous potential exists in GIS to study problems and help derive achievable solutions. The remainder of the display session featured over fifty posters illustrating faculty-student research and student internship projects, as well as displays by professional organizations. Some of the posters represented completed studies and outreach via the college's HNGR (Human Needs and Global Resources) Program and the student-run Honduras water project. Others exhibited progress in water work in Chad and Tanzania. One poster indicated a project to come during the summer of 2005 to help a poor, AIDS-devastated township in South Africa with their sanitation problems.

Because the main theme and intent of this symposium was student opportunities for ministry through their major, meal times over the three days were devoted to discussion with the experts. Students from Olivet Nazarene, Hope, and Calvin Colleges took part as guests along with the host students from Wheaton. It was mutually agreed that accessibility of practical information, along with inspiration was abundant during the symposium.

A Vision

- Whereas the “World” has huge material as well as spiritual needs, and
- Whereas these needs should be met by those sincerely called to a life of devoting the appropriate talents/gifts to the needy, and
- Whereas those called must be disciples of the true Light of the World, Jesus Christ, in order to minister spiritually, and
- Whereas a tremendous load of the material needs are geological, that is, related to life on the land (water, soil, air, and other resource availability, as well as natural hazards), and
- Whereas there are no concerted unions of individuals qualified to satisfy the demand for service*, therefore

It is proposed that a) interested parties find ways to deliberate means of meeting the needs and b) the planned means be implemented.

Specific components of the above, as it grows more coherent, include the following:

- 1) Outlining the needs to be met and the expertise to be provided
- 2) Communicating and “marketing” the vision to others
- 3) Determining sources of support for implementation

Some initial ideas that have been suggested for consideration are as follows in no essential order:

- Distinctly Christian Institutions of Higher Education (DCIHE according to mission and pervasive devotion to a biblical faith) are at a great disadvantage with state and many other private institutions in conducting scientific research.
- Inferior quantities of professional staff and facilities among DCIHE are the main causes of the disadvantage in doing science.
- DCIHE do possess the quality of staff and moral convictions to undertake very significant scientific projects that will directly or indirectly result in a better world (for example, improvements in the physical and spiritual lives of human beings, as well as in the care of God’s good Creation).
- Interested and qualified staff from various institutions need to be informed about the vision and recruited for involvement at some level. It is recognized that cooperative ventures and pooling resources, human and otherwise are more feasible than trying to begin a separate organizational entity.
- Financial support for the types of projects envisioned is likely to be available but will take major efforts to locate and obtain.
- There are many individuals and organizations that have been given visions similar to this one (the desire is there, the call is there, the clarity is not yet there).
- Although the focus here is on geology, geoscience must be considered in the widest possible context. The services that would be provided are quite interdisciplinary, with anthropological, sociological, philosophical, theological, political, economic, and other aspects as well as those from the natural sciences. The vision specifically concentrates on geology as oft-neglected discipline that becomes the practical foundation.
- One particular concern for geologists in reference to vocation has been over curriculum. There is the perception that a traditional geology major includes little of (employable) use and much that is too academically esoteric. For example, good arguments might be made that a few to several weeks (or even more!) on crystallography is a waste of time. Teaching about water and energy resources, well logging, GIS, etc. are more job applicable. This may be generally true but is also short sighted. Petrology, stratigraphy, sedimentation, historical geology, field camp, structural geology, mineralogy and other classical courses for the geology major provide us much more than is commonly recognized. Geology training teaches how to know the land. Proper land-use practices are at the heart of many human needs.
- Economic Geology was once a staple of the majors’ curriculum. (continued on page 11)



“Jim Clark and students also demonstrated the use of simple geophysical instruments (of Clark’s own fabrication) in exploration for groundwater.”



SEMP Great Lakes Field Conference. Dr. Moshier with Glenn '08 and Ben '03

New Staff: Nicole Titus



Norwegian Garnet.

After being away from the Geology department for only 3 years, I decided that it was indeed time to go back. I graduated from Wheaton College in 2002 with a B.S. in Environmental Science. After I left Wheaton I spent some time as an environmental consultant with a firm in Chicago. I thoroughly enjoyed the opportunity to get out in the field on a regular basis and be able to put some of the things I had learned about in college into practice. While consulting, I primarily worked on Phase I and II environmental site assessments but also had the opportunity to get involved in different surface and groundwater studies.

