



The Dickin-stone-ian

Department of Earth Sciences Participates in Coal Mine Trip

by Marcus Key



On 4 October 2011, Ben Edwards and I took 8 Earth Sciences students to Patriot Coal's Federal No. 2 mine in Fairview, West Virginia. The group of ten was mostly made up of students from Ben's Earth Materials class and my Sedimentology and Stratigraphy class. The students included Melanie Campbell ('15), Will Seward ('12), Leslie Milliman ('14), David Cruz ('13), Julia Rasamny ('13), Rebecca Rossi ('12), Paige Hollenbeck ('12), and Jeremiah Feldstein ('15).

We began with a lengthy safety training session where we learned how to use emergency breathing apparatus. Then we suited up in coveralls, heavy boots, hard hats, eye protection and hearing protection. We went down 100 feet in an industrial-sized elevator, loaded into an electric train car, and headed 4.5 miles back to the working face. The tour was led by an Australian mining engineer and an American geologist of Patriot Coal. The mine is producing bituminous coal from the 8 ft thick Pittsburgh #8 seam. This is the thickest of the Pennsylvanian cyclothem coal deposits in the area.

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A Letter from the Chair

Hi All. As I sit down to write this note at the beginning of July (I should have done this earlier in the summer but...), we have lots of news to share from the department and from alums. Ben Edwards has finished his three-year term and I've taken over the reins. We've graduated another cohort of fine students with a diverse range of interests and accomplishments. Visiting faculty continue to enliven and enrich our ranks. Mitch Scharman (PhD UTEP) joined us for the year and taught introductory courses and structural geology. We will miss him and wish him the best as he moves onto a visiting position at Bates College. We've also had an adjunct, Chris Ackley, teaching introductory courses each semester. We've taken several exciting extended field trips, developed some new courses, and expanded the rock prep and wet labs. Although my colleagues may be too humble to toot their own horns, we have much to celebrate too. Ben recently received a grant from the National Geographic Society to support additional research into subglacial volcanism in Iceland, last summer Marcus was asked to organize a summer sustainability program in Israel, and Jeff was elected a fellow of Geological Society of America. This sampling of accomplishments highlights the defining attributes of the department. We have, and remain committed to providing our students with opportunities to engage in fieldwork around the globe and to do innovative teaching. The department remains committed to global education and many of our majors study abroad. We are active in the College's Sustainability and Environmental Science efforts. After all, it is hard to study either sustainability or environmental issues without an understanding of how the Earth works.

Many of the exciting things happening in the department are directly related to your past support of student research and field experiences. For example, the William Vernon Research Prize in Geology and the Henry Hanson Research Prize in Geology have supported many of our senior theses including Bre Hashman's Organic-poor Neoproterozoic Banded Iron Formations from the Slave and North China Cratons, Paige Hollenbeck's Test of a methodology to quantify paleoseasonality using extant bryozoans from both sides of the Isthmus of Panama, Natalie Kormushoff's "Using a wave tank to compare landslide generated tsunamis to point source tsunamis and its implications for the east coast of the United States", Will Seward's "Growth of rye in Icelandic volcanic ash", and Claire Persichetti's "Soil Fertility: A Comparison between Organic and Conventional Agriculture". The Cassa Extended Field Trip Fund subsidizes fieldtrip costs for students allowing us to take them to diverse field areas including: Iceland, England, Scotland, and Wales, Sicily, Southern California, Hawaii, Death Valley, Grand Canyon, Zion, Yellowstone, Glacier, Acadia. Most recently in the spring of 2011 Marcus and Ben were able to take 13 students along with alumnus John Pohl ('78) to Mt. Etna! Finally, the Potter Lectureship Fund supports bringing a distinguished earth scientist to campus each year to interact with our students. This past spring we were delighted to have our 8th Annual Potter Lecturer: Frank Pazzaglia from the Lehigh University. His main public lecture was, "The Fall Zone; steep rivers and erosion: How Appalachian geomorphology has shaped our nation."

If you are able to contribute to any of these funds, please send a check payable to Dickinson College to Peter Sak, Dept. of Earth Sciences, Dickinson College, P.O. Box 1773, Carlisle, PA 17013-2896. Please indicate on the memo line which fund you would like to contribute to (i.e., William Vernon Research Prize, Henry Hanson Research Prize, the Cassa Extended Field Trip Fund and/or Potter Lectureship Fund). Our goal is to build the research funds to the point where we can provide some funding to all our seniors and offer Cassa-funded trips annually.

Keep in touch and come see us, Peter Sak

Construction on New Interdisciplinary Greenhouse to Begin this Summer

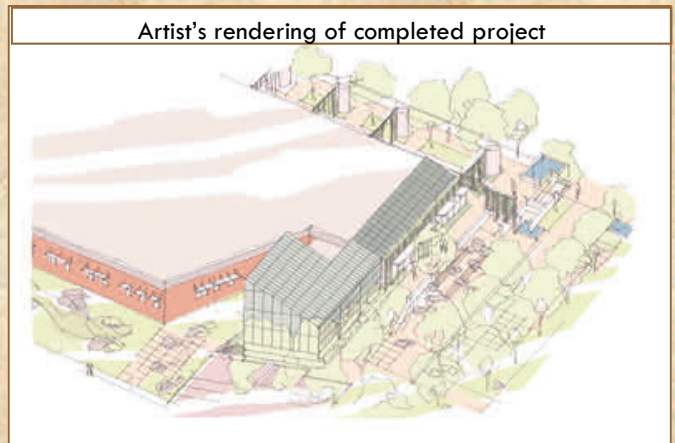
Funded by a \$1 million gift from alumni John '59 and Inge Paul Stafford '58, a new research-quality greenhouse will be erected on the grounds of Kaufman Hall this summer with an estimated completion in fall 2012.

The 1,400-square-foot state-of-the-art facility will include:

- three independent research zones
- a general-use greenhouse area
- solar panels, which will help to offset the electrical consumption
- an adjacent classroom-lab that will allow students to move conveniently from the greenhouse into the classroom and
- a preparation potting area and climate-controlled laboratory, which are critical to experiments and research on marine ecosystems, seasonally dependent plants and air quality.

When completed, the greenhouse is expected to greatly enrich student research resources, while also providing faculty with an invaluable hands on teaching tool for classroom instruction. While beneficial to the departments of biology and environmental studies, the building design will also include enhancements that will entice use by other science departments as well.

The project will also include significant landscaping on the south side of Kaufman Hall, which will give a distinctive new look to not only the building but the campus. The greenhouse will frame the science campus from the north and spotlight the location of the Center for Sustainability Education, a significant interdisciplinary undertaking that is bringing national attention to Dickinson for its leadership role in sustainability education and stewardship.



WE WANT YOU!!!

- ◆ Has your Dickinson education landed you the perfect career?
- ◆ Are you excited to tell people about projects you are currently working on?
- ◆ Are you involved in cutting edge work?

If you answered "yes" to any of these questions, the Earth Sciences department would love to have you back to campus to speak with our current majors.

If you would like to share your wisdom, knowledge and experiences with our students, please contact Marcus Key at key@dickinson.edu

Potter Lectureship Going Strong

In the spring we welcomed Professor Frank Pazzaglia (Lehigh University) as the 8th Annual Potter Lecturer. It was a real honor for the department to host Professor Pazzaglia. Frank has devoted much of his research efforts to unraveling the Miocene to recent evolution of the Susquehanna River and gave a stimulating public lecture entitled “The Fall Zone; steep rivers and erosion: How appalachian geomorphology has shaped our nation” to an overflow crowd. The following day Frank spent time interacting the majors and gave a technical talk (“Broadband geodesy and the growth of the northern Apennines, Italy”). As in past years (see chart for listing of past speakers and their affiliations) our students have enjoyed the opportunity to speak with established scientists about their career paths and research and career opportunities beyond the limestone walls. We are grateful to all the alumni and friends of the Earth Science department who continue to support the Potter Lectureship Endowment.

	Name	Affiliation
2005	Richard Alley	Pennsylvania State University
2006	Bruce Marsh	Johns Hopkins
2007	Rob Thieler '87	USGS-Woods Hole
2008	Jeremy Jackson	Scripps Inst. Oceanography-UC San Diego
2009	Mark Brandon	Yale University
2010	John Eichelberger	USGS-Reston
2011	Katie Huntington	Univ. of Washington
2012	Frank Pazzaglia	Lehigh University

Department Outreach to Area Schools

The Department, in an initiative to promote Earth Sciences in education, has invited area schools to campus to participate in labs and exercises that we feel would interest them. Below is a photo of our volcano simulation that was enjoyed by local grade schoolers of the Carlisle Area School District. I thought it was cool to watch too!



Picture Left: Man Made Eruption in all her glory!!

Picture Right: Grade Schooler looking on as the “volcano” erupts.



William Vernon Prize for Excellence in the Earth Sciences

Each year the faculty has the difficult task of deciding which graduating senior will receive the Vernon Prize for Excellence in the Earth Sciences. The prize is based on grade point average, service to the department and the college, and promise for the future.

In 2011, the prize was given to Everett Lasher. Everett was an excellent student and spent much time in service to the college in the student government and as an Admissions tour Guide. With much appreciation he was quite biased toward the department in talking up the major to prospective students. Working with Jeff Niemitz his senior research was on climate change effects on peak stream flow magnitude and frequency and potential legacy sediment remobilization. Part of that work has been accepted for publication in the GSA journal *Geology*.

Everett became hooked on GIS in his senior year and now works in the School of Sustainability at Arizona State University overseeing many of their GIS projects. He plans to go to graduate school next year.

