An SNC Geology Update:

Welcome to the fourth issue of the SNC Geology Newsletter! The reception for each issue has been incredibly positive from our alums and friends, so it seems this has become an annual tradition! We are excited to share what we have been up to in the past year with all of you.

If any of you have been around campus within the last year, you have certainly noticed our expanded science building. Over half of the renovation is now complete. We are all moved into our new offices and have actually been teaching classes in our new space this fall semester (for photos of the new space see GMS Renovation on pages 4 and 5). The renovation has been huge for geology, as we have gone from having two small rooms to having two dedicated upper-level lab/classrooms, one lower-level lab room, student and faculty research spaces, and multiple storage areas. As you can imagine, we are beyond thrilled and we encourage you to stop by and check it out sometime if you are in the area!

Academically, we have some exciting things going on within the program. We graduated our largest class this May, with seven seniors (see photo to left)! This speaks to the growth of our program, which we expect will continue with all of the excitement around our new space. Becky taught a new course this fall (one particularly close to her heart), Introduction to Paleontology. Students in the course traveled to Wequiock Falls County Park to learn about the information recorded at a field site (see photo below), started prep work on a plesiosaur (see GMS Renovation on page 5), and have been reading a lot of scientific papers.

Tim, Nelson, and Becky just started a Program Review of the Geology Discipline. One thing recommended by the committee was an alumni survey. We have conducted surveys like this in the past, but it has been awhile. Please keep your eyes open for it sometime in the next six months – it would really help us if you took the time to fill it out.

Our Geology Club has been fortunate in having a multitude of speakers within the last year, including Eric Carson (who students met on our Driftless Area field trip last year) and Esther Steward, both of the Wisconsin Geological and Natural History Survey. Students have also presented on their summer experiences in geology, have had a bad geology movie night (to watch The Core), and enjoyed our traditional end-of-the-year cookout at Tim’s house.

In this issue, you will find a recap of our latest field trip to Nicaragua, photos of our new space in the renovated science building, information on student research and summer experiences, updates from our faculty, and more.

Please keep in touch with us – we love hearing from you!
St. Norbert Geology Field Trip to Nicaragua:

This year, we added another international field trip to our line-up – Nicaragua! Students (and their parents) were a little hesitant about the location at first, but it certainly delivered. The geology was fabulous, the people were welcoming, and the area was much less commercialized than Costa Rica.

We booked our trip with a company called “Tours Nicaragua”, who helped us arrange transportation (by bus, boat, and air), lodging, and logistics for the majority of the trip. We had our own local tour guide, Lenin, who did a fantastic job talking about the geology, biology, and culture of the many locations we visited.

With Nicaragua being part of a major subduction zone, we saw volcano after volcano. You can imagine this made Tim quite happy. Many of the volcanoes we visited were active. In fact, for the first stop of our trip, we drove up to the summit of Volcán Masaya, a very active and steaming, large stratovolcano!

Another volcano, Volcán Mombacho, had its peak covered in cloud forest, so a trip in an open air bus was the perfect way to get to the top. We also hiked to the top of Cerro Negro, an active cinder cone that spews ash over the city of León every couple of years (see photo above). After about a 45 minute hike to the top, students found a faster way down, by boot skiing, which took just about a minute.

Another highlight of the trip was a visit to Volcán Telica (see group photo at top). We traveled by jeep and by foot to the summit of the volcano, where we enjoyed our dinner with a view of the sunset. After the sunset, guides showed us how to safely peer into the crater of the volcano, for a view of glowing red lava!
Fortunately (or unfortunately...), the trip was not entirely a volcano tour! We took a couple of boat tours to look at coastal beaches and a mangrove swamp, hiked through two cloud forests, walked on a sand spit, and swam in a natural spring pool. Students had the opportunity to tour a modern geothermal power plant (see photo below) and then days later visited a local gold mining family, who showed us the colonial period techniques they use to extract gold, quite a contrast.

We were also able to spend some time exploring the cultural aspects of Nicaragua. We took short cultural tours of every city we visited, learned a little about the political background of Nicaragua, visited a local orphanage (which the Geology Club provided a donation to), and even toured local cigar and chocolate factories. We also visited León Viejo, a UNESCO World Heritage Site that consists of the ruins of Nicaragua’s first capital city, buried by ash in 1578.

After a glorious time on the mainland, we said goodbye to our tour company and went off to visit the Corn Islands, small islands in the Caribbean waters of Nicaragua. There, students snorkeled on a coral reef and learned more about beach processes.