After only a year and a half of this I felt the Lord was opening up new doors for me. I began graduate work (once again at Wheaton College) in the spring of 2004. After one semester on campus I took the opportunity to earn credit towards my M.A. in Educational Ministries, for 12 months, at Wheaton's own, HoneyRock. That was an amazing experience that will not soon be forgotten. My time at HoneyRock ended right as my time at Wheaton College began once again, this time as the new Lab Associate/Secretary for Geology. While I only have a few more hours to go in completing my degree, I have committed to be with the department for at least the next two years and am incredibly excited for the opportunity to get back into the sciences.

Geology PR

Partly in response to the difficulty in attracting majors, Geology is promoting areas of interdisciplinary education. This means that we have initiatives designed to draw students from other departments into our realm. We must demonstrate the relevance of Geology to all sorts of students with varied interests and the typical lack of understanding in the geosciences. Our newly established BA track allows students to double major in Geology and something else. The BA is only 36 total hours in contrast to the full 52 hours of the traditional BS program. If a student begins in the BA and decides upon geology grad school, then they can make up some science and math classes to qualify. We believe that there are potentially many students who could appreciate the meat of geological education in the context of their other disciplinary interests. The hard part is for us to sell that proposition. Jeff has already met with three colleagues in Business/Economics to consider suggesting the double major in their advising. The International Relations major is an even more appropriate partner with the Geology BA. There is some sympathy with our goals among the IR faculty. Additionally, the Physics Department has just moved to begin a special interdisciplinary track in geophysics. In large part because of Steve's research and his *Geoarcheology* class, we have a great relationship with the Archeology Department on campus. Another unexpected relationship for Geology may come from ties to the Art Department. We have a good variety of lapidary equipment in our "dirty" lab in the basement. We also have a fine selection of geological raw materials that is just begging to be made into jewelry or sculpture. The new faculty member in Art, with his interest in ceramics and sculpture, has shown some interest to work with us. Oh, if people only knew how fun and relevant geology really is.

"We must demonstrate the relevance of Geology to all sorts of students with varied interests and the typical lack of understanding in the geosciences."

Scholarships

We are very pleased to announce that the department has two scholarship accounts that may be specifically noted on donations to the department. The first of these is the **Wheaton College Geology Scholarship**, which is awarded for special merit and need when the fund has at least a few hundred dollars available. It is hoped that this award will eventually have a positive effect on recruitment. The other account is for the **Dr. Donald Boardman Black Hills Award**. This scholarship is only available to help students attend the Geology majors' summer program at the Science Station. Summer 2004 was the first time this fund became available. It helped four students cover expenses of travel and lodging. All who have contributed to these accounts have our deepest thanks and appreciation. Please note that if donations are given to the college for use by the Geology Department, that they must be clearly designated for a specific scholarship or other particular purpose. Generic gifts have no associated account. In addition to the two established scholarships, there may be future awards coming from association with geologic resource companies. In some cases, industry is trying to entice students into the resource professions with paid internships or simply academic scholarships in order to obtain the right background.



Alumni Updates

Congrats to alumna Charlotte Derksen '66 for receiving the first career achievement award from the Geological Information Society!

Once-upon-a-time, Wheaton College was known for many accomplished geologists in academia and industry who received their doctorates after a stimulating undergrad experience. The trend to go on and complete a PhD after Wheaton mostly dried up through the 1990s. Something in the air or water must have caused another change, back to the PhD desire. Currently, the Geology Department has several alums working on or just completing their doctorates. In addition to Steve Moss mentioned above (and we should mention that he is being treated to the opportunity of mapping extrusive features of diamond-bearing kimberlites in the Northwest Territories!), there are Joel Moore and Jamie Fulton, both at Penn State doing PhDs in Organic Geochemistry, Christopher Williams finishing his dissertation on Bahamian sedimentation at Southern Illinois, Andrew Kulpecz continuing on at Rutgers for a PhD, and Jeremy Vaughan, who is beginning work on a dissertation project at the University of Sydney (Aussie of course). At the University of Wisconsin in Madison, Ben Sheesley is finishing up his PhD in Cartography alongside his wife, Rebecca who is finishing up her PhD in Atmospheric Chemistry. Along with this, the Sheesley's have just received the double blessing of twin daughters. Recently completed PhDs are Jamie Skillen, in Environmental Policy from Cornell and Dwight Schuster in Science Education from Duke. We expect this renewed trend to continue. We may not have many majors in comparison with other departments, but the quality of people spending up to four years with us is remarkable.



Wheaton students along with Steve Moss '99 trying out Dr. Clark's geophysical equipment at the Science Symposium.