The 2012 recipient was Breanna Hashman. Bre had a very full four years at Dickinson. She was involved in the Geological Society and other campus activities while maintaining an active research agenda and a full year of study at the Dickinson Science Program in Norwich, England. Her sophomore summer she worked at the Carnegie Institution Labs in Washington, DC doing isotopic studies on Pre-Cambrian rocks looking for signs of life. It was there that she found her passion for early life studies in banded-iron formations (BIFs). After her junior year abroad she worked with Dominic Papineau at Boston College learning about the organic and inorganic origins of BIFs. She traveled to the Northwest Territories to collect samples which she used in her senior honors thesis on the potential organic origins of BIFs in the Slave (Canada) and Anshun (China) provinces. Bre has been accepted to the University of Wisconsin to continue her work on BIFs and will begin there in fall 2013. In the mean time she will be learning more analytical skills at the University of Manitoba in their ion microprobe lab.



Photo Above:

Year End Picnic with faculty and graduating seniors

Front Row (L to R): Robert Dean (Earth Sciences Technician), Marcus Key

Back Row (L to R): Ben Edwards, Bre Hashman, Jeff Niemitz, Paige Hollenbeck, Claire Persichetti, Rebecca Rossi, Natalie Kornushoff, William Seward, Chris Ackley (adjunct faculty), Mitch Scharman (visiting faculty)

2011-2012 Senior Student Research Projects

Breana Marquette Hashman

Organic-poor Neoproterozoic Banded Iron Formations from the Slave and North China Cratons

Abstract:

Geochemical data suggest that Banded Iron Formations (BIFs) preserve a record of both abiological and biological processes. Klein (2005) suggests that BIFs are hydrothermally--influenced chemical precipitates, while many other studies suggest a biogenic component to the formation of BIFs through the oxidation of Fe (II) and the conversion of iron oxides to magnetite (Heimann et al. 2010, Widdel et al. 1993, Planavsky et al. 2009, Lovley D.R., 1991). In order to further understand the genesis of these rocks, a study was performed on ca. 2.85 Ga BIFs from the Slave Craton in Canada and on ca. 2.53 Ga BIFs from the Anshan province of the North China Craton. Mineral occurrences of possible biological relevance like apatite, sulfides, and carbonates were mapped in petrographic thin sections from both localities and found typically to occur in bands parallel to bedding. This is consistent with an authigenic origin within a diagenetic environment. No apatite-graphite associations were found in BIFs from either location, although these mineral-pairs were found interbedded in Neoproterozoic turbidites from the Slave Craton. Only BIFs from Anshan province contained minor amounts of carbonates, typically occurring in bands, with isotopically light $\delta^{13}\text{C}_{\text{carb}}$ values around -9‰ . Diagenetic oxidation of organic matter from Dissimilatory Iron Reduction likely accounts for these carbonate isotopic values as well as for the low amount of organic carbon in the samples. Only one BIF sample from the Slave had detectable levels of organic carbon with only about 0.02 wt% TOC and a $\delta^{13}\text{C}_{\text{org}}$ value of -25.7‰ .

Paige Hollenbeck

Test of a methodology to quantify paleoseasonality using extant bryozoans from both sides of the Isthmus of Panama

Abstract:

Quantifying seasonality is important for understanding past, current and future climatic and geologic changes. Techniques have been used to calculate mean annual range in temperature, however these methods have not incorporated seasonality (range in temperatures from winter to summer) experienced within an annual cycle. The ability to detect and distinguish among seasons can have many environmental, climatic and geologic applications. This study aims to develop a methodology to quantify seasonality in extant bryozoans from both sides of the Isthmus of Panama, the Pacific Ocean side that experiences seasonal upwelling and the Caribbean Sea side that experiences relatively constant sea temperature conditions. The methods tested in this study include MART (Mean Annual Range in Temperature) analysis (i.e. comparing zooid area across generations of zooids) and $\delta^{18}\text{O}$ profiling (i.e. oxygen $^{18}\text{O}/^{16}\text{O}$ isotopic ratio analysis to determine temperature across generations of zooids). The MART method was not able to detect seasonal upwelling trends and the MART temperatures were not consistent with literature values. The $\delta^{18}\text{O}$ profiling method was able to detect seasonal periods of upwelling on the Pacific Ocean side of the Isthmus. The $\delta^{18}\text{O}$ profiling method is therefore favored over the MART method in detecting paleoseasonality.

Senior Student Research Projects (cont'd)

Natalie Kormushoff

Using a Wave Tank to Compare Landslide Generated Tsunamis to Point Source Tsunamis and its Implications for the East Coast of the United States

Abstract:

This study models and compares the wave attributes of landslide generated tsunamis and earthquake generated tsunamis. The study region for landslide generated tsunamis is the Canary Islands off the coast of western Africa. Although landslides large enough to generate tsunamis can happen all over the world, this study focuses on the Canary Islands archipelago due to the potential threat of a landslide generated tsunami impacting the eastern coast of the United States (Grilli et al., 2009). A physical model analysis of wave height, wavelength, and run-up heights along the coast is used to determine the potential hazard of landslide generated tsunamis as compared to earthquake generated tsunamis (Masson et al., 2006). Experimental results suggest that landslide generated tsunamis were determined to have greater wave heights at the propagation source and shorter wavelengths than the earthquake generated tsunamis. However, run-up heights at the coast were found to be similar with only a 0.108 cm difference between the average run-up heights. These results have important implications for coastal areas of the United States, which low lying coastal areas might be at risk from a landslide generated tsunami. Two regions along the northern east coast of the U.S. that would be most at risk are the Hudson River estuary and Long Island, and the New Jersey coastline (Grilli et al., 2009). Florida was also determined to be another region of elevated hazard (Pararas-Cayanias, 2003).

William Seward

Growth of rye in Icelandic volcanic ash

Abstract:

The purpose of this study was to determine the effect on the early stages of plant growth from adding volcanic ash to soil. An experiment was conducted in order to compare the growth of rye plants in substrates composed of basaltic and trachyandesitic ash and peat moss to the growth of rye plants in substrates composed of quartz sand and peat moss. The results of the experiment showed that rye plants grew to significantly greater heights, weights, and root depths in the volcanic ash substrate. The average plant mass was 284.13 mg in basaltic ash and 348.48 mg in trachyandesitic ash, compared to 87.89 mg in poorly sorted quartz sand and 84.97 mg in well sorted quartz sand. The average root depth was 126.33 mm in basaltic ash and 163.33 mm in trachyandesitic ash, compared to 30.67 mm in poorly sorted quartz sand and 32.00 mm in well sorted quartz sand. Potential explanations for these results were investigated by examining the physical and chemical characteristics of the ash with the SEM microscope and XRF spectrometer. The XRF analysis showed significant leaching in certain trace elements, but it could not be interpreted as having a definitive effect on the plant growth experiment. The SEM analysis showed that the ash was significantly more vesicular than the quartz, but did not reveal any physical evidence of chemical leaching. The conclusion of this study was that the vesicular texture of the ash gives it greater surface area, facilitating the rye plants' access to water and soil moisture retention, and was responsible for increasing the growth of the plants during the experiment.

Senior Student Research Projects (cont'd)

Claire Persichetti

Soil Fertility: A Comparison between Organic and Conventional Agriculture

Abstract:

The objective of this paper is two-fold. The first objective is to conduct a meta-analysis of the current understanding of the influence that organic and conventional farming systems have on soil fertility within the context of inherent soil processes and characteristics. Overall, organically managed farms were found to have equal or higher levels of organic matter and essential nutrients relative to conventionally farmed soils. Organic management was also found to result in improved soil structure and aggregate stability. The case study found little significant difference between the organic and conventionally managed farms in terms of soil chemical fertility, however, organic matter and phosphorus levels were found to be significantly increased on the organic farm. The lack of a statistically significant difference between soil nutrient levels between the two farms suggests that, though the mechanism by which soil fertility is produced differs, both systems produce comparable soil chemical fertility.

Faculty Published Abstracts

(underlined name indicates student co-author)

2009

- ◆ Haynes, Courtney E. (Dickinson College, Department of Geology, Carlisle, PA, United States); **Niemitz, Jeffrey W.**, *Using 'legacy sediments' to determine past land use changes and future sediment release impacts on downstream ecosystems; Yellow Breeches Creek watershed, Cumberland County, PA. Geological Society of America, February, 2009, Vol. 41, Issue 3, pp. 110..*

