



## **The Champlain Thrust**

### **News from the Department of Geology, UVM**

***2011/2012***  
***Department News***



#### **Greetings from the Chair:**

Greetings from the corner office of Delehanty Hall. I am glad to announce that I have survived my first year as the new department Chair. The fact that a couple of faculty were on sabbatical probably helped!

As always it has been a busy and productive year in the department. Below is a very brief summary of our activities. Many more details can be found in the individual faculty sections.

Both Keith Klepeis and Paul Bierman are back in full swing after enjoying a “break” (i.e., sabbatical leave) in spring 2011. They both have been traveling quite a lot around the globe doing

fieldwork, and it is nice to see them back in the classroom to share their new experiences.

In the last newsletter I reported on Greg Druschel’s promotion to Associate Professor. Unfortunately for us, he has been offered an excellent position at Indiana University-Purdue University in Indianapolis and will be leaving UVM in January 2012. There, he will be joining the Department of Earth Sciences. We all wish him ongoing success as he transitions into a new phase of his career!

John Hughes, along with colleagues in the Chemistry Department, was successful in acquiring a single-crystal diffractometer through NSF. The instrument was installed in Chemistry and is producing exciting new data. I am also pleased to report that John was elected to a three-year term as Vice President/President/Past President of the Mineralogical Society of America. Congratulations!

Char has become quite a globetrotter recently. Last spring she traveled to England, Wales and Ireland, and this winter she’ll do fieldwork in Egypt with her new graduate student, Steven Gohlke. All that, combined with her heavy teaching load (Strat/Sed is being offered again) assures that she never gets a chance to get bored...

Laura Webb’s first UVM graduate student, Kyle Ashley, finished his MS during the summer and is now pursuing a PhD at Virginia Tech. Activities have been ramping up significantly in Room 201, the location of Laura’s soon to be

completed noble gas mass spectrometry facility. She recently hired a very talented and extremely motivated laboratory research technician, Dan Jones. Watching the two working in the lab surrounded by all kinds of tools and sophisticated equipment is a lot of fun. Not much has changed for Stephen: when he is not teaching, with a bit of luck one can spot him somewhere out there in the field, mapping and digging, always looking for new and exciting clues related to the glacial history of our region. The summer 2011 Regional Geology trip to Colorado was a great success. Stephen Wright and Jo Palmer (graduate teaching assistant) did an excellent job leading a group of eager undergraduate students on a “tour” of some of the most impressive geological attractions of the state. They even managed to bring them all back home (I am sure some of the students would have gladly stayed in Colorado). Once again Jack has managed to collect all the information needed to put this newsletter together. As usual, not an easy feat! He has also been of tremendous help with the Perkins Museum tours. We have Gabriela, Robin and Srebrinka to thank for keeping our small but rather complex (in the words of the Dean’s Office...) Department running. There is really never a chance for our support trio to get bored, and without them the place would fall apart pretty quickly!

I know belts are tighter than ever these days, but we could really use your help. The next time the UVM Alumni Affairs office calls or sends you a fundraising letter, don’t hang up or recycle that envelope! Think about making a donation to support UVM Geology. This can be done either through the Development Office by earmarking it for the Geology Department or donations can be made directly to the department itself. If you would like your donation used for a specific purpose that can also be indicated. All of your funds go directly to students. This really IS a case of “every penny helps.” On behalf of everyone in the Department, thanks to all of you who have been making donations.

## Department Faculty



### **Char Mehrtens, Professor (Stratigraphy, Sedimentation, Carbonate Petrology):**

Hi all! It’s a good thing that Jack agrees to do the newsletter every year as it forces me to sit down and think about what has gone on in the past year. It always makes me feel better to remember what happened (and it’s my annual check on my memory health!). Fun things: visiting Jack and Ruthie Drake in March in Santa Barbara area for golf (we met 2010 alum Graham Hagen-Peter there for news on his grad career at UCSB). Late spring brought travel to England, Wales and Ireland. The first stop was to pilgrimage to Down House, Charles Darwin’s home in Kent. In all my travels, I never got there before. It was worth the trip. From there I went to Cardiff, Wales, where Dave Rickard hosted me at Cardiff University. UVM Geology and Cardiff recently established an exchange program and I was trying to iron out the bugs between the UVM and British systems so both sides of the pond had some idea what we wanted/needed our students to be doing at the other school. I gave a talk on my work (with Keith) in Patagonia. Dave was super kind and schlepped me all over Wales and western England looking at rocks (so I would have an idea what our students might be able to see) and having gourmand pub lunches. Life is tough. From that I needed a vacation and I met Meg Modley in Ireland for a week on the west coast, biking, walking and imbibing our way around the Aran Islands (heads up on that one...there aren’t sheep there anymore and the famous Aran sweaters are now made from imported wool). The geology was actually spectacular there (if you like Carboniferous limestone, which fortunately I do). June was spent doing field work down in the Middlebury area with grad student Megan Scott and undergrad Amanda Northrop (Amanda received some grants from UVM and Geology for her undergrad research project, trying to date the Middlebury Limestone with conodonts). July was spent at beloved camp in the Adirondacks, although Geol 001 labs got overhauled and syllabus for Strat/Sed developed when I wasn’t recreating. This fall I’m teaching Geol 001 again and, for the first time in many years, Strat/Sed. I decided to do as much field work as possible with that class so we have gone on weekend field trips to the Northampton, MA region (Triassic-Jurassic non-marine sed), Duxbury MA Beach (modern shorelines), and Crown Point NY (Ordovician limestones) with the usual local Cambrian rocks thrown in. It’s been fun but it’s generally created havoc by consuming “catch up” (and

golf) time on the weekends. The biggest news of the fall is my upcoming field campaign in Egypt! Along with new grad student Steven Gohlke (from UT Austin) we are accompanying Hamilton College colleague Barb Tewksbury and others to southern Egypt to help Barb on a structure project she's doing involving Cretaceous and Tertiary limestones. After some thin section work I did for her last year, Barb decided it would help to know more about the burial history of the limestones and their possible influence on brittle deformation, so, Steven and I are going to Egypt in December-January! This will be Steven's field season. Send positive vibes for political calm there! Please keep sending news of your activities. It is ALWAYS great to hear from everyone.

