



GEOL 213 Spring Break Field Trip

This year the Spring Break trip took 8 days and 7 nights to circle the island of Puerto Rico, starting at the Aerocibo radio telescope (which sits in a large sink hole in the middle karst country), then we spent a day examining the fossiliferous limestones that have generated the karst topography over the last tens of thousands of years, and ended the day watching the sunset on the west side of the Island at Rincon.

The next couple of days were spent in the salt terns of south-western Puerto Rico, then we needed east first stopping the evening for a swim and boat ride to bioluminescence bay. Finally, the last two days started in the "dry forest" which receives only a few inches of rain a year and ended up on the windward side of the island in the United States only tropic rain forest. Overall, a successful and enlightening spring trip.—*Tim Byrne*



GEOL213 students
-Left to right: Dan Feder, Adam Gower, Geoffrey Gelinas, James Csellis, Matt Nolan, Catie Thorne, Lisa Martland, Caitlin Arnold, James Cassanelli



IYPE Launched

The IYPE Global Launch event took place at UNESCO Headquarters in Paris February 12-13. Leading politicians, heads of geoscientific organizations and many others participated in this successful launch. In his address the UNESCO Director-General Koïchiro Matsuura noted that IYPE is a timely and pertinent initiative. Never before in the history has the Earth been subject to so rapid and profound changes, both in terms of the physical environ-

ment and in social transformations.

Students from all over the world had responded to The International Student Contest and contributed approximately 130 essays, poems, drawings and video messages. Three out of the award-winning submissions were selected to perform or display and comment upon their work on stage during the Global Launch.

Scientific sessions included the following Themes:

1. Population growth and climate change challenges for planet Earth.
2. Earth resources: threat or treat?
3. Geohazards: minimizing risk, maximizing awareness.

In his address the UNESCO Director General Koïchiro Matsuura trusted that the activities of the Year of the Planet Earth would lead to a long overdue recognition of the important contribution of the Earth sciences to society.

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In the News for Geosciences:

- *The Cretaceous (145 million to 65 million years ago) was one long heat wave. Average annual temperatures at the equator topped 38 degrees Celsius and even polar temperatures hovered near a temperate 10 degrees Celsius. Exactly how the planet got so warm is something that scientists have struggled to explain. Now, researchers say they may have the answer: A slight reduction in cloud cover that allowed more sunlight to reach Earth could have been the necessary nudge needed to push the planet into a "supergreenhouse" world.*

Announcements, Awards, Publications, etc.

Publications:

Riull P., Henrique Targino, C., Da Nobrega Rarias, J., **Visscher, P.T.**, Antunes Horta, P. *Decrease in Lithothamnion sp. (Rhodophyta) primary production due to the deposition of a thin sediment layer.* Journal of the Marine Biological Association of the United Kingdom, 2008, 88(1), 17–19.

Daniel H. Buckley, Laura K. Baumgartner and **Pieter T. Visscher** *Vertical distribution of methane metabolism in microbial mats of the Great Sippewissett Salt Marsh* Environmental Microbiology (2008) 10(4), 967–977

Grants: Jean Crespi was recently awarded a grant from the National Science Foundation to study the deformation associated with reactivation of continental margin fracture zones. Tim Byrne is co-PI, and Jean and Tim will be collaborating with Jon Lewis (UConn PhD 1998), who is a faculty member at Indiana University of Pennsylvania. The research will involve fieldwork in Taiwan and in the northeastern US, analysis of seismicity in Taiwan, and kinematic and dynamic modeling of transpressional tectonics. Phaedra Upton of the University of Otago, New Zealand, will undertake the dynamic modeling. By integrating information from the early Paleozoic Taconic orogen and the active Taiwan collision zone, the group aims to improve understanding of the ways in which preexisting continental margin rift architecture affect the tectonic development of collisional orogens.

Presentations:

Myshrall, K. “*Geology for Non-Geologists*” talk at AbGradCon 2008.

Myshrall, K., Przekop, K., Reid P., **Visscher P.**, Norman R.S., Foster J.S., Thompson, J.B., **Bush, A.M.** “*An Evaluation of Micro-*

bial Communities, Metabolisms, and Community Interactions in Modern Thrombolites in Highborne Cay, Exumas, Bahamas” At AbSciCon 2008.

Visscher, P. “*Microbially Mediated Mineralization: A Lesson in the Present for Interpreting the Past?*” **Keynote Speaker**, AbSciCon 2008.

Dupraz, C., Braissant, O., Glunk, C., Decho, A., **Visscher, P.** “*Influence of the EPS Matrix on Microbialite Formation*” AbSciCon 2008.