Overall, it was a fantastic trip and we are thrilled to add it to our field course offerings. We will definitely be going back in future years! For more information and photos from the trip, please visit our website at:

http://www.snc.edu/geology/fieldtrips/2014nicaragua.html
GMS Renovation:
As many of you know, our science building has been undergoing a massive renovation for about a year and a half. Although the building (formerly the John Minahan Science Building – JMS, now the Gehl-Mulva Science Center – GMS) is not slated for full completion until Fall 2015, we have actually begun occupying some of the new space, so we thought you might enjoy a mini-tour of geology’s new digs!

The new intro geology lab (above) holds 24 students.

The “hard rock” geology lab (above, seats 16) will be used for Mineralogy, Petrology, and Structural Geology.

The “soft rock” geology lab (left, seats 16) will be used for Hydrogeology, Geomorphology, Glacial Geology, Historical Geology, Sed/Strat, and Paleo.

A storage room between the two upper-level labs holds special partitioned drawers for mineral specimens (above, right), map drawers, and cabinets for microscopes.
A student research lab (above) will provide students with their own space to work on thesis projects. An additional student research space (not pictured) will serve as a computer lab.

Becky’s research lab is a state-of-the-art vertebrate fossil preparatory lab (above), with dust snorkels, surgical lights, and a hydraulic table.
Current Research Student:

Grant Zwiefelhofer ’15

Title: Geoarcheology of Obsidian Xenoliths within Basaltic Lavas from Mount Taylor, New Mexico

Faculty Advisor: Dr. Tim Flood

Description of Project: Grant is currently studying basalt samples from the Mount Taylor Volcanic Field, in New Mexico. This field was active about 3.3 to 1.5 million years ago. Once thin sections are made, Grant will study the petrography of the basalt and the included obsidian xenoliths, including point count analyses. In particular, he is interested in the contact relationship between obsidian xenoliths and the basalt. The nature of the contact has geoarcheological implications in that it may constrain the origin of individual obsidian pieces worked by native peoples.

Outcome of Project: Grant will be presenting the results of his work as a poster presentation at the annual on-campus Undergraduate Research Forum in the spring.

Student Summer Experiences:

Shannon Fasola ’14 – field camp with Albion College - field area in Wyoming, Montana, and South Dakota (see 2014 SNC Geology Graduates for more about Shannon).

Cody Heinze ’14 – field camp with UW-Oshkosh - field area in Utah (see 2014 SNC Geology Graduates for more about Cody).

Zach Osborne ’14 – field camp with Albion College - field area in Wyoming, Montana, and South Dakota (see 2014 SNC Geology Graduates for more about Zach).

Trevor Osorno ’14 – field camp with the University of Arizona - field area in east-central California (see 2014 SNC Geology Graduates for more about Trevor).

Ken Oxendorf ’14 – field camp with UW-Oshkosh - field area in Utah.

Allison Shackelton ’14 – field camp with Indiana University - field area in western Montana (see 2014 SNC Geology Graduates for more about Allison).

Thanri Jooste ’15 – field camp with Bowling Green University - field area in Colorado and New Mexico.

Justin Wendt ’15 – field camp with UW-Oshkosh - field area in Utah.

Andrew Schwoerer ’15 – National Science Foundation funded Research Experience for Undergraduates at Northern Arizona University (Landscape Evolution in a Monogenetic Volcanic Field). Andrew mapped a volcanic cinder cone (Rattlesnake Crater) east of Flagstaff, Arizona and used the data he collected to reconstruct the eruptive history of the cone. He presented a poster on the results of his research at the national Geological Society of America meeting in Vancouver.
Updates from the Geology Faculty:

**Tim Flood**

Greetings Alums and Friends:

Another year and the students in my classes continue to get younger and younger. It continues to be fun and interesting around the department. Becky received tenure last year (deserved and hurray) and was immediately placed in charge of our program. Consequently, Nelson and I are still trying to adjust to someone responsible running the show. The big news continues to be the renovation of the science building. Most of the new geology space is operational and fantastic, especially wonderful is the additional space. By my careful calculation, I have determined that I will not be able to clutter the entirety of it with rocks by the time I retire.

Last year Becky, Nelson and I ran our “big” trip to a new location, Nicaragua. What a beautiful, stunning and safe country! We visited several active volcanoes, including having the opportunity to peer into a lava lake at night. We snorkeled in the Caribbean off the Corn Islands, basalt-cored coral reefs. We spent a few days on Ometepe Island in Lake Nicaragua. We toured a coffee plantation, a cigar factory and an artisanal gold mining operation where they separated the gold by swishing it in mercury bare-handed. The most touching aspect was a visit to an orphanage, which received most of the proceeds of last year’s mineral sale. Up next for a department field trip is Death Valley over spring break.