2010

- ◆ Bhatt, M.P., Liermann, L.J., **Sak, P.B.**, Brantley, S.L., 2010, Basalt weathering rates vary with time and scale of measurement. *Geochim. Cosmochim. Acta* 74, A86 (abstr.).
- ◆ Buss, H.L., Dessert, C., White, A.F., Vivit, D., Blum, A.E., **Sak, P.B.**, Gaillardet, J., 2010, Mineral nutrient profiles and differing lithologies at three tropical critical zone sites. *Geochim. Cosmochim. Acta* 74, A133 (abstr.).
- ◆ **Key, M. M., Jr.**, G. A. Schumacher, and L. E. Babcock, 2010. Palaeoecology of commensal episkeletozoans fouling *Flexicalymene* (*Trilobita*) from the Late Ordovician Cincinnati Arch region. Pp. 227-228. In: *Programme & Abstracts, International Palaeontological Congress 3, London.*
- ◆ **Key, M. M., Jr.**, J. B. Knauff, and D. K. A. Barnes. 2010. "If you can't beat them, join them": epizoic bryozoans on predatory pycnogonids from the South Orkney Islands, Antarctica. *Terra Nostra*. 2010/4: 57-58.
- ◆ Lasher, G. Everett (Dickinson College, Department of Earth Sciences, Carlisle, PA, United States); **Niemitz, Jeffrey W.**, *The implications of climate change on stream flow and legacy sediment remobilization; Yellow Breeches Creek, Cumberland County, PA, Geological Society of America, November, 2010, Vol. 42, Issue 5, pp. 289*
- ◆ Ma, L., Chabaux, F., Granet, M., Pelt, E., **Sak P.**, Gaillardet, J., and Brantley, S., 2010, Quantifying weathering advance rates in basaltic andesite rinds with uranium-series isotopes: a case study from Basse-Terre Island, Guadeloupe: *Eos Trans. AGU*, v. 91, Fall Meet. Suppl. Abs.
- ◆ Miller, S.R., **Sak, P.B.**, Kirby, E., 2010, Relationship between fluvial geomorphology and erosion in the Pennsylvania Appalachians: Implications for landscape evolution: *Geological Society of America Abstracts with Programs*, v. 42.
- ◆ **Sak, P.B.**, Miller, S.R., Kirby, E., 2010, Hack vs. Davis: revisiting landscape evolution in an ancient orogen: 5th Annual Susquehanna River Symposium, Lewisburg, PA. [INVITED].
- ◆ Watson, Maunette (Dickinson College, Department of Environmental Studies, Carlisle, PA, United States); **Niemitz, Jeffrey W.**; Haynes, Courtney E., *Metals from legacy sediments and their impact on macroinvertebrates in Yellow Breeches Creek watershed, Cumberland County, PA. Geological Society of America, February, 2010, Vol. 42, Issue 1, pp. 180*

2010 Continued

- ♦ Wills, M.A., and **Sak, P.B.**, 2010, A Study of progressive deformation in the southern Valley and Ridge, Perry County, Pennsylvania: Geological Society of America Abstracts with Programs, v. 42.
- ♦ Witter, A.E., Baider, S., and **Sak, P.B.**, 2010, Distribution of PAHs in sediments along a rural-urban gradient in central PA: Assessing input sources and transport pathways using compositional analysis, GIS and multivariate methods: 5th Annual Susquehanna River Symposium, Lewisburg, PA. [INVITED].

2011

- ♦ Alcorn, R., Pollock, M, **Edwards, BR**, 2011, Construction of subglacial pillow ridges: insights from compositional variations in a 3-D exposure, Undirlithar quarry, southwest Iceland. Northeastern (46th Annual) and North-Central (45th Annual) Joint Meeting (20–22 March 2011), Paper 24-32.
- ♦ Bowman, L., Pollock, M, **Edwards, BR**, *Alcorn, R., 2011, Geochemical and field relationships of pillow and dike units in a subglacial pillow ridge, Undirlithar quarry, southwest Iceland, GSA Abstracts with Program, Minneapolis, 9 Oct.
- ♦ **Edwards, BR**, Karson, J, Wysocki, R, Gregg, T, 2011, Direct observations of lava-ice interactions: the Syracuse University Lava Project. IUGG 2011 Melbourne, IAVCEI Symposium V16: Subglacial and Subaqueous Volcanism.
- ♦ **Edwards, BR**, Pollock, M, Gudmundsson, MT, Russell, JK, Skilling, I, 2011, Petrology, Lithofacies and Structure of Glaciovolcanic Pillow Ridges: Iceland and British Columbia comparisons. IUGG 2011 Melbourne, IAVCEI Symposium V16: Subglacial and Subaqueous Volcanism.
- ♦ **Edwards, BR**, Russell, JK, 2011, Thermodynamic Constraints on Explosive vs. Effusive Onset of Glaciovolcanic Eruptions, *Eos Trans. AGU*, V31E-2578, Fall Meet. Suppl., Fall 2011.
- ♦ **Edwards, BR**, Ryane, C, Russell, JK, *Jansen, R., *Dunnington, G., 2011, Overview of glaciovolcanism in the Kawdy-Tuya volcanic fields, northern British Columbia and its implications for Pleistocene paleoclimate. IUGG 2011 Melbourne, IAVCEI Symposium V16: Subglacial and Subaqueous Volcanism.
- ♦ Jansen, R., **Edwards, BR**, Ryane, C, 2011, Origins of polymitic diamict at Kima'Kho, northern British Columbia, Canada. Northeastern (46th Annual) and North-Central (45th Annual) Joint Meeting (20–22 March 2011), Paper 24-2.
- ♦ Ma, L., Chabaux, F., Pelt, E., Granet, M., **Sak, P.B.**, Gaillardet, J., Lebedeva, M., and Brantley, S.L., 2011, Quantifying rind formation and chemical weathering rates in basaltic/andesitic weathering clasts with uranium-series isotopes: a case study from Basse-Terre Island, Guadeloupe: *Eos Trans. AGU*, v. 92, Fall Meet. Suppl. Abs. [INVITED].
- ♦ Miller, S.R., Kirby E., **Sak, P.B.**, and Bierman, P., 2011, Late Cenozoic fluvial incision through the Susquehanna River drainage basin: A response to dynamic topography?: Earthscope – GeoPRISMS Science Workshop for Eastern North America, Lehigh, PA. [INVITED HOT TOPICS TALK].
- ♦ Miller, S.R., **Sak, P.B.**, Kirby, E., and Bierman, P.R., 2011, Bumps in the long road to flat: *Eos Trans. AGU*, v. 92, Fall Meet. Suppl. Abs.
- ♦ **Niemitz, Jeffrey W.** (Dickinson College, Carlisle, PA, United States); Haynes, Courtney E.; Lasher, G. Everett, *Legacy sediment chemistry and land use: using small catchment basins to determine potentially harmful inputs to downstream environments*, *Geological Society of America*, October, 2011, Vol. 43, Issue 5, pp. 564.
- ♦ Rossi, R. K., and **M. M. Key, Jr.** 2011. Sourcing black limestone gravestones in late 17th century colonial Virginia. *Geological Society of America Abstracts with Programs*. 43(5): 294.
- ♦ Ryane, C, **Edwards, BR**, Russell, JK, 2011, Volcanic stratigraphy of Kima'Kho Mountain: a Pleistocene tuya, northern British Columbia, Canada. IUGG 2011 Melbourne, IAVCEI Symposium V16: Subglacial and Subaqueous Volcanism.
- ♦ Ryane, C, Russell, JK, **Edwards, BR**, Porritt, L, 2011, Armoured lapilli in glaciovolcanic deposits: origins and implications, *Eos Trans. AGU*, V51C-2531, Fall Meet. Suppl., Fall 2011.
- ♦ Ryane, C, Russell, JK, **Edwards, BR**, Porritt, L, 2011, Volcaniclastic deposits at Kima'Kho Mountain, northern British Columbia, Canada: A record of explosive glaciovolcanism. IUGG 2011 Melbourne, IAVCEI Symposium V16: Subglacial and Subaqueous Volcanism.
- ♦ **Sak, P.B.** and McQuarrie, N., 2011, Sequential development of the central Appalachian fold-thrust belt, Pennsylvania: A testable kinematic framework for crustal architecture: Earthscope – GeoPRISMS Science Workshop for Eastern North America, Lehigh, PA.
- ♦ **Sak, P.B.**, Vannucchi, P., Ujiie, K., Ohkushi, K., and the IODP Expedition 334 Scientific Party, 2011, Accelerated subduction erosion opposite the Cocos Ridge: Implications for the initiation of ridge subduction: *Eos Trans. AGU*, v. 92, Fall Meet. Suppl. Abs.

2012

- ♦ **Edwards, B**, Gudmundsson, MT, Oddsson, B, Hungerford, J, Skilling, I, 2012, Constraints on Emplacement of Lava Flows in Snow/ Ice-dominated Environments: comparisons of field and experimental observations to theory, 3rd IAVCEI Volcano-Ice Interactions on Earth and Mars Conference, 18-20 June, Anchorage, AK.
- ♦ **Edwards, B**, Karson, J, Wysocki, B, Lev, E, 2012, Experimental Insights on Lava-ice-snow Interactions, 3rd IAVCEI Volcano-Ice Interactions on Earth and Mars Conference, 18-20 June, Anchorage, AK.
- ♦ **Edwards, B**, Oddsson, B, Gudmundsson, MT, *Rossi, R., 2012, Field constraints for modeling the emplacement of the 2010 Gigjokull lava flow, southern Iceland: interplay between subaqueous, ice contact and subaerial lava emplacement, 2012 European Geophysical Union Meeting, Vienna, April 2012.
- ♦ Oddsson, B, Gudmundsson, MT, **Edwards, B** (2012) Interaction of lava and ice during the advance of a trachyandesitic lava flow in the 2010 Eyjafjallajökull eruption, Iceland, 3rd IAVCEI Volcano-Ice Interactions on Earth and Mars Conference, 18-20 June, Anchorage, AK.

2012 Continued

- ◆ **Seward, W., Edwards, B.**, 2012, Testing hypotheses for the use of volcano ash as low cost, natural fertilizer, 2012 European Geophysical Union Meeting, Vienna, April 2012.
- ◆ **Jeffrey Niemitz, Courtney Haynes, and Gregory Lasher.** *Legacy Sediments and historic land-use: Chemostratigraphic evidence for excess nutrient and heavy metal sources and remobilization.* Accepted to *GSA Geology*

Faculty Published Articles/Manuscripts

2009

- ◆ **Key, M. M., Jr.**, S. Vaughn, T. H. Davis, and W. Parr. 2009. ¹⁴C age control on a Rappahannock Native American site on Totuskey Creek (44RD0206) in Richmond County, Virginia. *Quarterly Bulletin of the Archeological Society of Virginia*. 64: 163-176

2010

- ◆ **Key, M. M., Jr.**, G. A. Schumacher, L. E. Babcock, R. C. Frey, W. P. Heimbrock, S. H. Felton, D. L. Cooper, W. B. Gibson, D. G. Scheid, and S. A. Schumacher. 2010. Paleoeology of commensal epizoans S. A. Schumacher. 2010. Paleoeology of commensal epizoans fouling *Flexicalymene (Trilobita)* from the Upper Ordovician, Cincinnati Arch region, USA. *Journal of Paleontology*. 84: 1121-1134.
- ◆ **Key, M. M., Jr.**, R. Teagle, and T. Haysom. 2010. Provenance of the stone pavers in Christ Church, Lancaster Co., Virginia. *Quarterly Bulletin of the Archeological Society of Virginia*. 65: 1-15.
- ◆ **Sak, P.B.**, Navarre-Sitchler, A.K., **Miller, C.E.**, Daniel, C.C., Gaillardet, J., Lebedeva, M.I., and Brantley, S.L., 2010, Rates of formation of basaltic weathering rinds vary with clast curvature: *Chemical Geology*, v. 276, p.129-143.