Decho, A.W., **Visscher, P.**, Norman, S., Ferry, J., Ferguson, L. “*Potential Geochemical Challenges on Bacterial Quorum Sensing in Natural Microbial Mats*” AbSciCon 2008.

Visscher, P., Baumgartner L.K., **Dupraz, C.**, Braissant O., Przekop, K., Stolz J.F., Glunk, C., Spear J.R., Buckley D.H., Reid, P., Norman R.S., Decho A.W. “*Biogeochemistry and Diversity of Open Marine Stromatolites and Hypersaline Lithifying Microbial Mats*” AbSciCon 2008.

Congratulations to graduate student Denise Burchsted who has won a GSA award to help with her doctoral research this summer!

Congratulations to Kristen Myshrall who received one of the interdisciplinary CESE awards to continue her research this summer!

Congratulations to Jen Pagach, who successfully defended her MS thesis at the beginning of April!

New Course for Fall 2008! GEOL 4130 - Geomicrobiology—now listed on the course schedule!

Professor Robbins On Sabbatical: Professor Robbins is on sabbatical this semester. While on sabbatical Professor Robbins has been exploring sinkhole conditions in Tampa, Florida, the endless caves at Carlsbad Caverns, NM and the DOE's Waste Isolation Pilot Project which is 2100 ft below ground in Permian Salt in Carlsbad. He is also assisting in a LIDAR study of dust dispersion in Las Cruces, NM. He returns for three days of short courses at the end of April for LSPs and LEPs at the Water Resources Field Station on Campus, then he is off to California to conduct research with the Navy.

Professor Cormier on Sabbatical:

Dr. Vernon Cormier has been on sabbatical this semester as well, and has been spending it at a university in Australia. He'll also be running a session on deep earth at the upcoming CIDER workshop in CA in July.

Biogeochemistry? A stolen(?) bike tossed into Mirror Lake was originally an unusual form of water pollution. But when it was hauled out, the net biological oxygen demand (BOD) was diminished because there was a net loss of algae. The rust must postdate removal from the former reducing environment of the pond benthos. (Photo by Robert M. Thorson)



Mirror Lake's mystery bike.

Dr. Tim Byrne's research was highlighted in the recent UConn Magazine on page 22. Check it out!

Geoscience Currents

The American Geological Institute (AGI) Workforce Program has initiated Geoscience Currents, a new series covering geosciences workforce and educational data snapshots, that are expected to be released on a near-weekly basis.

To subscribe to these free data snapshots, go to <http://www.agiweb.org/workforce/> and click “Register.”

From the latest edition #6: US Geoscience Enrollments and Degrees.

This Currents publishes the preliminary 2007 geoscience enrollments and degrees in US colleges and universities. In addition, the historical enrollment and degrees granted data is charted with the new 2007 data.

The number of students enrolled in the geosciences in US colleges and universities remained relatively steady in 2007 based on preliminary numbers, with 19,216 undergraduates and 7,944 graduate students en-

rolled.

Degrees granted in 2007 remained steady, except for new doctorates, which increased sharply by over 30%. This sharp increase mirrors the influx of entering graduate students in 2003 and 2004 following the collapse of the dot-com boom.

However, given the graduate enrollment profile since 2003, this increase in doctorate production will be short-lived.

Geoscience Websites of Interest

For each newsletter that comes out, we will try to feature a few great sites related to geosciences that may be of interest to students and faculty associated with the Center. Please feel free to send any sites you find along to Abi, to be included in this section in future editions!



topography, geology, history, water resources, national parks, planets, and much more! Some maps can be downloaded for free; all can be purchased in paper form at minimal cost (\$7-\$14).

<http://education.usgs.gov/common/resources/mapcatalog>

- **THE ELECTRONIC VOLCANO**—A good source for everything about volcanoes, including photos, radar, video, and cinematic coverage of active volcanoes. Also maps and catalogs of active volcanoes.

<http://www.dartmouth.edu/~volcano/>

- **EARTH SCIENCE HANGMAN**, Double click on any word from the Hangman game, and a little window with the definition opens! A fun game to pass time.

<http://charlesburrows.com/hangman/earthsci.html>

- **USGS EDUCATION MAP CATALOG**—Browse a collection of USGS maps and posters that are popular with educators. Topics include

More to come in the next edition!



Upcoming Events

- **Tuesday April 29**— **Geoscience Seminar Series** Presents Piyumi Obeysekara, Geoscience graduate student. *“Integrating Fluvial Geomorphology and Stream Ecology: Processes Shaping the Distribution of Freshwater Mussels in Connecticut.”* **3:30pm Beach Hall 233. Refreshments served!**

- **Wednesday April 30**—**GEOL 251 Earth Surface Processes Student Symposium**. Individual students will be giving brief presentations. Each will apply some aspect of the course to a subject or place of interest. The public is invited to attend. 12:00pm to 3:00pm. Beach Hall 233.