On the academic side, things continue to grow and evolve. We graduated 7 students last year and currently have 12 juniors/seniors in structural geology. Yes, it rained in Baraboo again. This was the first full year of a new interdisciplinary course that was sponsored by an NSF grant. Scott Kirst from Education and I combined his science methods class and intro-geology into one year-long sequence. The general idea is that I teach something like plate tectonics and he follows right after “teaching them how to teach plate tectonics” to K-8 students. I took the 20 students in the class on a field trip to northern Wisconsin. Yes, it rained.

On the personal side, all is well. I was honored to be chosen to give a talk in the College’s “Last Lecture Series”. My topic was time, mostly deep, geologic time. If you are brave enough to view it, go to the SNC home page and type in last lecture. My family is a joy. The boys, Connor and Ryan, are 11 and 10. They are now to the age where they much prefer to spend time with electronic devices rather than mom or dad. My wife Sally is still doing the exotic veterinary thing and we continue to have a revolving door of odd creatures in our house. On a final, fun note, I accidentally caught a 33” walley in Canada last summer from my kayak. Whahoo!

All I can say is “Life is good—knock on wood”.

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**Nelson Ham**

Dear Geology Friends, I hope the past year has been a great one for all of you. SNC is a busy place indeed...the GMS construction project is nearly over, and many good things have happened. We are very excited about the present and the future of our program. Thanks again for your calls, emails, and campus visits the past few months. It’s always exciting and humbling to see the great things you are doing out in ‘the real world.’

2014 started with our trip to Nicaragua, which I consider one of the most inspiring field trips of my time as a geology student or professor. Not only was the geology spectacular, but the people were incredibly generous and friendly. Tim did an amazing job finding our tour guides—who we would highly recommend to anyone traveling to the country (just email or call for info). For those of you who had a chance to go to Costa Rica years ago, Nicaragua would remind you of CR but with very little tourism. We hope to go back sometime soon. Despite the easy traveling and great geology it turns out that few programs take students to Nicaragua—at the national GSA meeting in Vancouver we presented our trip logistics in a special session on emerging international field-trip opportunities.

I’m also excited at the addition of adjunct faculty to our program. With the new science building has come a significant increase in science students, especially in the area of pre-health studies. This situation has increased demand for general education science courses, especially our introductory courses (physical geology, environmental geology, and oceanography). For the first time ever we will have three adjuncts teaching with us in the spring semester: SNC grad Jackie Marciulionis (Shumway) ‘05 and Paula Leier-Englehardt (who coaches the SNC crew team) will be teaching sections of introductory geology, and Jeff Dumez (Brown County Land Information) will be offering an introductory GIS course once again. Jackie and Paula have extensive experience working in the geotechnical field.

I’ll be on sabbatical leave this coming spring semester working on a book project about the environmental history of Wisconsin streams. But other projects have also come up along the way. I’m part of an interdisciplinary group on campus that submitted a grant to the Luce Foundation to integrate environmental science and the liberal arts (humanities and social sciences) in the study of Japan and the Philippines—two countries subjected to significant natural disasters and climate change impacts. I’m also starting to work with the new DNR NE-region coldwater streams coordinator. We are beginning to think of collaborative work that will help understand the geologic conditions important for sustaining good physical habitat for trout in the streams of NE Wisconsin. The Wisconsin DNR has allocated a significant amount of money for public access, baseline studies, and restoration work.

Finally, on the home front Elias (2 ¼) and Zinash (8) are doing great...Elias has perfected expert techniques in how to annoy his older sister (although he loves her to death). My favorite is stealing the TV remote, changing the channel, running like hell and laughing very hard, and then throwing the remote as far as he can. And Staci continues to work in the geotechnical field and also teaches yoga regularly for a studio in Green Bay. We wish all of you the best for the Holidays and the New Year! Namaste, Nelson
Becky (Schmeisser) McKean

The past year has involved a lot of traveling for me. I love seeing new places, so it’s been fun to visit a few brand new destinations. Nicaragua in January was truly spectacular. Standing on the rim of an active, smoking volcano on the day we arrived in the country let me know that it was going to be a pretty special place.

In May, I traveled back to Flagstaff for two weeks of museum work to collect some data for a paper I’ve been working on that examines the taphonomic condition of marine vertebrates from the Tropic Shale, the formation I do most of my work in. The visit was timed just as the Slide Fire started, a fire that raced through Oak Creek Canyon, a pristine forest canyon just south of Flag that runs directly to Slide Rock State Park. It was heart wrenching seeing all the smoke, wondering how the canyon would appear after they managed to put the fire out. I also managed to sneak in a few days of field work to place the stratigraphic position of some old vertebrate sites, which would have been lovely had it not been for the blood-sucking gnats that happened to be in season.