<http://www.uvm.edu/~cmehrten/>



Just a little R&R in Ireland!!



**John M. Hughes, Professor (Mineralogy, Crystallography, Crystal Chemistry):**

I am pleased to update my activities since my last report; it has been a busy time here in the Department. Our equipment holdings have continued to increase here in Geology. Our new powder X-ray diffractometer, supported by the National Science Foundation, has been humming along and is quite busy. I am teaching the X-ray diffractometry course for the second time, and there is a great group of students in the course. We also were successful in our efforts to attract NSF funds for a new single-crystal diffractometer that is installed in the Chemistry Department. The instrument is up and running, and producing great data; it is nice to have a diffractometer again. I have a graduate student arriving in January to begin his graduate program, and he will be using the instrument extensively. I had a wonderful field trip with some colleagues this

summer to the Uravan district of the Colorado Plateau. We went into several mines, some abandoned and some active, and collected a great suite of minerals, including a lot of hughesite. It was a great trip, and hopefully one that we can take with students someday.

This summer I was honored to be elected to a three-year term as Vice President/President/Past President of the Mineralogical Society of America. I have been involved with the Society for many years and a member for 32 years (!), and I am pleased that I can serve the Society in this way. Having served on MSA Council as Treasurer for four years I know it is a time-consuming task, but a very rewarding one as well.

On a personal note, on October 15 Susan and I became grandparents for the first time, as our son Gareth and his wife Amy gave birth to Belle Halladay Hughes. Belle Halladay is simply beautiful, and we get new pictures of her daily. We even got to hold her on her birth day. Needless to say, there are more trips to Brooklyn in our future... if you bump into me, I will certainly show you some pictures!

Below are some of the publications from that past year.

Kampf, A.R., **Hughes, J.M.**, Marty, J., and Nash, B. (In Press) Gunterite,  $\text{Na}_4(\text{H}_2\text{O})_{16}(\text{H}_2\text{V}_{10}\text{O}_{28}) \cdot 6\text{H}_2\text{O}$ , A new mineral with a doubly-protonated decavanadate polyanion: Crystal structure and descriptive mineralogy. *Canadian Mineralogist*.

**Hughes, J.M.**, Derr, R.S., Cureton, F., Campana, C.F., and **Druschel, G.** (In Press) The crystal structure of cavansite: Location of the water molecules and hydrogen atoms in  $\text{Ca}(\text{VO})(\text{Si}_4\text{O}_{10}) \cdot 4\text{H}_2\text{O}$ . *Canadian Mineralogist*.

Kampf, A.R., **Hughes, J.M.**, Marty, J., Gunter, M.E., and Nash, B. (2011) Rakovanite,  $\text{Na}_3\{\text{H}_3[\text{V}_{10}\text{O}_{28}]\} \cdot 15\text{H}_2\text{O}$ , a new pascoite family mineral with a protonated decavanadate polyanion: Crystal structure and descriptive mineralogy. *Canadian Mineralogist*, 49, 889-898.

**Hughes, J.M.**, Rakovan, J., Ertl, A., Rossman, G.R., Baksheev, I., and Bernhardt, H.-J. (2011) Dissymmetrization in tourmaline: The atomic arrangement of optically sectoral-zoned triclinic Ni-bearing Mg-rich tourmaline. Invited paper, *Canadian Mineralogist*, 49, 29-40.

Luo\*, Y., Rakovan, J. Tang\*, Y., Lupulescu, M., **Hughes, J.M.** and Pan, Y. (2011) Crystal chemistry of Th in fluorapatite. *American Mineralogist*, 96(1), 23-33.

**Bierman, P. R., Corbett, L., Finkel, R., Graly, J., Hughes, J.M., Lini, A.,** Neumann, T., and Rood, D. (2011) Ancient, slowly-eroding soil preserved beneath the summit of the Greenland Ice Sheet. Geological Society Annual Meeting, Minneapolis, MN, October, 2011.

Kampf, A.R., **Hughes, J.M.**, Marty, J., and Nash, B. (2011) Postite,  $\text{Mg}(\text{H}_2\text{O})_6\text{Al}_2(\text{OH})_2(\text{H}_2\text{O})_8(\text{V}_{10}\text{O}_{28}) \cdot 13\text{H}_2\text{O}$ , a new mineral. Report to the *International Mineralogical Association Commission on New Minerals, Nomenclature and Classification*.

Kampf, A.R., **Hughes, J.M.**, Marty, J., Gunter, M.E., Nash, B. (2010) Rakovanite,  $\text{Na}_3\{\text{H}_3[\text{V}_{10}\text{O}_{28}]\} \cdot 15\text{H}_2\text{O}$ , a new mineral. Report to the *International Mineralogical Association Commission on New Minerals, Nomenclature and Classification Names*.

