

# Department of Geosciences



## The Boulder RUNdown - Fall 2005

### Geoscience majors on the rise!

We now have 24 Geoscience majors...

**14 in Geology,  
7 in Environmental Geoscience,  
and 3 in Earth Science.**

### New microscope video camera system.

The Department has invested in a state-of-the-art microscope video system that allows us to use the computer projection equipment in the tech classrooms to display microscope views. No more squinting at interference figures!

### Load up the Geovan...

Geoscience students have had a wide range of field opportunities this past year, including: Bancroft, Canada; Baraboo, WI; California WT; Death Valley, CA; and Appalachian Mts., MD-WV.

### Contact Us!

Visit our website at:

<http://www.depauw.edu/acad/geosciences/>

## Geoscience Students Win National Awards and Internships

In the past two years Geoscience majors have been awarded two nationally competitive scholarships from federal agencies and numerous internships with various universities and museums.

### Phil Mooney ('07) awarded Ernest F. Hollings Scholarship from the National Oceanic & Atmospheric Administration (NOAA)

Phil Mooney ('07) was notified this fall that he is the recipient of an Ernest F. Hollings Scholarship from the National Oceanic & Atmospheric Administration. Phil, who is presently studying abroad in New Zealand, will receive up to \$8000/yr of academic assistance for two years and will participate in a 10-week paid summer internship at NOAA or a NOAA-approved facility. Phil is a Science Research Fellow, was president of DePauw's Geoscience club last year, and is an avid (rabad?) cycling enthusiast. Phil worked with Fred Soster on the Lake Erie heavy metals research project, which was presented at the IAGLR meeting last May.



Sara Smaltz ('06) & Heather Byars ('06)

### Sara Smaltz ('06) worked as a summer intern at Indiana University's Center for Geospatial Data Analysis

Geology senior and Science Research Fellow Sara Smaltz ('06) participated as a summer intern at Indiana University's Center for Geospatial Data Analysis. Sara, who is a 2004-2006 recipient of the Barry M. Goldwater Scholarship, put her GIS skills to good use working on a remediation project in Lake County, IN for the Army Corps of Engineers. Sara has conducted research with Scott Wilkerson on detachment folds the past two summers and has had the results presented at both GSA and AAPG.

### Heather Byars ('06) participated in NSF-REU summer internship at the University of Southern Maine

Heather Byars ('06) spent a large part of her summer paddling a sea kayak from island to island along the coast of Maine in order to map structural features there. Specifically, Heather worked as part of an NSF-REU project entitled, "Digital Mapping and Strain Analysis of Deformed Veins and Intrusions: A Detailed Structural Analysis of Strike-slip Shearing Deformation Combining Traditional Field Methods, Global Positioning Systems, Total Stations, and Geographic Information Systems". Heather used both GPS hardware and GIS software to produce detailed maps of pseudotachylytes within the metamorphic rocks exposed on the islands. The overall goal of the project was to better understand the nature of slip along map-scale strike-slip faults related to the Appalachian orogen. The group's work will be presented at the NE GSA meeting in March 2006 at Harrisburg, PA.

These awards/internships follow on the heels of two successful internships last summer..Sara Baughman ('05), who worked for the American Museum of Natural History, and Dannena Bowman ('05) who participated as an NSF-REU intern at the University of Alaska-Fairbanks. Many other majors during this time also have worked with Departmental faculty on various research projects, most of which have been or will be presented at professional meetings.

MESSAGE FROM THE CHAIR

*Hello from DePauw! I hope this newsletter finds you and yours happy and healthy. We're in the midst of another semester here in Greencastle, now with a complement of 5 full-time, tenure-track faculty members with the conversion of Tim Cope's term position. We're delighted that Tim will be continuing on with us and look forward to his continued development of our GIS offerings and of field opportunities to exotic locations for our students.*



**Field discussion of topographic map patterns on WV-MD field trip**

*Speaking of students, our number of majors has been steadily growing. We presently have 24 majors in the Department up from a recent high of 21 majors last Spring. The group is a bright and energetic bunch who love to be in the field. Many took Tim's Winter Term last year to California and are contemplating joining him and Jeane on a Winter Term trip to New Zealand this coming January. It also appears that I'll have a large class joining me in Utah over Spring Break for Geologic Field Experiences.*

*On a personal note, I've been busy working on two projects and wrapping up a third. I've been splitting the majority of my time between work on 3-D stereo visualization of topographic landforms (part of my Faculty Fellowship) and writing several chapters for a 2nd edition of a structural geology lab textbook (my chapters mostly focus on maps and cross sections). I've also been writing a manuscript describing some of the detachment fold research that I conducted with Sara Smaltz ('06) and Dannena Bowman ('05), much of which I presented on our behalf at the 2005 AAPG conference in Calgary this summer.*

*Beth and the boys loved hiking in the Canadian Rockies and Glacier National Park after the conference. Zach is now 8 and Ben is now 4...both became experts at spotting ripple marks and mudcracks in the Precambrian strata in and around Glacier. Beth continues to work as GIS Specialist for DePauw's GIS Center...she gets to work on all kinds of projects with a wide variety of faculty and loves every minute of it.*

*Please stop by if you're in the neighborhood!*

*-Scott (mswilke@depauw.edu)*

Erratum

In the Fall 2004 newsletter "Message from the Chair", the final printed copy should have read: "Through your donations, our Departmental scholarship funds (Smith, Bieber, & Gault) have maintained balances to adequately address our student scholarship needs. Should you be considering a donation to the Department, please consider directing your donation to the DePauw Annual Fund (in lieu of an endowed Departmental Field Trip fund) or to the Departmental Jim Madison Fund."