At the end of my work, I spent 3 days driving precious cargo from the Museum of Northern Arizona back to De Pere. That cargo is a partial skeleton of a plesiosaur that I discovered in the Tropic Shale in the summer of 2012 that we (my colleague, Dr. David Gillette, two SNC students, and myself) excavated last summer. Now that my fossil preparatory lab in the new building was complete, there was finally room for it! The specimen consists of two large and one small plaster jacket containing the skull, some ribs, and some vertebrae. Students in my Paleo class got the chance to crack one of the jackets open, but I’m pretty excited to see what else is inside.

In July, I was invited to speak at Bryce Canyon National Park’s Geology Festival. Although I had already fallen in love with Utah long ago, this place is one of my new favorites. The scenery was spectacular, Tropic Shale deposits were nearby (exciting me with the potential for plesiosaurs!), and never have I been welcomed quite so warmly. On my way out of Bryce, I snuck into Zion National Park for 7 miles of impromptu hiking amongst huge cliffs of gorgeously cross-bedded Navajo Sandstone. What a treat.

In other news, I’m thrilled to report that I was granted tenure at SNC. I’m so fortunate to have my dream job with fantastic colleagues and am really excited that I am now here to stay!

Personally, Colin and I are still running a lot – find us on the East River Trail! Colin competed in his first marathon this fall in the Twin Cities and finished in under three hours! It was a blast cheering him on!

Thanks to all of you who keep in touch throughout the year – we love hearing from you!
An Update on Some of Our 2014 SNC Geology Graduates:

Shannon Fasola

Shannon has begun work towards a master’s degree in Geophysics at Miami University in Oxford, Ohio. Her project focuses on seismic and aseismic deformation of the Oaxaca Segment in the Mexican Subduction Zone. She will be analyzing the behavior of the subducting slab through seismicity patterns of earthquakes and non-volcanic tremor in the Oaxaca Segment and the slow slip event preceding the Mw 7.4 Ometepec Earthquake on March 20, 2012. She will compare these results with a previously proposed subduction slab tear boundary within the Cocos Plate to show that the structure of the slab is consistent with no slab tear. This summer she will be traveling to Mexico to update the seismic network her professor installed in 2006. Shannon is a Teaching Assistant for Hydrogeology.

Cody Heinze

Cody is currently working on his masters in sedimentology/geochemistry at the University of South Carolina. His project focuses on the correlation of Grenville age sediments and exposed granitoids from the Grenville orogeny. He hopes to find key tracers, through detrital zircon analysis – including Hf, Ti, and rare earth metal isotopes, in the granites and sediments that can create a detailed provenance history and distinguish where the sediments originated in the mountain belt. Grenville sediments span across all of North America, and the granitoids are found on the Atlantic coast from Central America to Greenland. He will be travelling and sampling many granites and sedimentary rocks. The data will be useful for many sedimentologists and geochemists throughout North America. Cody is funded as a Research Assistant.

Zach Osborne

Zach has started work on his master’s degree in Igneous Petrology at Indiana University. His research will focus on the use of experimental petrology to try and differentiate between fractional crystallization or partial melting as the origin of plagiogranites near mid-ocean ridges. Zach is also a graduate Teaching Assistant for Meteorites and Planets.

Trevor Osorno

Trevor is currently working on his master’s degree in hydrogeology at the University of Kansas in Lawrence. His project focuses on groundwater contamination, more specifically on contaminant transport. Trevor will be designing and testing a new direct groundwater velocity measurement device for in-well use. This work is a part of the ongoing development of the point velocity probe (PVP) as a tool for direct groundwater velocity measurements. Trevor is funded as a Research Assistant for KU.

Allison Shackelton

Allison is working on her master’s degree in vertebrate paleontology at Temple University in Philadelphia. While she is still working out the details of her project, she will likely be focusing on Cenozoic mammals or vertebrates from the Late Cretaceous. Allison is also a graduate Teaching Assistant for Physical Geology and Geology of National Parks labs.
Student Awards for 2013-2014:

The Geology Award
Allison Shackelton ‘14
Chosen by the Geology faculty for strong academic performance and involvement in the program.

Academic Achievement Award
Zach Osborne ‘14
Highest GPA over the past academic year, awarded The Glossary of Geology.

Outstanding Field Geologist
Bailey Anderson ‘16
Voted on by their peers for enthusiasm and excellence in the field, awarded a rock hammer.

ROX Award
Matt Larson ‘15
Voted on by their peers for “getting caught in the act of being themselves”.

For photos from our recent field trips, information on current research students, old issues of our newsletter and more, please check out our website at:

www.snc.edu/geology

Thank you for your continued support of the geology program!