Kampf, A.R., **Hughes, J.M.**, Marty, J., and Nash, B. (2010) Gunterite,  $\text{Na}_4(\text{H}_2\text{O})_{16}(\text{H}_2\text{V}_{10}\text{O}_{28}) \cdot 6\text{H}_2\text{O}$ , a new mineral. Report to the *International Mineralogical Association Commission on New Minerals, Nomenclature and Classification*



Just getting ready to identify, yet,  
another new mineral



**Paul Bierman, Professor (Geomorphology, Geohydrology, Isotope Geology Applied to Landscape Change):** This has been a year of traveling for me, doing geology around the world. After living up in Greensboro, Vermont for the winter, I spent 10 days working along the southern coast of South Africa in April, 10 more days in Greenland in May, 2 more weeks in Namibia in August, and just now I am coming home from a week in Brazil. All the trips were amazing, both for the landscapes I saw and the people from other cultures that I had the opportunity to spend time with. And the food, wow. Amazing seafood in Greenland, exotic antelopes to eat in Namibia, and amazing beef in Brazil - all local. Now it's time to stay home for a little while and get ready for nordic ski season and a couple 50 km races. Christine continues her work with the Governor's Institute and sends the following

“I've been busy traveling this summer (Germany, South Africa, Namibia) and fall (Brazil, Minnesota) and getting my daughters back into their school and sports routines. I hope everyone is persevering after our Irene encounter—Lake Champlain rose here in Burlington, again”

Below are some websites related to my activities and recent publications.

<http://www.uvm.edu/cosmolab/?Page=cosmocam.html>

I've been working very closely with 5 graduate students as they complete their research. Lee Corbett and Joseph Graly are completing work on our first Greenland project (sponsored by NSF). Two papers are in review and one has come out. You can find any of our papers and abstracts by visiting the lab web page and checking under publications.

*Graly, Joseph A., Bierman, Paul R., Reusser, Lucas J., and Pavich, Milan J., Meteoric  $^{10}\text{Be}$  in soil profiles – a global meta-analysis. *Geochimica et Cosmochimica Acta* (2010).*

Luke Reusser is finishing up his doctorate in New Zealand. Two of his papers are out and two more are in prep.

*Reusser, L., Graly, J., Bierman, P. R., and Rood, D., A new approach for constraining long-term meteoric  $^{10}\text{Be}$  deposition rates. *Geophysical Research Letters* (2010).*

*Reusser, Lucas J. and Bierman, Paul R., Using meteoric  $^{10}\text{Be}$  to track fluvial sand through the Waipaoa River basin, New Zealand. *Geology* **38** (1), 47 (2010).*

Eric Portenga and Charles Trodick are working out the erosion dynamics of one of the most geomorphically famous landscapes, the central Appalachian Mountains. They are both presenting at GSA this year in Denver.

Eric just submitted a paper to GSA Today that compiles every  $^{10}\text{Be}$  erosion rate ever measured - quite a feat!

Jamie Russell, the staff member in charge of the several digital archives we maintain, has made great progress with both. She's presided over a more than four-fold expansion of the Landscape Change Program archive. We just got word that the program is going to be funded by the National Endowment for the Humanities (not the usual organization for Geologists to get \$\$ from). We will be digitizing an archive of 36,000 images documenting the construction of the Interstate Highways through Vermont and using the images to understand how landscape and cultural change in rural Vermont was catalyzed by these highways. There are now over 38,000 images of Vermont landscapes on-line. Have a look and find your favorite town or picture of campus at:

<http://uvm.edu/landscape>

Jamie's also been working hard on a new image archive designed to improve the teaching of Geomorphology and Physical Geography. We now have over 2800 images of landscapes from around the world on line and ready for downloading. We'd love more images, so please scour your archives and hard-drives and upload a few images on line at:

<http://uvm.edu/geomorph/gallery>

I've been doing lots of writing. Colleague Dave Montgomery and I are creating a new Geomorphology textbook, the rough draft of which is almost done! We've been working with Christine Massey on this endeavor. She's been coordinating the outreach component,. You can learn more about the project and get involved (by sharing your own case studies as Vignettes, on-line e-media) at:

<http://uvm.edu/geomorph/textbook>

Lastly, we have funding for two new MS students to start work in summer/fall 2011. One project will take us back to Greenland for fieldwork and then analysis of DSDP cores; the other is the Interstate Highway project I explained above. If you know of a top notch undergraduate who would like to come to UVM for a funded MS degree, please have them get in touch with me!

Email: [paul.bierman@uvm.edu](mailto:paul.bierman@uvm.edu)

<http://uvm.edu/~pbierman/>



Paul, Christine, Quincy (8), & Marika (11) with +/- 1000 year-old Welwitschia plant in the Namibian desert, Aug. 2011



The geomorph/isotope MS grads of the 90s...all reassembled at GSA this year.

Karen Jennings (consulting), Josh Galster (faculty), Sara Gran Mitchell (faculty), Kyle Nichols (faculty), Sarah Brown Lewis (academic staff), Anders Noren (research).



**Andrea Lini, Associate Professor (Stable isotopes, Limnology and Climate Change):**

Greetings from the world of stable isotopes, lake mud, and tree rings! Our research project on the trophic history of Lake Champlain is moving along very well. Our group (the UVM Mudslingers), which also includes faculty and students from the Rubenstein School of Natural Resources, has recently published a manuscript titled “The eutrophication of Lake Champlain’s northeastern arm: Insights from paleolimnological analyses” in the Journal of Great Lakes Research. An additional manuscript discussing study sites from the Main and South Lake sections will be submitted soon.

Work on the long sediment cores (up to 10 feet) collected by two of my graduate students in St. Albans and Missisquoi Bays in winter 2010, is almost complete. These cores span 9,000 years of Lake Champlain’s history and have allowed us to extend our study of the processes that have affected the lake’s chemistry, biology, and sedimentary patterns well beyond the European settlement period.

Shelly Rayback (UVM Geography) and I very recently submitted a research proposal to NSF that aims at reconstructing northern New England climate variability from tree-ring records. Very little is known about past climate in this region from tree rings. Many existing climate records rely on lake sediments, which, although being excellent recorders of climate variability, do not possess the fine time resolution needed for successful correlation to historical climate records and for climate modeling. This is a very exciting new research direction for Shelly and I, and it has kept us, along with several undergraduate students, very busy this year.