Department Awards / Scholarships

**Ernest R. "Rock" Smith Memorial Scholarship**

Sara M. Smaltz  
Audrey E. Gehlhausen  
Mark J. Loomis

**H. Richard Gault Memorial Scholarship**

Phillip R. Mooney  
Kellie Packwood  
Kyle Smitley  
Charlotte Buehler

**Charles L. Bieber Memorial Fund**

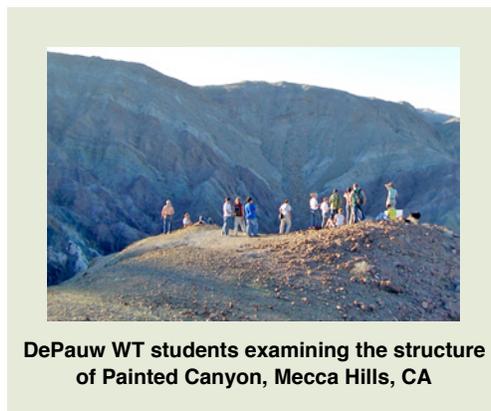
No one attended field camp.

**Charles M. & Frances Wylie-Condit Science Scholarship**

Chris Myrvold  
Heather Byars

**James A. Madison Fund for Research**

- Paid some student expenses for West Virginia Departmental field trip.
- Paid for stable isotope analysis for Big Walnut Creek research project (Mills).



**DePauw WT students examining the structure of Painted Canyon, Mecca Hills, CA**

Field Photos



**Structural Geology class studying cleavage at Van Hise Rock, Baraboo, WI**



**Field Experiences students mapping faulted Precambrian-Cambrian strata in the Resting Spring Range, near Death Valley, CA.**



**Chris and Sam conducting research on calcite dykes, Bancroft, Canada**



**DePauw WT students summit a large exotic block of eclogite in the Franciscan Complex, near San Francisco.**

## Tim Cope

I am now in my third year at DePauw, and I am pleased to say that this year (which was originally going to be the final year of my term position at DePauw) has become my first year of teaching in a tenure-track appointment. It certainly didn't take much persuasion to convince me to stay at DePauw—the department is fabulous, the students are bright, and the opportunities for unique teaching and research possibilities are abundant. As part of my new job description, I plan to develop a GIS curriculum at DePauw, re-tool a number of our introductory labs, and help to offer an expanded choice of field trip opportunities for students, including research and teaching trips abroad.

I have already begun to expand the GIS curriculum here by offering two new courses. *Introduction to GIS and GPS Mapping* (Fall 2004) is an intensive hands-on course that teaches the fundamentals of GIS and gives students experience in using GIS to solve earth science problems. *Exploring the Dynamic Earth using GIS* (Fall 2005) is a first-year seminar that utilizes GIS maps as a basis for teaching about Earth systems. Visit my website (accessible through our Departmental website) if you would like to see some GIS term projects from Fall 2004.



I also have been busy conducting geology field trips for both geoscience and non-geoscience students. Last Winter Term, 18 students (16 geoscience majors!) joined me on a three-week field trip through California. We visited Yosemite, the San Francisco Bay Area, Death Valley, and the Mojave desert (among other places), camping most of the way. This was a fabulous (and relatively inexpensive) trip, and I plan to offer it again in the near future. In Winter Term 2006, Jeane Pope and I will be leading 22 students on a field trip through New Zealand. We plan to visit both islands, and explore active volcanoes, an onshore plate boundary (the Alpine fault), glowworm caves, and more.