2011

- ◆ Hausrath, E.M., Navarre-Sitchler, A.K., **Sak, P.B.**, **Williams, J.Z.**, and Brantley, S.L., 2011, Soil profiles as indicators of mineral weathering rates and organic interactions on a Pennsylvania diabase: *Chemical Geology*, v. 290, p. 89-100.
- ◆ **Key, M. M., Jr.**, P. N. Wyse Jackson, and **L. J. Vitiello**. 2011. Stream channel network analysis applied to colony-wide feeding structures in a Permian bryozoan from Greenland. *Paleobiology*. 37: 287-302.
- ◆ Navarre-Sitchler, A., Steefel, C.I., **Sak, P.B.**, and Brantley, S.L., 2011, A predictive model for weathering rind formation on basalt: *Geochemica et Cosmochemica Acta*, v. 75, p. 7644-7667.
- ◆ Ryane, C, **Edwards, BR**, Russell, JK. 2011. The stratigraphy of Kima'Kho Mountain, Tuya-Kawdy volcanic field, northwestern British Columbia: a Pleistocene tuya. *Geol Survey of Canada Current Research, 2011-14, 12p.*

2012

- ◆ **Edwards, BR**, Gudmundsson, MT, Thordarson, T, Magnusson, E, Hoskuldsson, A, Oddsson, B, ***Haklar, J** (2012). Interactions between lava and snow/ice during the 2010 Fimmvorduhals eruption, south-central Iceland, *Journal of Geophysical Research*, 117, B04302, doi: 10.1029/2011JB008985.
- ◆ **Key, M. M., Jr.**, **J. B. Knauff**, and D. K. A. Barnes. 2012. Epizoic bryozoans on predatory pycnogonids from the South Orkney Islands, Antarctica: "If you can't beat them, join them". Pp. 133-148. In: A. Ernst, P. Schäfer, and J. Scholz (eds.). *Bryozoa Studies 2010, Lecture Notes in Earth System Sciences 143*. Springer-Verlag, Berlin.
- ◆ **Key, M. M., Jr.**, K. Zágóršek, and W. P. Patterson. 2012. Paleoenvironmental reconstruction of the Early to Middle Miocene Central Paratethys using stable isotopes from bryozoan skeletons. *International Journal of Earth Sciences*. DOI 10.1007/s00531-012-0786-z.
- ◆ Ma, L, Chabaux, F., Pelt, E., Mranet, M., **Sak, P.B.**, Gaillardet, J., Lebedeva, M., and Brantley, S.L., 2012, The effect of curvature on weathering rind formation: evidence from Uranium-series isotopes in basaltic andesite weathering clasts in Guadeloupe: *Geochemica et Cosmochemica Acta* v. 80, p.92-107.
- ◆ **Sak, P.B.**, McQuarrie, N., **Oliver, B.P.**, **Lavdovsky, N.**, and **Jackson, M.S.**, 2012 Unraveling the central Appalachian fold-thrust belt, Pennsylvania: the power of sequentially restored balanced cross sections for a blind fold-thrust belt: *Geosphere* v. 8, p. 685-702.

Faculty Awarded External Grants

- ◆ **EDWARDS: National Geographic Committee for Research and Exploration Grant:** Field documentation of water-ice-lava interactions in the 2010 Gigjökull lava flow (awarded \$19,870 for summer 2012)
- ◆ **SAK: Consortium for Ocean Leadership.** Constraining the rates, timing, and magnitude of subduction erosion along the Middle America Trench: IODP Expedition 334, \$14,823.

Professor Noel Potter

I am still happily “somewhat” retired. I continue to work on some local projects. Lidar has given a new view of the landscape, particularly in the forests on South Mountain where all sorts of periglacial features such as solifluction lobes and sheets left over from the Pleistocene abound. I also continue to serve GSA as “Section Meetings Senior Adviser,” a volunteer position in which I help section meeting chairs deal with budgets and hotel logistics. Helen still works at the PA Geological Survey, and our son Noel Lewis is now a Junior in high school. We are beginning to look at colleges, and of course he is totally contaminated by his parents so that he is looking at liberal arts colleges. It is interesting having been involved in admissions recruiting for Dickinson to see the college hunt from the side of a parent and son. I enjoy hearing from Department alums.

Try pottern@dickinson.edu

Professor Mitchell Scharman

I joined the Earth Sciences department at Dickinson College for the 2011-2012 academic year to cover the Planet Earth and Structural Geology courses while Pete Sak was on sabbatical. Coming to Dickinson from Idaho by way of El Paso, Texas, I have greatly enjoyed learning about and exploring the structural geology and tectonic history preserved in the rocks of the eastern U.S. which has provided a chance to view and learn about geology that is new to me. It has also given me a chance to use my knowledge and experience in the North American Cordillera – especially from my field and research experience in southern Alaska and the American southwest - to introduce different and new ideas of geology to both introductory students and Earth Science majors.



I greatly enjoyed working and collaborating with Ben Edwards, Jeff Niemitz, Marcus Key, and Pete Sak on many different aspects of geoscience education both in lecture and lab settings, as well as in science outreach events. I also greatly valued the numerous talks about the local geology and fieldtrips with Noel Potter throughout the year. I look forward to maintaining these excellent collaborative relationships and the experience gained in this excellent program to use as I move on to Bates College in Maine for the next academic year.

Professor Jeffrey Niemitz

Hello to all alumni graduating since the class of 1978. Wow, it doesn't seem possible that I am just finishing up year 35 at Dickinson. Lots has changed at the College not the least of which has been the students. Yes, I know I'M getting older and they are staying the same. It has been an interesting last two years so let's take it in chronological order.

Spring of 2010 I was on sabbatical and working on Legacy Sediments in the local watersheds. Legacy Sediments for those out of the loop are sediments trapped behind late 18th to early 20th century mill dams. They contain the runoff from 150 years of development (mostly agricultural and urban) in the eastern US. The best estimate is that there are ~65,000 of these dams many of which have been removed with the sediment being remobilized to downstream environments. I have had students working on these deposits in various ways for the last 3 years. Some of that work was just submitted to the journal *Geology* for publication and more is coming. My fourth student will be working on these again this summer; an interesting combination of natural and human historical geochemistry.

Last summer I had the opportunity to go to Africa (Zimbabwe) with a group called Forgotten Voices to do some water quality work on water supplies that affect kids with HIV AIDS or orphaned by the disease. We did a lot of test of wells and streams. As you might imagine the water quality in Africa is sketchy at best but fortunately most of the testing turned out to be acceptable. I also advised a bush (aka middle of nowhere) hospital on purification of their water drawn from a very nasty looking reservoir. We were there in the dry season so the water levels were particularly low and, of course, the cattle were grazing in the water as well. Makes you stop and think about what you have and how little we question our water and food supplies. The kids I met were just crazy cute and funny. You would never know they were orphans. Forgotten Voices helps orphans with all sorts of needs through local churches including farming, water, school fees, clothing, income generation for caregivers and so forth. It is a great model of how to help the African people directly and to help themselves.

The other big event last summer was the marriage of our son, Matt, to Mary Flynn Detlefs. The wedding was held in the Great Smokies of NC and was spectacular. They are living in NYC so we get to see them frequently. Two weeks later our second grandchild, Kate, arrived. She is, of course, perfect though her mother may beg to differ. We now have 2 grandchildren, Will (2.5) and Kate(0.75 yrs).

Professor Jeffrey Niemitz (cont'd)

In the fall, I was humbled to be elected a Fellow of the Geological Society of America at the annual meeting in Minneapolis. It was a great honor. This fall I taught in a mosaic; 4 thematic courses taught to the same students over one semester. The theme was African Climate Change. The new Director of the Sustainability Center, Neil Leary, taught an Environmental Change and Governance course centered on the UNFCCC Climate Conference in Durban, South Africa. Jeremy Ball in History taught an Ecological History of Africa course and I taught my Global Climate Change course with an emphasis on Africa. The fourth course was an independent study based on research at the conference.

In October, we spent time briefing US negotiators in Washington and between Thanksgiving and Christmas we spent 3 weeks in South Africa; two at the conference and one doing service work (AIDS orphanages) in the vicinity of Durban. It was quite an experience to be at the conference (20,000 people from 193 countries trying to agree on climate change mitigation and adaptation). I really never thought I would ever get to Africa and then I go twice in 6 months. If you are wondering it is 27,000+ km roundtrip and takes 17-19 hours one way depending on the season and winds. This summer looks like it will be positively boring compared to the last year and that is just fine with me.

Trish is also doing well. She started full time in school nursing this spring due to a personnel change at her school. She has decided to work for 2 more years and then retire. Hope all is well with you. We love hearing about your family and careers and, be assured, the light is always on at 230 Conway Street if you are coming through Carlisle. Please don't hesitate to stop and chat.