It is quite possible that soon we will start analyzing bear and wolf fur samples in my lab... more on that next time!

### Winter fun on the ice Andrea and Drew Koff



**Whoops!! Drew Koff seems to have a problem here**

Some recent papers are listed below.

Rayback, S. A., **A. Lini**, and D. L. Berg. 2010. Multiple climate signals characterize *Cassiope mertensiana* chronologies for a site on Mount Rainier, Washington, USA. *Physical Geography*. 31: 79-106

Rayback, S. A., **A. Lini** and G. H. R. Henry. 2011. Spatial variability of the dominant climate signal in *Cassiope tetragona* from sites in Arctic Canada. *Arctic*. 64: 98-114

Levine, N., **A. Lini**, Ostrofski M.L., Bunting L., Burgess H., Leavitt P.R., Dahlen D., Lami A., and Guilizzoni P., 2011, The Eutrophication of Lake Champlain's Northeast Arm: Insights from Paleolimnological Analyses. *Journal of Great Lakes Research*, 37 (4)

Rayback, S. A., **A. Lini** and G. H. R. Henry. in review. Multiproxy reconstructions: Combining stable isotope analysis and dendrochronological techniques to reconstruct recent climate in the Eastern Canadian Arctic. *Climatic Change*.



**Keith Klepeis, Professor (Structural Geology and Tectonics)** Greetings!

It's been a pleasure to see many of you at various meetings, gatherings, and field trips this past year. The year started out well (I was on sabbatical for one thing!) with an interesting UVM field expedition to Central Chile in January, the height of the austral summer. Laura Webb, Gabriela Mora, graduate student Jeff Webber, and I launched a new project with two Chilean colleagues looking at the evolution of the Coastal Batholith of Chile. For his Masters thesis, Jeff is working on some new techniques that reveal the flow patterns of magma as it moves through the Earth's crust to form volcanoes at the surface. The project involved collecting lots of samples and making maps of coastal outcrops along beaches near the resort

town of Viña del Mar (I swear we were working!). One of the best places was located in front of the house of the famous Chilean poet Pablo Neruda. So we had lots of fun explaining to Chilean vacationers what we were doing on the rocks...and why hammers might be necessary. It was great for practicing some Spanish.

Later, in March, undergraduate Maggie McMillan (class of 2011) presented the results of her research project on the evolution of structures in Craftsbury at Northeast GSA in Pittsburgh. Soon after that, Abigail Ruksznis began a new summer a project with me working on the relating the bedrock geology of the Plainfield, Vermont to various groundwater problems. Abi is the eleventh UVM student to do a research and field mapping project in collaboration with the Vermont Geological Survey. She also was involved in organizing and leading a field trip during the New England Intercollegiate Geological Conference (NEIGC) in late September/early October. This year, Middlebury hosted the conference and many of us developed new trips. Abi worked with UVM grad students Christine McNiff and Jeff Webber, myself, Jon Kim and Marjorie Gale from the Vermont Geological Survey, and Peter Ryan at Middlebury. This trip involved a one-day traverse across west-central Vermont looking at rock structures and discussing the synergistic role that hydrogeology and groundwater chemistry studies have played in current thinking about this part of Vermont. A second trip, with Dave West from Middlebury, took a close look at classic outcrops used for teaching. That one had 85 people on it despite the rain!

I hope to see many of you during the course of the coming year.

Below are some of this year's publications with UVM faculty in bold and students in bold, italics.

\* **Maloney, K.T.**, Clarke, G.L., **Klepeis, K.A.**, Fanning, C.M. & Wang, W., 2011, Crustal growth during back-arc closure: Cretaceous exhumation history of Cordillera Darwin, southern Patagonia, *J. Metamorphic Geology*, 29(6), 649-672, doi:10.1111/j.1525-1314.2011.00934.x.

\* **McAtamney, J.**, **K. Klepeis**, **C. Mehrstens**, S. Thomson, \***P. Betka**, L. Rojas, and \***S. Snyder** (2011), Along-strike variability of back-arc basin collapse and the initiation of sedimentation in the Magallanes foreland basin, southernmost Andes (53–54.5°S), *Tectonics*, 30, TC5001, doi:10.1029/2010TC002826.

**Klepeis, K.**, **P. Betka**, G. Clarke, M. Fanning, F. Hervé, L. Rojas, C. Mpodozis, and S. Thomson, 2010, Continental underthrusting and obduction during the Cretaceous closure of the Rocas Verdes rift basin, Cordillera Darwin, Patagonian Andes, *Tectonics*, 29, TC3014, doi:10.1029/2009TC002610.

West, D.P., Jr., Kim, J., **Klepeis, K.**, and \***Webber, J.**, 2011, Classic bedrock teaching localities in the Champlain Valley between Middlebury and Burlington, Vermont, in West, D.P., Jr., editor, *Guidebook for Field Trips in Vermont and Adjacent New York: New England Intercollegiate Geological Conference Guidebook*, B1-1-35.

Kim, J., **Klepeis, K.**, Ryan, P., Gale, M., \***McNiff, C.**, \***Ruksznis, A.**, and \***Webber, J.**, 2011, A bedrock transect across the Champlain and Hinesburg thrusts in west-central Vermont: integration of tectonics with hydrogeology and groundwater chemistry, in West, D.P., Jr., editor, *Guidebook for Field Trips in Vermont and Adjacent New York: New England Intercollegiate Geological Conference Guidebook*, C5-1-23.