My research has been keeping me busy as well. Last summer I spent 6 weeks in southern China, exploring options for new research projects in eastern Tibet. Some colleagues from Stanford University (including my former advisor) and I covered over 5000 km on poor roads at an average elevation of 4000 m, and saw a vast portion of the high Tibetan plateau. In the process, I discovered several options for future research in this region, and I plan to write a PRF grant proposal to return there next summer. Although no DePauw students accompanied me on this initial reconnaissance trip, I do plan to bring one or more students along in 2006. -Tim ([tcopes@depauw.edu](mailto:tcopes@depauw.edu))

## F A C U L T Y N E W S

## Jeane Pope

Greetings from Maine!! Yes, you read that correctly. No, DePauw is not developing a field program in the Northeast (though that wouldn't be a bad idea!) Instead, I am on pre-tenure leave this Fall, which offers me a sabbatical from teaching and committee work for one semester. After much contemplation about what I might do with the time, my decision was to follow Thoreau's example and head off to a cabin in the woods to collect my thoughts and develop new ideas and projects for Hydrogeology and Geochemistry. Of course, I'll have more conveniences of the modern world (laptop computer, internet, mountain bike) than ol' Henry, but I hope that I also receive the benefits of getting back to nature. I have a visiting appointment with the University of Southern Maine and will be consulting with Charlie Fitts, a hydrogeologist and author of a textbook on this subject. Later this fall, I will be traveling to Blacksburg to work with Don Rimstidt at Virginia Tech on new and innovative ways of teaching Geochemistry. Between these trips I will be back in the Julian environmental lab, putting ideas into practice with new labs for the Hydrogeology and Geochemistry courses. It looks to be a busy semester, but I am very excited about the opportunity and extra time. As an incidental benefit, my current plan is to make fall last forever by following the changing leaves from Maine to Indiana to Virginia.

In January, I will be joining Tim Cope on a Winter Term to New Zealand! Since he designed the project, I'll let him tell you more about the details. Needless to say, I am very excited about the trip. Furthermore, it's quite the buzz among our current majors. Many of them are signed up for the trip, and we hope to meet up with other students of ours who have studied or will be studying at the University of Otago.

Alas, I will not be able to outrun the cold weather forever. The Spring semester will find me back in Greencastle and teaching classes associated with the Environmental Geoscience major. I'm sure,



however, that after all the traveling it will be nice to be home. Best wishes to you all! -JKP ([jpoppe@depauw.edu](mailto:jpoppe@depauw.edu))

## Jim Mills

Hello everyone! This past year has been very productive on many fronts. I continue to work on the upgrade of Earthquakes and Volcanoes to a full lab-based course and am looking forward to spending this coming spring on developing the lab exercises. If all goes well, we'll offer the new course in the fall of 2006. We've set a new record for Mineralogy this fall – 20 students! The Department has a very strong core of students, and it has been a pleasure to have them in Mineralogy this fall. Petrology may have close to ten students in the spring – another record!

Research with students is moving along briskly. Erik Melchiorre, Deb, Brandon Chapman ('01) and I have two articles in print. The first pertains to groundwater movement and recharge at Green Valley, a reclaimed coal mine site near Terre Haute, IN and the second article documents the occurrence of Xitieshanite (a hydrous iron sulphate mineral) at Green Valley – only the second known occurrence in the world of this mineral.

Chris Myrvold ('06) and Sam Rund ('08), both SRF students, worked with me on the Bancroft project this past summer. Our work this summer has led us to hypothesize that the calcite-dykes in this region are most likely re-mobilized metasomatized marbles, not mantle-derived carbonatites as we had initially thought. As always, we had a busy summer of collecting samples and analyzing the data.

Chris, Sam, Brett McArthur (SRF, '07) and I traveled to Salt Lake City, Utah in October to present poster sessions of our results of the past two summer's research at the national meeting of the Geological Society of America. We had some very interesting discussions while there. Best wishes to you all for the coming year!

-Jim ([jmills@depauw.edu](mailto:jmills@depauw.edu))

## Fred Soster

Hello Alumni! After a year-long leave in 2004, I returned to the classroom in 2005. I taught Sedimentology and Stratigraphy in Spring Term, 2005 and I am teaching Historical Geology and Senior Seminar this Fall Term. I completed several projects during my leave, including preparing and submitting a second manuscript for publication from the Yellowstone River project, data collection for a Lake Erie project that examines the impact of the zebra mussel invasion on the benthic fauna, and conversion of some course material to PowerPoint presentations. Two of my research students, Phil Mooney ('07), and Mark Loomis ('06), presented the results from their 2004 summer research that examined heavy metals in Lake Erie sediments at the Annual Meeting of the International Association for Great Lakes Research in Ann Arbor, MI last May. I am presently preparing this work for publication.



**Outcrop discussion of folding and sedimentary features at Roundtop, MD**



**Geoscience group at an anticline in the Keefer Sandstone near Franklin, WV.**

tackle football team that went undefeated and won the Superbowl in the Greencastle league last fall, he decided that soccer is a lot more fun and a lot less painful. He joined the Greencastle soccer travel team and managed to become the starting goalie. They play every Saturday and Sunday, so boating season ended prematurely this year. Hope to hear from some more of you this year so feel free to drop me an e-mail or stop by if you are in the vicinity.

-Fred ([fsoster@depauw.edu](mailto:fsoster@depauw.edu))

On the home front, Jennifer has settled into her new job as Director of Alumni Relations for the University and successfully orchestrated the Annual Alumni Reunion Weekend last June. Erica is now 15 and playing varsity soccer this fall. Frederick is 10 and after playing for the

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