A Vision (continued from page 9)

With changing economic conditions among geological commodities (metals, industrial minerals, energy, etc.), industry's hiring demand for geologists remains very low. This situation does not reflect the real situation outside the U.S. The developing nations are still targets for geological exploration. Wealthy nations have a large appetite for the luxuries of jewelry and ornamental stone. There has recently been a dramatic increase in demand for polished building stone in the U.S. and Europe. Gemstone exploration has also experienced an increase over the last ten years. A traditional geology education, especially in a liberal-arts context, is a fine qualification for exploration.

- The lack of industrial positions for geologists in the U.S. is a perception due to a) the great abundance of positions in water resources and environmental consulting and b) the positions that are available through international corporations and filled by foreign students.
- Large corporations involved in resource exploitation are not particularly interested in bringing benefit to the lands or peoples of their operations. They do large-scale work and optimize profit for stockholders. **There are other, smaller-scale mining operations that can be done in many regions with benefit to the local populace and minor damage to the environment.** Finding these opportunities could be one key objective within the vision. For example, resource-development projects can be combined with small-enterprise loans to enable new, appropriate business operations.
- Community development and its Christian counterpart, "transformational ministry" is a great context for the application of geology with other disciplines.
- In order for the new association to function, there must be a strong commitment to teamwork, including the participation of technical support and specialists in marketing, entrepreneurship, as well as social scientists. Missions organizations are essential partners in many potential cases.
- Not all potential sites for research and/or ministry are located outside the USA. Certain urban areas and regions of the rural poor in America must also be considered.
- Initial opportunities to gather interest may come by way of e-mail communication campaigns, advertise conferences and workshops.

* Note that a primary devotion to the vision of serving humanity and the rest of Creation through our earth-science vocation would be unique to DCIHE and would set the vision apart from anything like it existing in the academic or commercial universe. The mission statements of many DCIHE express distinction from the missions of other colleges and universities. Fulfillment of the vision will validate that distinction in very tangible ways.

"We may not have many majors in comparison with other departments, but the quality of people spending up to four years with us is remarkable."



Taylor Shipman '06 with mushroom out in the Black Hills



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Panoramic view at Mathiessen State Park during the Physical Geology class field trip this fall.

Abstracts and Publications

Faculty and Students have continued writing and publishing their research this year. Listed below are the references for recent abstracts from the department. The full abstracts can be found on the Geology Webpages at www.wheaton.edu/geology/overview_links_abstracts.html. Students (current and past) are listed in bold type.

- "Littoral zone contamination and integrated waste-water abatement, Pellsrus township, Republic of South Africa." **Andrew J. Luhmann '06, Deborah J. Zylstra '07, Jedidiah Wentz '07,** and Jeffrey K. Greenberg; 2005 Salt Lake City Annual Meeting (October 16-19, 2005).
- "Paleogeography of the Eastern Frontier for New Kingdom, Egypt, Northwest Sinai." Stephen O. Moshier; IX International Congress of Egyptologists, Grenoble, France (6-12 September 2004).
- Van Dragt, R. and Clark, J. A. (2005) "Environmental Stewardship: What are the roles for science and faith?", in *Not Just Science* edited by Chappell, D. F and Cook, E. D., Zondervan, Grand Rapids, 158-173.
- Moshier, S. O. (2005) "What is God's Purpose for Natural Disasters", in *Not Just Science* edited by Chappell, D. F. and Cook, E. D., Zondervan, Grand Rapids, 141-147.
- **Shipman, T. D. '06, Befus, K. M. '08,** Clark, J. A. and Hooyer, T. S. (2005) Use of numerical isostatic deformation models and GIS to predict ice sheet history, lake levels and paleohydrology of eastern Wisconsin during late glacial times, North-Central Section of the Geological Society of America meeting, Spring 2005, Geological Society of America Abstracts with Programs, Vol. 37, No. 5, Paper No. 16-4, p. 22.

We Need You!

The Geology department is in the process of compiling information on alumni that are out using their degree in some form or another. We would like to feature a different individual each week for students in the physical geology introductory lab to hear and pray about during class. There still seems to be a lack of understanding of what one can do with all of these "rocks" and our hope is that a glimpse into your life will help shed some light on this.

If this is something that you would like to be a part of, please send a simple explanation of:

- When were you a student here?
- What drew you to geology or environmental studies?
- Where have you been living and working since graduation?
- And finally, give us an explanation of what you are doing now along with a somewhat recent photo (especially a photo of you at work, if you have one!).

You can send information to us via email or snail mail. Looking forward to hearing from you!