With best wishes,  
Keith

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<http://www.uvm.edu/~kklepeis/>

<http://geology.uvm.edu/structure/structure.html>

<http://geology.uvm.edu/structure/fjordland/fjordland.html>



**UVM Field expedition to Central Chile. Left to right: Diego Morata (Univ. Chile), José Cembrano (Universidad Católica de Chile), Gabriela Mora-Klepeis (UVM), Keith Klepeis (UVM), Jeff Webber (UVM), Laura Webb (UVM)**



**Prof. Keith Klepeis and Grad Student Jeff Webber explain the geology of the Hinesberg Thrust, Mechanicsville, VT to 85 students and professionals at 2011 NEIGC field trip**



**Greg Druschel, Associate Professor (Microbial Geochemistry):** Hello everyone! My biggest news is that this will be my last entry in the UVM Geology Department newsletter as I will be leaving UVM for a new position as an Associate Professor in the Department of Earth Sciences at Indiana University-Purdue University Indianapolis (IUPUI). The department there is growing with a focus on geochemistry (there will be 7 geochemists on the faculty in the department when I arrive), has a Ph.D. program, and is home to a new center for Environmental Health. My wife Teresa and I are both from Ohio, so this move back to the Midwest feels a little like going home and will bring us both much closer to our families. We will miss many things about Vermont and UVM, but most of all the wonderful interactions I have been privileged to have with so many exceptional students and colleagues!



**Stephen Wright, Senior Lecturer (Glacial geology, Geomorphology, Environmental Geology) :** We've been having another wet fall and managing 4 class field trips a week as well as my own field work on weekends has been challenging. All of this wetness is very much in contrast to 3 weeks of excellent weather in Colorado this last May and June with the Colorado Regional Geology class. I brought 11 students out this year with the aid of graduate student Jo Palmer. We had an excellent group that was both academically curious and a great joy to work with and camp with for 3 weeks. I need to once again thank Paul Myrow of Colorado College for lending us cook stoves and other kitchen gear. This has proven so helpful since tightened airport security has made it impossible to fly with stoves any longer. Our only logistical difficulty was the very low snow line on the western slope, much lower than I can ever remember during June.

There were many areas we couldn't hike to (post-holing through deep wet snow!) or, where we could travel over the snow, it was impossible to see rock structures and even fairly large land forms, e.g. rock glaciers!

When I returned from Colorado I devoted the rest of the summer between four different projects. The first of these involved completing fieldwork for an NEIGC field trip that I led at the end of September. I spent several weeks mapping glacial landforms in Bolton Notch and describing a complex section of deformed glacial sediments exposed by a large landslide along Preston Brook in Honey Hollow (north side of Camels Hump; see below photo). Another big project was mapping the southern half of the Pico Peak quadrangle. Luckily I completed most of that work before most of the roads leading to that area were washed out during the flooding following Tropical Storm I've included several pictures:

Email: [Stephen.Wright@uvm.edu](mailto:Stephen.Wright@uvm.edu)

Students descend a large snowfield on their way back to camp



Ollie Olliver, Ryan Stredny, Abi Ruksnis, Hank Ainley and Doug MacLeod relax on lower Plaeozoic rocks after ascending a very steep cirque headwall



**Laura Webb, Assistant Professor (Igneous petrology and Geochronology)**

Hello UVM Geology alumni and friends: Hello UVM Geology alumni and friends:

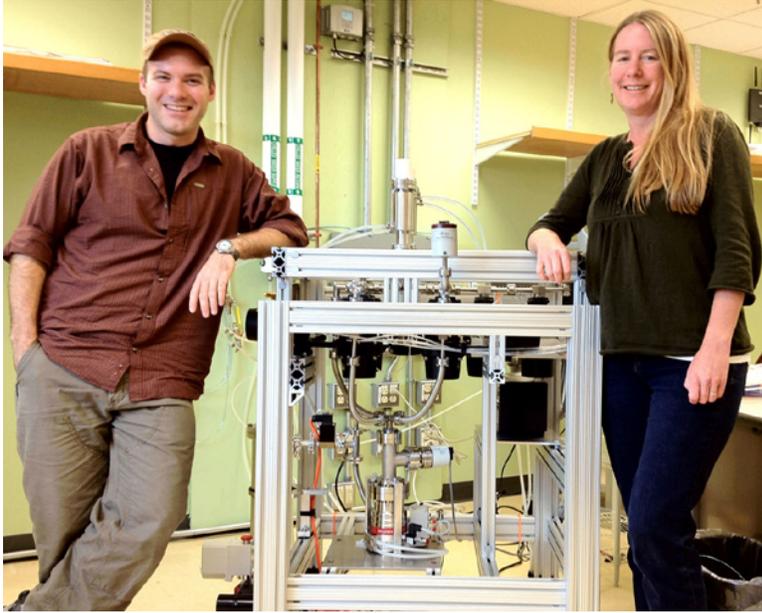
Another year has flown by and much has happened, including some milestones. My first UVM graduate student to defend, Kyle Ashley, finished his MS this summer and is now pursuing his PhD at Virginia Tech where he continues to do research related to the titanium-in-quartz thermobarometer ('TitaniQ'). Merrill Stypula is writing her MS thesis on U/Pb zircon geochronology of migmatites in the East Gobi Fault Zone. Christine McNiff is finishing up her field work associated with investigation dome and basin structures in the Champlain Valley.

Patrick Dyess arrived this summer and has begun work on the TitaniQ project by collecting samples from the White River region in central Vermont. On top of these projects, I remain

active in research in Papua New Guinea and also had the pleasure of embarking on field work and research in Chile with Keith Klepeis, Jeff Webber, and Gabriela Mora-Klepeis and our Chilean colleagues. In terms of things going on inside Delehanty Hall, we are busy building the  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology noble gas extraction line. Dan Jones, University of Alaska Fairbanks alum, is the new laboratory research technician and it has been a pleasure and a lifesaver to have him join the team. The magnetic sector mass spectrometer is still being built in Wales, but we very much look forward to its eventual arrival — through the second floor hallway window!