Professor Marcus Key

Greetings from Dickinson Earth Sciences! My knees turned 50 this last year, and I bought my first bifocals! I am on the long slippery slope of middle age. Maria's new 1987 Alfa Romeo Spider Veloce is helping me deal with that though. This past year we finished our first significant renovation to Kaufman, our new home since 2006. The Wet Lab off the Sedimentology-Stratigraphy-Paleontology lab was expanded to accommodate the giant wave tank that Jeff and Rob built. That lab is also the home of our new laser scattering grain size analyzer which helps us quantify grain size distributions at the finer end below what traditional sieving can handle. This year the paleontology teaching collection is getting a much needed curatorial overhaul to accommodate new donations from our alumni. Thank you Bill Berggren ('52), David Rilling ('62), Jim Turner ('67), and David Ellis ('83). Keep them coming!

On the teaching front, since the last newsletter I have taught Sedimentology and Stratigraphy for the 12th time, and I taught a new First Year Seminar on peak oil. The seminar was very timely, but last week the U.S. Energy Information Agency reported that U.S. petroleum product exports exceeded imports in 2011 for first time in over six decades. Hydraulic fracturing in North Dakota and Pennsylvania is temporarily ruining my peak oil predictions! The plus side is that the job market for our majors remains strong in the minerals and energy industries despite the global recession.

On the research front, I am on sabbatical this semester (spring 2012). My sabbatical project, conducted with senior major Paige Hollenbeck, is using C and O stable isotopes derived from bryozoan skeletons to quantify the onset of seasonal upwelling on the Pacific side of the Isthmus of Panama. This summer I will be working with senior major Rebecca Rossi applying the same isotope method to more temperate bryozoans from New Zealand. Our goal is to develop a way to quantify paleoseasonality that we can use in the fossil record. I am also wrapping up a few historical geoarcheology projects trying to determine the provenance of stones used in a colonial Virginia church on the coastal plain where there are no sources of stone. Using fossils, we have traced the floor stones to the Early Cretaceous Purbeck Limestone Group that outcrops along the Dorset coast of southern England and the tombstones to the Middle Mississippian black limestones in Belgium that outcrop along the Meuse River!

If you are ever in the Carlisle area, please let me know so I can rope you into giving a seminar to our students about what you are up to in your career (in exchange for a bevy or two of course).

Professor Pete Sak

It's hard to believe I've been at Dickinson for eight years now. Over this time, I've been expanding my research to explore Appalachian geology. My work in the Appalachians has been field based, with some projects focused on tectonic questions such as quantifying the amount of shortening across the Valley and Ridge and Appalachian Plateau and the magnitudes of incision throughout the upper Susquehanna River basin and other projects related to the geochemistry of weathering in the Great Valley. These local projects have been very rewarding and have allowed me to stay closer to home and engage more students and classes in the ongoing research projects. In addition to these local projects, I sailed on an Ocean Drilling Program Expedition offshore of Costa Rica last spring (2011) and am using data from that cruise to document the timing, rates, and magnitudes of subduction erosion along the Pacific coast of Costa Rica.

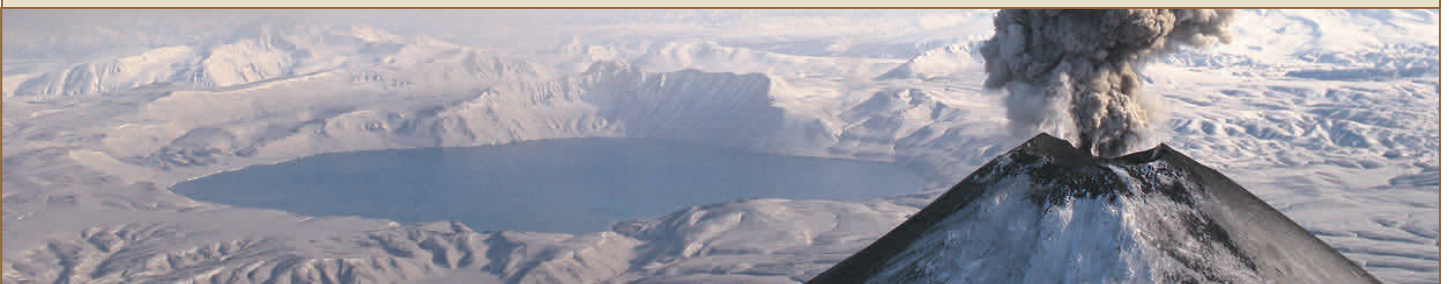
This fall I'll return to teaching after a year on sabbatical leave. I am looking forward to returning to the classroom and am excited to introduce a fresh crop of students to the geological wonders of Central Pennsylvania in intro courses. On the home front, Maya (4 ½) is growing like a weed and swimming, dancing, singing, and doing gymnastics. Linda continues to teach at Bucknell. We enjoy hiking, biking and paddling the many local trails and waterways when we aren't traveling to see family and friends. I truly look forward to hearing from department alumni and friends through email updates, campus visits, or upcoming conferences – please do stay in touch. Or better yet, join us for a field trip.



Professor Benjamin Edwards

Greetings after another very busy year in the Department of Earth Sciences! We're just finishing our second year with a new name and new course program, with lots of interesting preliminary successes. We have a great group of seniors graduating this year, who have traveled extensively during their four years at Dickinson (ALL five did at least a semester abroad!), and who have covered a broad range of interesting projects for their senior research (see abstracts and SR Bios), including growing plants in volcanic ash and characterizing soil on the college farm, using Bryozoans to study ocean circulation, creating tsunami in our large wave tank, and looking for clues of biological influences on the formation of Banded Iron Formation (BIFs). As Marcus and Pete are on sabbatical, Jeff and I have been hopping reading theses over the past few weeks! As of July 1 Pete takes over as department chair, so I am looking forward to being a bit (or maybe a lot) less of an administrator and focusing more on teaching and research for another 6 years (at least!).

This year I've learned a lot about our new curriculum, teaching for the first time a 6-hour version of combined mineralogy and petrology. We were uncertain as to how this would work, and the students did feel like they missed out on a few rocks – maybe this bodes well for my opportunities at teaching an 'advanced' petrology class! I also taught Earth History for the first time this spring, and have a much better idea of the sorts of information that we are delivering in the 'historical' part of the introductory sequence...I did have to cut ten out of Marcus's eleven bryozoan-based labs, but otherwise was very impressed with many of the hands-on lab activities that Marcus, Jeff, and Noel have developed over the years (including students making 'coal' from peat during lab). Finally I've been teaching a newly revised, non-lab Environmental Hazards course; we debated whether or not our new 200-level courses would be as successful without labs, and this first test suggests to me that we do need some sort of lab component in these courses. We are having larger discussions within the College's Physical and Natural Sciences Division (Div III) about teaching in general, and teaching load is an important part of the discussion. We earth scientists have one of the largest contact loads among any of the science departments, which, along with our research requirements and extra-curricular trips with students, means the college and students are getting great value for their dollars! We wouldn't want it any other way...



Professor Benjamin Edwards (cont'd)

Along with lots of new and interesting teaching insights, I've been relatively busy with a few different research projects. I'm finishing work now, including a paper just published in the *Journal of Geophysical Research*, on investigations of the two different lava flows effused during the 2010 Eyjafjallajokull eruption in Iceland (with field work help from James Haklar '11 and Rebecca Rossi '13). This research has added immensely to my insights about how lava flows interact with snow/ice, and that experience will give me a very different perspective as I continue to work on ancient glaciovolcanic deposits in British Columbia, Iceland, and likely other places TBD.

As part of this research, I was also invited to Syracuse University to pour basaltic lava flows (~1 m long, 0.3 m wide) onto ice using the unique, large volume lava production lab housed in the Syracuse Sculpture program – I'm not quite sure whether this is the start of a new career in experimental volcanology or just a brief interlude, but the experiments are fascinating and we're reproducing features that I've seen in BC and at the 2010 Eyja eruption sites. I've also very excited to begin writing up new constraints on Pleistocene ice-sheets and northern hemisphere climate change from Ar-Ar geochronology work in BC that is just now finishing. Finally, I've officially started both agricultural and archeological volcanology this year through the experiments of graduating senior William Seward and field work of rising senior Rebecca Rossi. Will used volcanic ash from Iceland to grow rye plants as a test of the benefits of fresh volcanic ash for agriculture. With the construction of the new greenhouse this summer at the south end of Kaufman, I am hoping to continue work on the use of volcanic rocks as soil additives. Becca is looking at the textures and geochemistry of our local south-central PA volcanic deposits, the Catoctin metarhyolite (probably familiar to all of you from various course field trips!), as it was quarried for thousands of years by early native American populations for tools, and apparently traded widely along the East Coast. So I'm following Jeff and Marcus in what is becoming a department speciality of doing geo-archeology.

For those of you who know my family, they are all healthy and very busy as well. This is the height of soccer season, so I'm generally running out of Kaufman at least a couple of afternoons each week to watch Teagan and the Carlisle High School girls soccer (I'm one of the unofficial game photographers and so can't miss too much of the action or my photos are a bit boring). Kaelan has decided to choose field hockey in the fall, and so is taking a bit of a sports break this spring and is instead occupied with a production of *MASH* by one of the Carlisle theater groups. Kim is a full-time substitute in Shippensburg, so we are up at 5.30 a.m. every morning to shower, breakfast, walk the dog, etc. So if you're in Carlisle and up for an early morning dog walk – be sure to stop by and help me practice Icelandic as I wander around the streets of Carlisle bright and early!