- **Friday May 2**—**MARN Seminar Series** presents Ann Bucklin, Marine Sciences. *“Holo*

Zooplankton Diversity” 3:00pm Room 103 Marine Science Building, Avery Point Campus.

- **Friday May 9**—**MARN Seminar Series** presents Tracey Sutton, Harbor Branch Oceanographic Institution. *“Deep Sea Fish Diversity”* 3:00pm Room 103 Marine Science Building, Avery Point Campus.

- **Fall weekends fill up quickly, so now is the time to start planning to take advantage of two fall field trip opportunities which will be within a relatively short drive of Storrs this year.** The 100th meeting of the New England Intercollegiate Geological Conference takes place from October 10-12 and will be based out of Westfield, Massachusetts. See <http://neigc.org/NEIGC/> for

more information. Field trip descriptions will be posted during the summer.

- In addition, the annual meeting of the New York State Geological Association takes place from September 26-28 and will be based out of Lake George on the far eastern side of the state. See <http://www.nysga.net/AnnualMeeting.html> for more information. Jean Crespi and Ray Underwood (UConn MS 2006) will be running a field trip on September 27 on “Transpressional deformation in Taconic slates and its relation to basement architecture.” If you’d like descriptions of the other field trips, which are not yet posted on the Internet, stop by and see Jean.

Earth Science Picture of the Day



EPOD from 4/5/2008— This photo shows a meteor impact melt cliff found in the central peak area of the Manicouagan Impact Structure, Quebec, Canada. Approximately 214 million years ago, an estimated 10 k (6.2 mi) wide bolide impacted here at a velocity of between 12 and 30 k (7.4 and 18.6 mi) per second. The resultant 100 k (62 mi) diameter crater is one of the largest impact craters still preserved on the surface of the Earth. The water filled circular annular moat that's prominent on images taken from Earth orbit is only one third of the size of the original crater. This moat fills a ring where impact-brecciated rock was eroded away by glaciation.

The illustrated impact melt cliff and talus (debris at the base of the cliff) is composed of target rock that was made temporarily molten from the energy released during the impact of the bolide. The heat released was so intense that's believed it took 1,600 to 5,000 years before the melted rocks cooled. There's no detectable meteorite component in the Manicouagan structure melt rock (Palme et al., 1978). This impact melt and talus outcrop is found in an inlet, cut into the central peak of the impact structure, known as Memory Bay. Since the impact, millions of years of erosion have created the existing landforms at the Manicouagan impact structure. *Photo*

by Charles O'Dale

251 Field Trips

Students from Earth Surface Processes were treated like royalty with a luxurious coach normally used for the athletic program. Here, they were boarding up for one of six field trips during Spring 08. We hauled water and gold pans uphill to fractionate several kinds of soils in order to understand initial conditions prior to sediment delivery to the Fenton River. (*Robert M. Thorson*)



Earth Surface Processes students on their last field trip of the year

Exciting Geo-Observations from Spring Break

Continued from last newsletter! Earth Surface Process— GEOL 251 student observations— Edited and interpreted by Robert M. Thorson.

Bajorek, Pam --- has driven by a large landscape rock in Winsted, CT before, but now saw it clearly for the first time, complete with its joint anisotropy. I suspect her Mom didn't even notice, or didn't let on.

Becce, Chelsae --- got to thinking about "exposed granular solids" when camping. Her campfire produced ash, which then became part of the soil, changing its texture and chemistry. Did she have sweet dreams of loam?

Bockus, Scott – The weight of a woodpile indents the soil with non-recoverable deformation. He got it right, not elastic, not brittle, but plastic deformation. (the compaction is not quite this simple). It was the addition of the water that made the soil plastic.

DeFrancesco, Alex --- "watched biomass grow," truly exciting in slow motion, especially for a farmer. Actually, he was working in his farm's greenhouses. His thoughts went to solar power, fossil fuel, and the heat from it, an exchange of energy we know something about. Only later, when less

excited, did he reflect on the chemical exchanges.

Feder, Daniel --- writes from Puerto Rico "somewhere," which is a pretty good start to not know where you are....walking down "what appeared to be a dry river bed." I like the qualification: the observation preceding interpretation. Ahh! Traction moved the large stones, likely fluid drag from an ephemeral stream. Corrasion. Polish. Good vocabulary....and stone concentration, i.e. particle hiding.

(Continued pg. 6)

GeoTrivia!