Best regards,  
Laura

Email: [laura.webb@uvm.edu](mailto:laura.webb@uvm.edu)  
<http://www.uvm.edu/~lewebb/web>



Laura Webb and Dan Jones with the new noble gas extraction line built in house for the  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology lab in Delehanty Hall

## Graduate Students



**Luke Reusser:** I am currently a doctoral student in the School for Natural resources and the Geology Department at the University of Vermont, having completed my masters in the Geology Department. Many of the projects I am working on for this degree include estimating drainage basin-scale erosion rates along both the east and west coasts of North America, as well as along the east coast of the North Island of New Zealand. The aim of my research is to understand better the relative influence of tectonics and human land use on rates and styles of landscape change.

Prior to my current research, I completed a Masters Degree here at UVM considering the rate and timing of fluvial incision through bedrock along several large rivers draining the central Appalachian Mountain Belt. I earned my Bachelors degree from Skidmore College where I studied both Geology and Studio Art. Besides playing with rocks, I occupy myself with the usual hiking, camping, traveling etc, and I also enjoy growing a good garden.

Email: [Lucas.Reusser@uvm.edu](mailto:Lucas.Reusser@uvm.edu)



**Merril Stypula:** Greetings. I graduated with a bachelor's degree from Colorado College and made my way east to UVM in order to work with Laura Webb in tectonics, thermochronology and ARCGIS. My introduction to UVM was a field season last summer in Mongolia. A great experience.

Email: [Merril.stypula@uvm.edu](mailto:Merril.stypula@uvm.edu)



**Ben DeJong:** Major professor: Paul Bierman. PhD through the Rubenstein School of Natural Resources Defining mappable Pleistocene units on the Eastern Shore of Maryland. My wife and I took our belated honeymoon to 3 islands in Hawaii during the month of July. We avoided tourist hot-spots and spent our time hiking, camping, and pressing fresh Kona coffee. Then in August I spent a few weeks on the Eastern Shore of Maryland with the USGS Drilling Crew out of Reston, VA drilling auger holes up to 80' deep to help characterize the Pleistocene stratigraphy there. Lots of mosquitos, chiggers, and "green-heads" happily extracted blood while we happily extracted fluvial-to-estuarine channel sequences.

Email: [bdejong@uvm.edu](mailto:bdejong@uvm.edu)



**Angel Garcia:** Hola! Greetings! I come from the Caribbean island of Puerto Rico. I did my undergraduate major in Environmental Science and a minor in Marine Biology at the Universidad Metropolitana, San Juan, Puerto Rico. I'm in my first year of a Master's program. I participated in four national and international summer research internships in places like South Carolina, Arizona, Costa Rica, and Vermont. Actually, I'm part of the Vermont EPSCoR Fellowship for graduate studies. I really enjoy hiking and scuba diving across the world. I'm working with geochemistry in Yellowstone National Park.

Email: [agarcia2@uvm.edu](mailto:agarcia2@uvm.edu)



Hello! I received my BS: Geology from Salem State College in Salem, MA. Originally from MA, I have lived in Florida and traveled a bit before returning to MA to attend college. I am particularly interested in structural geology, petrology and geophysics and came to UVM to work with Laura Webb. The field season this year was great! I got to explore Chittenden County for outcrop and found some beautiful spots for rest and relaxation in the process. In my free time, I took as many hikes/long walks with my husband as possible and tended to my beehive. It was a good summer, but it's the fall that I truly enjoy. The crisp air, rustling leaves and harvest festivities always bring me peace. My husband and I absolutely *love* fall in Vermont and are trying to make the most of it.

Email: [Christine.McNiff@uvm.edu](mailto:Christine.McNiff@uvm.edu)



**Jeff Webber:** Greetings, I am currently a Masters of Science candidate in the department of geology at UVM working under the guidance of Dr. Keith Klepeis. The fundamental premise of our research concerns the evolution of deformation in a variety of tectonic and thermal regimes from the low-grade assemblages of the green mountains to melt involved plutonic complexes in coastal Chile. I was born and raised in the mountain town of Bozeman Montana where I received a Bachelors of Science degree from Montana State University. My passion for research and teaching is most directly linked to days spent climbing, hiking, and skiing with mentors and friends amongst the mountains of the West. My previous research has included work in Montana, Colorado, Spain, and France studying a variety of environments from large scale

crustal shear zones to deep marine basin formation. I am excited to begin a new chapter in Burlington with new peers, students, and colleagues.

Email: [jrwebber@uvm.edu](mailto:jrwebber@uvm.edu)



**Nikki Shufelt:** In the past year I have been fortunate enough to spend some time in the field on the Melosira (the Rubenstein school research vessel) collecting samples and scuba diving to collect sediment cores from the bottom of Missisquoi Bay for my research. I also got to spend a month camping and hiking in Colorado, Utah and Wyoming when I was a cook for the University at Buffalo Geology Field Camp. I spend a lot of time in the lab working on my research, but in my free time I have done a lot of travelling, camping, and hiking around the New England area with some of the other graduate students. I am enjoying the beautiful fall in Vermont and will be making some time to ski when winter hits!