CLASS OF 1964

MERRITT "JIM" ALDRICH

I am continuing an investigation of the kinematics and dynamics of the accretionary prism that forms the Olympic Mountains. I am funding the project which makes it a great way to be doing research. I don't need to write proposals and am accountable only to myself and not a funding agency. Retirement is thoroughly enjoyable.



CLASS OF 1969



RUDY SLINGERLAND



Still teaching at Penn State. Present research consists of a multi-investigator study of river deltas in Louisiana and Labrador and an Appalachian basin black shale study (imagine that) funded by industry. Photo taken in Patagonia on a project last year studying Paleocene sediment environments.

CLASS OF 1971

SCOTT LAIRD

Marty (Quay Laird '73) and I will be celebrating our 40th anniversary next January. Our three daughters (Ellen '02, Molly, and Beth) have all finished college and pursuing their own careers. Ellen is the resident Program Assistant in D'son's Study Abroad Program in Bologna. After 38 years, I am still with URS in Fort Washington, PA doing mostly contaminated site remediation and some engineering geology. My work is now focused in PA and NJ. After a decade of service, I retired from the Board of Directors of the PA Council of Professional Geologists.



CLASS OF 1971 Cont'd**W. DAVID MENZI**

I am still at USGS as Chief of the Global Minerals Analysis Section of the National Minerals Information Center. Our website is <http://minerals.usgs.gov/minerals/>.

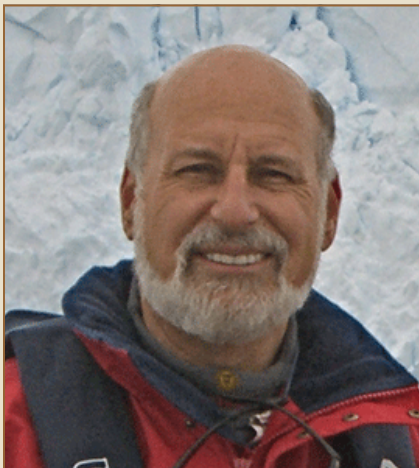
Strategic minerals have been of renewed interest in Washington, D.C. and as a result, in January, I testified at the U.S. Congress U.S. China Economic and Security Review Commission hearing on China's Global Quest for Resources and the Implications for the United States. I am also a member of the Working Group on Critical Minerals Criteria and Prioritization which is part of the Office of Science and Technology Policy's Critical and Strategic Supply Chain Committee.

I learned recently that a book that Don Singer and I authored, Quantative Mineral Resource Assessments--an integrated approach, is to be translated into Chinese!

Finally, I am scheduled to make a presentation for one of the classes at the War College on May 29 and will try to stop by the Department after the class.

Best regards

Dave

CLASS OF 1972**JOHN ENGLANDER**

While I always appreciated the grounding that my geo major gave me (the other was econ), I never really considered that it would be part of my career when I graduated back in 1972. Over the years, my unusual odyssey had me diving in the Bahamas for decades and afforded me the privilege of a lot of really amazing experiences- even two expeditions diving under the Arctic ice cap. When I was diving down a hundred feet or, even on a few submarines, I would look for submerged shorelines and recall my geologic training and perspective. Still I never linked it all together. For the last fifteen years I have struggled with how to explain climate change to the skeptics -- or for that matter to the public in general, something that had grabbed hold of me since some late night conversations with Jacques Cousteau, a few

months before he died -- yes, it was just as powerful as that image conjures. (If this all sounds like bragging, I regret that; it is the way I make this story personal and real) In 2007, standing on the shore of Greenland with some ultra wealthy yacht owners, I suddenly had the idea for a book about sea level, that might get people's attention.

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JOHN ENGLANDER (cont'd)

I would use a different time perspective than what is currently debated, one that is based on geologic history. It started with the perspective of paleo sea levels that I was fascinated by back at Dickinson, with the late Henry Hanson. (My others profs were Noel Potter and Bill Vernon -- glad to see they are both alive and well). The perspective of SL changing with the ice ages -- on natural cycles, even citing the 6m plus during the Eemian 120k yrs ago, and now being changed by CO2 levels that are 40% higher than they have been during the last millions of years -- tells a very different story than the current myopic discussion about climate change. For the last few years, I have been refining that story, weaving a thread to what will surely happen due to the glacial forces underway in Greenland and Antarctica, places I have been privileged to visit. I now actually look at all the relevant papers in SCIENCE Magazine and AGU and am able to tell a layman's story based on the latest science and am gaining a reputation as an expert. My book specifically cites my start at Dickinson Geo as the genesis of my understanding and perspective. So now four decades later, I do consider myself a geoscientist - usually introduced as an Oceanographer; my metamorphosis was just slower than most graduates. The book will be available this summer. For a description see the BOOK tab at www.johnenglander.net, You can sign up for e-mail notification when it is available on Amazon, or as an e-book. Glad to inscribe a copy for any Dickinson Geo people. Please visit my web site and drop me a note. If you're on LinkedIN, please connect there. On a personal note, I am married, with an 11 year old daughter, and live in South Florida.

CLASS OF 1974



GEOFF COE



Full-time fine art photographer specializing in wildlife (profiled in Summer 2011 issue of Dickinson Magazine). I travel throughout Florida (winters) and the Northeast coastline (late spring through early fall) selling my bird photographs at outdoor art festivals. Schedule is on my website: (www.wildimagesfla.com), feel free to drop by and say hello!

CLASS OF 1975

SARA HELLER BALDWIN



I retired from teaching at the College of Charleston in 1993 so I could stay at home and raise my three kids. It has been very rewarding, but less lucrative. At present my youngest child will be entering college in the next few years, so I need to get back into the employment world, particularly since I can't afford to retire. I would be interested in college teaching again. Anybody out there want to retire and need a replacement?



CLASS OF 1976



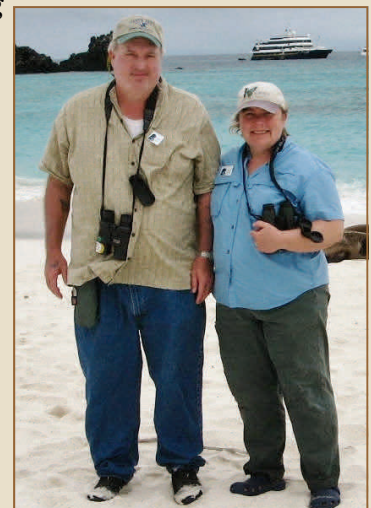
CHRIS D. STRAW DUSEL

Candidate for a MS degree in Negotiation and Conflict Resolution at Columbia University.

CLASS OF 1979

KEITH R. PARKER

After graduation in 1979, I got a job in Carlisle with Garland Heating Company. It was geology-related because I shoveled a lot of coal. (Anthracite, I was pretty sure!) My next job also had a Dickinson connection: I had become friends with a local "townie" over the foosball table in our frat house, whose father worked at Three Mile Island and was hiring decontamination technicians to clean up the TMI accident water. (It's OK for me to say "townie": I went to High School in Carlisle while my dad went to the Army War College, so I was in the "Post Toastie" subset of "townie" myself.) I got into the nuclear industry as a "deconner" at TMI (picture Garrett Morris mopping in the SNL sketch The Pepsi Syndrome), moved to the Oyster Creek Nuclear Generating Station in Forked River NJ in 1981, and worked there ever since. In 1982 I married Jackie Kimack ('81, Anthropology) and she works at Oyster Creek as well. We both joined the Union (IBEW Local 1289) in 1986. Jackie was a Union mechanic (big pumps, big wrenches!) for years and is now a Predictive Maintenance Supervisor for pumps, fans and all rotating equipment.



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KEITH R. PARKER (cont'd)

I joined the Chemistry Department in 1990 and am still a proud blue-collar rotating-shiftwork Union Kemtek. But thinking about retirement every day... No kids, but we had multiple Shetland Sheepdogs and rescue cats for decades. Now we have a more reasonable 2 Cardigan Welsh Corgis and 2 cats. In the late '80s we started birdwatching, and now that is our main spare-time occupation. We do numerous bird (and butterfly) surveys and coordinate it so our power plant environmental department gets credit for employee participation. We do a lot of native plant/butterfly gardening at home and we even put in a butterfly garden at work. How many Dickinson grads do you know with bird and butterfly tattoos? We travel all over the US for birding, also South and Central America, the Caribbean, Hawaii, Scotland, New Zealand, Greece, Galapagos and more. We are planning to retire in Cape May NJ, famous for it's weather/geography-induced bird migration. Everywhere we go, the birds are part of a complex ecology. The literal foundation of every ecology is the underlying geology. So even though I didn't continue with geologic academia (could you tell?) after Dickinson, I have deeper appreciation of every bird I see (and evolution in general) because of my geology background. Corny but true. Did you know Waggoner's Gap is well-known for fall hawk migration? Northwesterly winds after each fall cold front rise along the western side of the ridges. So hawks can glide southward along the ridges buoyed by the rising westerlies, and save their energy. And they do. Geology-based evolution, right before your eyes in PA! And some people think they have to go all the way to the Galapagos to see it... OK, geology pun warning: I played soccer at Dickinson, but had to quit my senior year. I had so many Geo labs I could never go to practice, and never played again. I still watch soccer with a passion though, I had season tickets to the Cosmos for several years, and still watch 5-10 televised games a week. But to still be playing at age 47? Jeff Cohen ROCKS!!

CLASS OF 1982**VICTORIA PORTO**

I am enjoying retirement very much. My 29 years as a professional geologist was extremely rewarding and most enjoyable. I now travel at every opportunity and remain involved with geology through committee membership in various organizations. I remain in my happy place pretty much constantly. I have traveled a great deal, with a goal set to make it to every continent, two to go, Antarctica and Australia; one high point (no pun intended) was when me and my husband summited Mt Kilimanjaro on my 60th birthday, three years ago. Obviously I was an older student when I graduated in 1982. Best regards to all.