Fun with Geoscience Trivia

1. Aventurine, citrine, and amethyst are all types of what mineral (hint: photo!)?
2. In what field did Lord Rayleigh give his name to a series of waves?

3. What term is given to a fracture in a rock, normally vertical to bedding, along which no movement has occurred?

Check your answers:

http://www.geosociety.org/GSA_Connection/0804/trivia.htm





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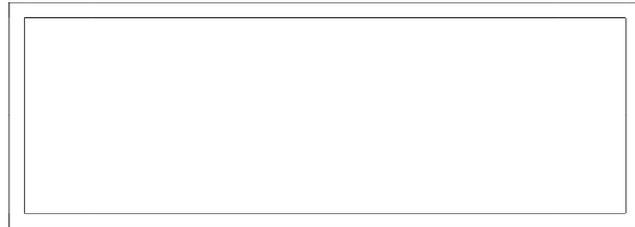
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The Center for Integrative Geosciences mission is to offer transdisciplinary programs of instruction and research that advance understanding of the interaction of biological, chemical, geological, and physical processes, including feedback mechanisms, at all spatial and temporal scales that have shaped Earth through geologic time, continue to shape the environment today, and which provide the basis for understanding the present and future impact of human activity on this planet.

We will be issuing these newsletters monthly throughout the academic year to keep associated students, staff, alumni, and faculty up-to-date on the Center's activities!



Geo-Observations continued...

Ford, Robin – worked at home, especially the raking of leaves, which, being sodden and slightly decomposed, stuck together to create a nearly continuous “armor.” Raking this up gave him a new appreciation of the strength of deciduous leaves against autumn storms. Less entrained sediment is the result. Not so in spring.

Heenehan, Heather – While on the interstate, her sister was impressed with Heather’s discussion of A/R and why chemical/mechanical weathering were dominant, if not exclusive. Then a small waterfall, a plunge pool effect in which grains are dislodged.

Isenberg, Alexandra – A childhood story of becoming bored at the seaside and deciding to go rock climbing at the distal end of the wave-cut platform. After enjoying the view, she encountered a rockslide, complete with a talus that shifted dangerously when she increased the torque on surface particles with her weight.

McIntosh, Patrick – spent time skipping rocks, noting angular momentum mattered. In the classic “Duhh” (aka eureka) moment, he noted that it makes a difference if the water is static or dynamic. The results for lake and river are not the same, the latter being more complex for reasons that he now understands.

Pearson, Jeff – Texas, the Lone Star State, isn’t only about cowboys and the seizure of old Mexico. It’s also about Padre (I’m a padre) Island a sand barrier with A/K/W/Gs/R. The “K” is a new one, for keg, which acted like a single large grain when undercut by the waves.

Psoter, Erika, S. – watching the old Planet of the Apes movie...noting that the Hollywood fake rocks didn’t look right. The set designers obviously never had this course or saw Pride Rock in Real Life. (a concatenation of our trip, the Lion King, and Dan in Real Life, all of which I liked).

Rego, Brian – Mt. Washington, New Hampshire. He made it. The amount of cobble-boulder-rock was striking. While breathing easily on a fast steep grade, he contemplated snow the thickness of the trees, as a reservoir holding the water, an in-out imbalance that is a wonderful thing for streams. He noted “trees on stilts,” which means that flow went below them. Now that’s what we call a tougher buffer.

Thomas, Collin – Reminiscence...4th grade...playing tag at parties...learning from the mistake of trying to escape being tagged by running up a 10 foot high pile of gravel. Had he known about Coulomb’s Law, he might have evaded the winner and not had such a vivid ESP experience.

Thorne, Catie – She went into orbit (actually MORBIT), while looking at mid ocean ridge basalt (MORB). Basalt pillows (due to plastic squeezing) and radial fractures (due to tensile brittle fracture), all due to pahoehoe lava being extruded underwater.

Tucci, William – while driving through Vermont he noticed the small mountains and hills. They don’t call it Ver (=green) mont (mountain) for nothing. He’s right about the rounding (rather than jagged) forms due to glaciation.

Vanterpool, Varicia – Danger! Autos skidding and sliding in very wet mud. We know about the “greasiness” of wet clay caused by the molecular absorption of water, and the plasticity it demonstrates at low threshold stresses.

Wasley, Anthony – showed me pictures of gorgeous beaches and hills, in Marina, California that resembled the fearful look at the exam question about coastal Chile. Great footprints in the transiently plastic fine grained (2-3 phi) sand with negative pore pressure. The slopes? Oh, they are definitely convex divergent. His girlfriend was impressed with his geological knowledge, which cannot be a bad thing...or can it?