Email: [Nicole.Shufelt@uvm.edu](mailto:Nicole.Shufelt@uvm.edu)



**Megan Scott:** Hi, I came out to Vermont to work with Char Mehrtens on a project involving some Ordovician carbonates near Middlebury. This past summer was filled to the brim with fun experiences including a productive field season in Middlebury Vermont. My fieldwork involved studying the structural and sedimentological features present in the Middlebury Formation, a Middle Ordovician limestone. The goal of the project is to examine the lithofacies and determine what environment the sediments composing the Middlebury limestone were deposited in. When I wasn't in the field or in the rock room, I was most likely spending time in my garden or on a bike ride. In the garden this year I planted tomatoes, beans, peas, peppers, eggplants, summer squash, carrots and a handful of other vegetables. As fall is now upon us and the semester is in full swing I have added class and a teaching assistantship to my schedule but continue to work on the Middlebury limestone project. Most recently I attended The New England Intercollegiate Geological Conference, which was a great opportunity to go on numerous field trips in Vermont. Despite the rainy weather we had fun and were able to see some beautiful outcrops!

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**JoAnna Palmer:** Hello friends! Phew, what a year! I've been plugging away at my project on the paleolimnology of St. Albans Bay, finishing lab work this summer and now in full writing mode, with plans to defend in December! However, the exciting things that happened this year weren't in the lab. I TA'd the Colorado Field Trip this summer with Stephen, which was a blast. 3 weeks of hiking around and camping in some of the most fascinating geological areas I've ever seen was certainly a highlight of the year! My favorite things were the amazingly huge conglomerates, dike fins, and Stephen's skills on the harmonica .

The other sort of exciting little event that happened this year was that Erik and I got married in August! It was wonderful. Great weather, awesome friends and family, and delicious food (and beer dispenser!) made for a very memorable experience. And now that I'm done planning seating charts and flower pieces, I can get back to work! Woohoo lake muck!

Peace,  
Jo Palmer

Email: [johann.palmer@uvm.edu](mailto:johann.palmer@uvm.edu)



A tough TA job for Jo  
in Colorado



**Alice Nelson:** Hi, I graduated in 2010 from Williams College where I majored in Geology with a concentration in Environmental Studies. I spent last fall in the Swiss Alps teaching Geology to high school sophomores at a school called Swiss Semester. I moved out west in the winter to ski and take classes at Montana State University. I headed back east this fall to work with Paul Bierman on a 10-Be project that is using sediments to study the Greenland Ice Sheet. I have really enjoyed my time so far here at UVM and I am looking forward to fieldwork in the Arctic this summer.[m.edu](mailto:ahnelson@uvm)

Email: [ahnelson@uvm](mailto:ahnelson@uvm)



**Ana Vang:** I am a first year graduate student at UVM this year, and I will be working with Paul Bierman on the Landscape Change Project (<http://www.uvm.edu/landscape/>) and more specifically on the Vermont interstate system. I completed my undergraduate degree in geology in 2011, from Carleton College in Minnesota. I love visiting national parks, but sadly have not made it to any in the southwest yet. I am enjoying Vermont so far - it looks a lot like Minnesota but with mountains - and am looking forward to exploring the state more. As a graduate student at UVM this year, and I will be working with Paul Bierman on the Landscape Change Project (<http://www.uvm.edu/landscape/>) and more specifically on the Vermont interstate system. I completed my undergraduate degree in geology in 2011, from Carleton College in Minnesota. I love visiting national parks, but sadly have not made it to any in the southwest yet. I am enjoying Vermont so far - it looks a lot like Minnesota but with mountains - and am looking forward to exploring the state more next summer when I do my fieldwork along the interstate.

Email: [avang@uvm.edu](mailto:avang@uvm.edu)



**Steven Gohlke:** I am a new graduate student in the department working under Char Mehrtens. I graduated from the University of Texas (B.S., summer 2011) where I studied general geology. While in Austin, I also worked as a research assistant at the Bureau of Economic Geology, the Texas state survey, supervised by a sedimentary petrographer studying deep burial diagenesis in the Gulf of Mexico and onshore Texas and Louisiana. As long as the political situation in northeast Africa remains stable until after the holidays, we will be visiting Egypt to collaborate with a group of researchers from both the U.S. and Egypt. Our project is called "Desert Eyes," and its goal is to determine the origin of large-scale structures that can only be seen on the most recent satellite images of the western desert. My role in the project will involve acquiring and maintaining a stratigraphic framework for our field areas and the timing of events that shaped them. Ultimately, my thesis project will involve studying cements from different positions in the stratigraphic column. My main areas of interest are sedimentology, stratigraphy, and structural geology.

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**Patrick Dyess:** Hello! I am a new Master's candidate working with Laura Webb. I am working with the TITANIQ method of thermobarometry; looking at how the percentage of TITANIUM In Quartz and how that relates to temperature. Specifically, I am working on refining how it works or where it needs to be modified to work in the medium high temperatures of biotite grade rocks in the Eastern Green Mountains. I finished up my B.S. in Earth Sciences at Montana State University in Bozeman, Montana. I'm looking forward to a great change in pace here out east. Any time I'm not working on things here in Delehanty, I can be found hiking, climbing, skiing, and just plain old enjoying being outside in the beautiful New England woods!

email: [Patrick.dyess@uvm.edu](mailto:Patrick.dyess@uvm.edu)

## Staff



**Robin Hopps:** UVM Geology is a great department in which to work with outstanding students, staff and faculty. At present, the Department has 13 graduate students, 2 PhD students, 42 majors, and 17 minors. Stop in to Delehanty Hall, to visit, or re-visit staff and faculty, as well as the Perkins Museum. Feel free to stay in touch by sending an email to [geology@uvm.edu](mailto:geology@uvm.edu). You can also see the list of lectures for the Geology Seminar Series on the UVM Geology website at "News and Events." I enjoy my ten-month position in the office, as well as being out of the office from mid-June to mid-August for my landscaping business.

email: [robin.hopps@uvm.edu](mailto:robin.hopps@uvm.edu)

<http://www.uvm.edu/perkins/>



**Srebrenka Sehovic:** Since May 16<sup>th</sup> 2008 I have worked as department administrative coordinator in the Geology Department, and I love working here. It is a real pleasure to work with every single person in the Department. Being around young, educated people and watching them develop makes me feel good. I am always glad to assist them when they need help. My husband and I are fortunate to have four daughters; two of them graduated from UVM and the younger twins are first-year students at UVM so I am happy to see them on campus now. Also, I am a grandmother, my three-year old grandson brings me joy on a daily basis.