CLASS OF 1982 Cont'd

BETSY STRACHAN SUPPES



I continue to do due diligence work for banks, law firms, oil companies and individual investors. I now have a website, www.forgedalegeo.com. Most of my professional work is currently focused on Appalachian shale plays and Gulf of Mexico deltaic reservoirs. I have two boys, Conrad and Sammy, who love when I come into their classroom in full geologist attire (rock hammer, hard hat, no-mex jump suit) and thrill their classmates with rock, mineral and fossil samples. Conrad recently completed his geology merit badge for cub scouts. My husband, Greg, good naturedly accepts the ever-expanding rock collection in our basement.



CLASS OF 1983

JOHN KASTRINOS

I am still at Haley & Aldrich in the Boston area (Charlestown) - going on 27 years!- and am now serving as the Hydrogeology Discipline Leader for the company. Though the "hey-day" of geologic characterization for environmental work is largely behind us, I manage to stay busy with work in environmental remediation work, commercial-scale ground-source heat pumps systems, and litigation support. More importantly, Margot DeNoie ('84, PoliSci) and I are enjoying raising our two boys, getting them out into the finer places of New England whenever we can, to hike, paddle, bike and ski (that's Mount Washington and the Presidential Range of New Hampshire in the background of the photo). I try and stay in touch with fellow Dickinson Geo grads Jeff Hoffer ('84) and Ann Tihansky ('83).



CLASS OF 1984

LAURIE M. BACON

The big scholastic news of the year is that sons Will and Sam will graduate (fingers crossed) from high school on May 25. They don't know, or aren't sharing, what they want to study or do with themselves, but perhaps I'll know more by the next department newsletter. (!) The big health news of the year is that Sam is now at the "maintenance" phase of his leukemia treatment, having been diagnosed June 2011. Fingers crossed that we don't see a reoccurrence of that! (If you live near Baltimore and need to use the facilities at Sinai Hospital, I highly recommend them - especially when it comes to pediatric oncology, which I REALLY hope you never need.) And about me - this is my 20th year teaching middle school science at a Baltimore k-12 girls school - so my professional life is much the same, even as it changes every year.

EDWARD FIGELMAN

In 1999, I began FigTree Environmental (www.figtree.us.com) providing sales and marketing support for various manufacturers of equipment used to collect and measure weather data. Of course, there have been the usual small business highs and lows over the past 13 years, but business is still growing each year and I am always looking for new products to promote (if you have any ideas definitely let me know)! Working from home in Wynnewood, PA allows me to spend time with my wife Claudia (Claudia Siegel '85) and two sons- Ricky age 17 and Michael age 15. Claudia and I remain lifelong friends with many local Dickinsonians we met during our years in Carlisle.

NANCY JARVIS MUELLER

I am still in LaFayette, NY with husband John and three children. In my "spare" time, I have been serving as a Dickinson Alumni Admissions volunteer. My job with the NYS Federation of Lake Associations, Inc. involves a wide variety of lake and watershed management issues, and I continue to coordinate the state's volunteer lake monitoring program in collaboration with the NYS Department of Environmental Conservation. During the summer of 2011, we added harmful algal bloom monitoring to the program since the number of NY lakes experiencing toxic blooms is on the rise. The appearance of some of our lake samples brought to mind a certain St. Patrick's Day (1983) when some "Geo-majors who shall not be named" borrowed some fluorescein dye from Henry Hanson's office and turned the Kline Center fountain a shimmering green!



CLASS OF 1991**GRETCHEN DOCKTER HANCOCK**

Things are great here in Connecticut - I'm still with GE, doing "sustainability" work, and managing our global environment, health & safety programs. I absolutely love it. Derrick's at Apple, and coincidentally ran into Noel Potter one day recently - he was in a Dickinson cap, and was apparently in Hartford for a Geology conference! I also realized (much to my embarrassment when I didn't recognize him right away) that Trent Harrison ('93) and I had kids in the same first grade class. Amazing. I keep telling all of these recent grads that want to work in "sustainability" that the ONLY way to do that with any credibility, is to be a geology major.

**CLASS OF 1992****ROLF V. ACKERMANN**

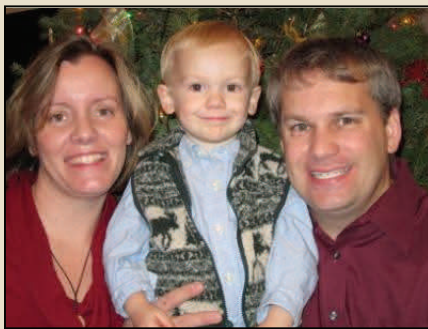
I'm still living in Houston, working in the oil and gas industry. I have been affiliated with research and technology development over the course of my entire career. Over the last few years I have been focusing on technology marketing within the industry. I was with BP when the Deepwater Horizon Gulf of Mexico incident took place and during the aftermath, which was an incredibly interesting experience. Since then I have taken a position leading Research, Development, and Marketing for a small geophysical services company. We focus on rock physics, seismic inversion for reservoir properties, and controlled source electromagnetics for assessment of fluid saturations. I'm learning a lot about program and people management, and really enjoy it. I am always using my problem-solving and communications skills acquired at Dickinson. On the personal front, things are good. I moved my parents to Houston in 2010 so I could care for them. I just completed a major renovation project on my home, which is located close to downtown and was built in 1910 (ancient by Houston standards!). I have two great dogs who keep me out of trouble. I occasionally see other Dickinsonians like Alyson Lighthart '92 and Amy Dinkins-Allen '93. Don't forget that there is a named scholarship at Dickinson in memory of Matthew Baker '92, who died in 1993; you can direct your gifts to Dickinson to it. The 20th reunion for the Class of 1992 is coming in June, and I am really looking forward to seeing lots of folks there! I have not seen the new science building yet, so I can't wait for that, too! If you're in Houston or attending AAPG, SEG, or EAGE, please look me up!

CLASS OF 1992 (Cont'd)**ALYSON LIGHTHART**

Greetings from forever ago! I'm thinking I won't make it for our 20th reunion this year, tempting though it truly is. Oregon is about as far from Pennsylvania as one can get, though that is not why I came here. I didn't come for the gorgeous geology either, though I can see Mt. Hood, Mt. St. Helens, and Mt. Adams all from the bridge that is a short walk from my house. We moved a year and some months ago, so I could take a position as Dean for Math and Sciences at Portland Community College. I love this work. I love this city. I do miss my friends though. We all need to keep better in touch somehow--take a cue from lava and move a little slower sometimes.

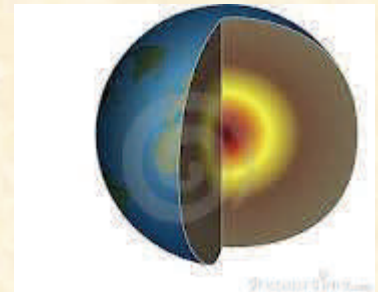


YAY GEOLOGY!

CLASS OF 1993**ANDY B. JUDD**

My big news since the last newsletter is that my wife Jennifer and I are expecting a baby girl, Katie, in July 2012! Our son Robbie will be 4 y.o. at the time. We're still living in Chester, NJ and continuing to work on our fixer-upper house a little at a time. I've been working with CH2M HILL for

16 years now as a hydrogeologist & project manager in Environmental Consulting.

**CLASS OF 1994****JULIE COLLINS**

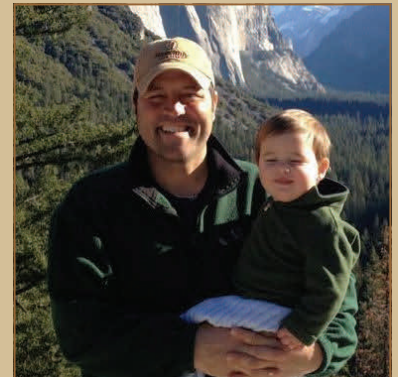
At the end of 2011, I moved to Carrboro, NC for a great opportunity to work for the Town's Recreation & Parks Department. I love it here! I am responsible for developing and supervising all of the town's youth and teen programs. This place feels like home and I will definitely be staying here for a while. People always ask how I got to this profession from degree in Geology - I got into recreation through developing Outdoor Education programs through the knowledge of the outdoors and the environment that I received from my studies at Dickinson. From there I just grew to love Recreation and the profession.

CLASS OF 1994 (Cont'd)**TRENT M. HARRISON**

My Oceanography and Astronomy classes have grown from 1 to 3 sections per Semester, and I have 4 (soon to be more) salt water tanks in the classroom for student inquiry and water quality testing. I incorporate as much Geology as I can into the Oceanography course (along with Marine Biology and Ocean Chemistry) as well as Planetary Geology into my Astronomy course. Still "Living the Life" in Newtown, CT with my lovely wife of 9 years, Cindy, our 8 year old son, Tyler Knight, and 6 year old daughter, Morgan Janelle, and our 2 Border Collies, Monty (10) and Tess (9). Weeks filled with Coaching, Scouting (Den Leader) and being Mr. Mom after school. Finally recovered from shoulder reconstructive surgery last year, only to rupture a disc in my back this year (clearing the 7 downed trees from the October Snowstorm...I'm not as young as I think I am anymore. Maybe if Alumni Weekend is not during my Final Exams, I can make it back to see the new building.

CLASS OF 1997**DEREK M. PEACHEY**

Stephanie and I moved to Sonoma County, California in January 2011. We welcomed our first son, Lane, on April 11th, 2011. Life in Northern California presents great opportunities for the amateur geologist...we have spent a lot of time in the Sierra, Blackrock Desert and Cascades. Planning to climb Mount Shasta in early June. I have had two Ken Brophy sightings in San Francisco since arriving on the West Coast. Planning to be back on campus for my 15th reunion in June and look forward to reconnecting with a few geology classmates!

**CLASS OF 1998****SARAH JABLONSKI KELSEY**

No Update....just a picture for the newsletter.



CLASS OF 1998 (cont'd)**MEREDITH S. ROBERTSON**

I joined the Foreign Service right after September 11, 2001. Since then I served in Iraq, Afghanistan, and Pakistan as well as other places in the Middle East. Right now I am enjoying a two year stint in Washington, D.C. and will serve somewhere in South America, as yet to be determined, in 2014. I have never enjoyed my geology background as much as I did when hiking along the Pakistan/Afghanistan border. Gorgeous - from a geologic perspective!

CLASS OF 1999**CATHERINE JAMET POWERS**

I am still living in the Denver area and raising my two children, Marion (3) & Avie (2). Both are old enough now to be interested in geology and we take little field trips around the Denver area to check out rocks and fossils. Their favorite place to visit at the Denver Museum of Nature & Science is, of course, the dinosaur exhibit. Marion attends a montessori preschool where she has been learning all about volcanoes. I beamed with pride the first time she showed me a mud volcano she had built in the backyard. On the professional front, I am about to start a part-time job with the USGS researching & cataloguing carbonate source rocks and reservoirs.

CLASS OF 2000**CHRIS JUNIUM**

Since my last update life has brought some big changes, and all in a very short time. After finishing up at Penn State I moved to Northwestern University for a 2 year post-doc working on ocean and atmospheric evolution during the Neoproterozoic snowball Earth episodes. I traveled twice to Australia for fieldwork in central and South Australia and Tasmania. During that time I got married to my wonderful wife Susan Parks, who I met while I was at Penn State. We found out in December 2010 that we were going to have a baby boy in August. In April I was lucky enough to be offered a tenure track position at Syracuse University which I happily accepted. Even better, Syracuse agreed to hire Susan; she is a biologist who specializes in the bioacoustics of whales and other animals. All the while, I was living in Chicago and Susan in State College. In July I returned to PA and Charlie Parks Junium was born on August 24th.



Cont'd on next page

CHRIS JUNIUM (cont'd)

Three weeks later our newly minted trio departed State College for Northwestern so I could wrap up some work while Susan was on leave from Penn State. Then in November we moved my apartment and Susan's house in State College to Syracuse. We both began our jobs at Syracuse University in January and are getting settled into the faculty life and taking care of a wonderful 8 month old boy. This summer I will be on the JOIDES Resolution participating in IODP Leg 342 to the Newfoundland Drifts and Susan will be tagging right whales in the Bay of Fundy. For my work we will be targeting records of Paleogene hyperthermals and the growth of the Antarctic Ice Sheet at the Eocene-Oligocene boundary. I have two MS students starting in the fall...should be fun!

CLASS OF 2001**JOEL KNAUFF**

I just celebrated year 3 at the Controlled Hazardous Substance Enforcement Division of Maryland Department of the Environment. I'm a geologist here with the responsibility of providing oversight to sites with non-petroleum contamination. These usually consist of sites contaminated by releases of substances, such as chlorinated solvents, metallic solutions, or compound solutions used in or created by industrial applications. These sites include both active sites, where responsible parties are known, and orphan sites, where the state oversees the clean-up due to lack of a 'responsible party' (bankrupt companies, "innocent landowner" defense, government-owned property, etc.). I bought a rowhouse just outside of Baltimore Maryland a little over two years ago and have continued to go on vacation once a year to geologically significant areas, like the Grand Canyon, Yellowstone, Cedar Breaks, Zion National Park, Bryce Canyon, Death Valley, the Great Smokey Mountains, etc., etc.

CLASS OF 2002**MEGAN GERSENY**

Almost two years ago I moved to Denver having decided my five year hiatus from geology into collegiate ministry and church-planting had been long enough. I relocated south from the small college farm town of Pullman, Washington to the sunny city life of Denver, Colorado. I am now a geotech for a small independent oil and gas firm, all thanks to a co-worker I did an REU with when I was sophomore at Dickinson. I am moving to Boulder this month and will also get to live near an old Dickinson alum, Lisa Beamer

'01, whom I have enjoyed reconnecting with since moving to Colorado. I absolutely love the area - same cultural feel as the NW but with closer mountains, more sunshine and milder winters - all good for this Florida native. I am excited to hit the trailhead a mile from my new home and spend the summer gallivanting around the Colorado Plateau.

CLASS OF 2002 (cont'd)

KATIE TAMULONIS

After 2 years in Texas, my husband Art and I moved to Pittsburgh, PA. I am a geologist for Shell Appalachia, and we are expecting our first child in May.



CLASS OF 2005

MICHAEL ASMUSSEN

I am still working as a staff Geologist for URS Corporation in Atlanta, Georgia, where I primarily conduct site investigations and work on soil and groundwater remediation projects at gas stations, car dealerships, dry cleaners, etc. However, my big news is that this past fall I finally stopped procrastinating and sat for (and managed to pass!) the ASBOG Fundamentals of Geology and Practice of Geology examinations, so I can now call myself a Professional Geologist (and enjoy the glorious trappings that come along with the title).

CLASS OF 2007

**MIKE BURNS**

I am currently in the second year of my PhD program at the University of Alberta and am working on growth, allometry, and intraspecific variation in armoured dinosaurs. In addition, I supervise volunteer fossil preparators at the UofA's Dino Lab and teach seminars in systematics and animal physiology.

MARGARET JACKSON

After graduating from Dickinson I spent two years in Morocco as a Peace Corps volunteer, where I conducted environmental surveys and ran informal education programs. I then spent a year teaching in Eastern Europe, and last fall entered a graduate program in Earth Sciences at the University of Maine. This spring I had the opportunity to conduct my thesis research in Antarctica, exploring the glacial and climate history of the Royal Society Range valleys, and stayed on for a second field season in New Zealand. I still don't know how to drive.

CLASS OF 2010

GWEN DUNNINGTON



In January of this year, I packed up and drove out to California to begin teaching at Astrocamp, a physics and astronomy camp for middle school kids. I teach lab-based earth and planetary science classes with just about the coolest set of science toys you could ask for, including phosphorescent walls, dry ice, liquid nitrogen, ziplines, lasers, and superconducting magnets. It's been an awesome opportunity to try teaching and to explore southern California geology, and I've found working with kids to be a lot more fun and satisfying than I ever expected. I'm excited to work teaching into my graduate school plans! I've also

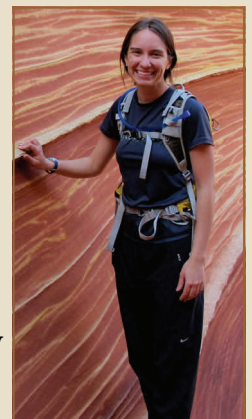
been lucky enough to see some amazing geology in the past few months! I just got back from a trip to the southern rim of the Grand Canyon, and I got to visit Zion National Park and some crazy toadstool formations on the drive out to southern California. We got to go trilobite hunting just a few weeks ago in a terrifying back-country army vehicle (affectionately known as the twelve-passenger death mobile), and I'm still planning to look up the lava tubes we visited on the CASA trip in 2008. The land out here is just amazing! No earthquakes just yet, but, as I'm sitting relatively safely on a big batholith, I'm hoping..

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MARCI WILLS

I am currently living in Flagstaff, AZ where I'm in my fourth semester of my geology masters program at Northern Arizona University. I plan to graduate next December, but... then again I'm not in much of a hurry because I absolutely love grad school living in Flagstaff! My thesis research involves analyzing garnet compositions of Sevier orogen pelitic schists to link metamorphic P-T paths with mapped extensional structures. I also teach two sections each of undergraduate mineralogy and petrology labs here at NAU. Outside of school, I've been working as an instructor for the Museum of Northern Arizona's Kids Discovery Camps but I am just now starting a new job with the National Parks Service. I will be doing 'interpretation' work for the three national monuments in the area: Wuptaki, Walnut Canyon, and (the best) Sunset Crater Volcano National Monuments. Otherwise, I try to spend as much time as possible exploring the deserts of the southwest, and the many miles of trails around Flagstaff. I am very thankful for my geology experiences at Dickinson which prepared me well and led me to this stage in my life!



CLASS OF 2010

ROBERT JANSEN

After graduating from Dickinson, I relocated to Denver, Colorado and started working as a Geology Technician at Bill Barrett Corporation. The work has been very exciting and includes database management, abundant GIS, and all aspects of the geologic spectrum, with a particular emphasis on stratigraphy, structural geology and petrology. Being exposed to the physical side of geoscience, as well as the more technical side (GIS, database work, other computer programs), was something I enjoyed at Dickinson, and it has been invaluable during my first year since graduation. I hope to continue working at BBC, and am currently considering graduate programs at the Colorado School of Mines. Outside of the office, I am taking in all that this state has to offer, and am hoping to finish climbing Colorado's 58 14,000' peaks this summer.

**Coal Mine Trip
(cont'd from cover page)**

We saw a variety of shale partings and layers of pyritic concretions. We visited the loud and dynamic longwall mining working face. The technology and rate of production were impressive. As the longwall mining machine moves through the seam, it drops the roof behind it 8 ft which results in a topographic lowering of 2-3 ft at the surface, some 1000 ft above. After a company-supplied late luncheon, we headed home with a brief stop at the famous Sideling Hill syncline in western Maryland. This trip was made possible due to the connections of Hank Baumann at PPL, father of Marc Baumann ('13).

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