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**Gabriela (Gaby) Mora-Klepeis, Senior Research Technician:** It has been a great year, full of personal and professional projects! In January I was part of a 10-day field trip in Chile where we explored the plutonic complex of Isla Negra, a series of Permian to Mesozoic outcrops west of Santiago. Doing fieldwork in the southern hemisphere summer was a great experience! Working close to the beach was a plus. During our spring, I started training to do my first biathlon. The event in St. Albans was postponed from July to September due to the lake levels that flooded the area where the race was going to take place. That gave me the chance to enroll to 2 biathlons: Colchester and St. Albans. Jack Drake did the paddling part for me and I did the bike and run legs for the Colchester event. Having more time to train, I was ready for St. Albans, but after finishing the run part, a sudden thunderstorm rolled over the area and the event was cancelled. I hope next year is better! In October I had the chance to attend the GSA annual meeting held in Minneapolis. I presented a poster with some preliminary results on my Alaska granites research. It was nice to see past and present UVM students there. If you are in the area, please stop by for a building tour, I'll be happy to show you around!

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<http://www.uvm.edu/~geology/?Page=faculty/mora-klepeis.php>



Isla Negra, 2011

Finish Line – Colchester  
Triathlon. Julv 2011



## Emeriti Faculty



**Barry Doolan:** Greetings to all Geology Alums.

Hello to all alums and friends. 2011 has been a great year in retirement...travel, golf and bit of geology. Sandy and I participated in the Oaxaca Mexico semester abroad program for UVM students last March. Char and I ran an interesting field trip for the UVM OLLIE program earlier this summer visiting field stops in the Champlain Valley for very interested adult learners. Heard from a few alums. Congratulations to Jeremy Hourigan on the birth of his first daughter this year; Hello from Laura Mallard who is doing well at Appalachian State in Boone NC. Watch out Laura we're back to NC next month!

Older daughter Kristan (UVM Geology '92) is doing well in nearby Bakersfield running Does Leap Farm (organic goat cheese and kiefer and more recently pork and goat sausage) with her family. Grandkids Zoe and Peter continue to be a source of joy and inspiration for us. We are fortunate to have them close by.

We still live in Fletcher Vermont (since 1981) and welcome any visits you may make to Vermont. Just put in 27 Cambridge Road, Fletcher Vermont in your GPS. Looking forward to hearing from past grads. Drop an email or visit us in Fletcher when you're in the area.

Best wishes to all

Barry



**Barry and crew near Oaxaca Mexico, Spring 2010**



**Jack Drake:** Life continues to smile on us. We enjoy our camp on Lake Champlain (east shore of South Hero) during the summer with many related aquatic and biking activities. During the fall semester Ruthie and I continue auditing courses here at UVM. In the past several years we have audited “History of the Muslim world to 1453”, “The History of Egypt, Iran and Turkey” and currently “Modern History of the Middle East”. We finally decided to actually go see some of this area for ourselves and went to Turkey for 17 days- great country, spectacular coast, beautiful antiquities, wonderful people and excellent food!!

This winter we are again heading to California for 3 ½ months, but we’re going to camp our way out and back – shades of regional geology – visiting our sons and granddaughters (ages 4 and 6) along the way. So, for us, life is good. We just have to keep reminding ourselves how lucky we are considering all the trials, tribulations and problems that exist in the world today.

Getting ready for a balloon ride over the Cappidocia landscape, Turkey. 2011



Best to you all, you have provided many fond memories of my years here at UVM.

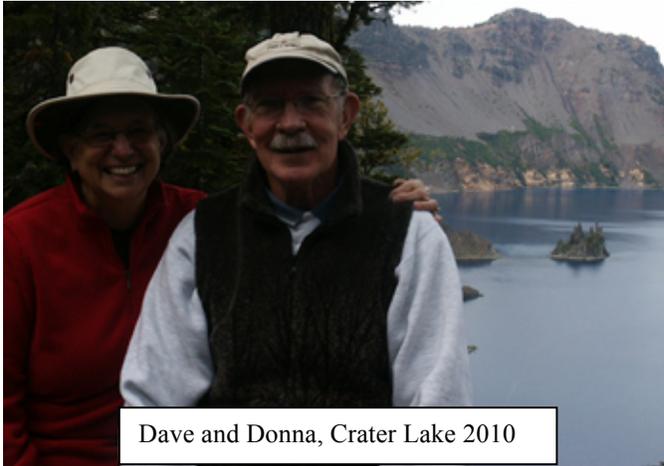
Jack

Email: [john.drake@uvm](mailto:john.drake@uvm) or [jcdrakevt@gmail.com](mailto:jcdrakevt@gmail.com).



**David Bucke:** Greetings all. We've been out on the road again, this time since Sept 1. We got back Monday night after about 9500 miles, just in time to get voting done. Son-in-law #4 is in charge of the Essex town polls so I get tapped to be a helper. A long day-night but I do get to see & meet a lot of neighbor folks.

On this trip we concentrated on Oregon -- both coastal and inland ending up with Crater Lake, one of our most favoritest spots, scenery-wise. Our other stay-longest state was Utah -- great rocks. We rarely stayed more than 1 night at any place, enjoying the travel as much as the intermediate destinations. If it weren't for gasoline, it would have been a cheap vacation. We never eat out, so that cost matches home and we averaged a little over \$4.00/night for camping costs. It's amazing how many free places can be found -- and we avoid commercial campgrounds. Federal places (Natl. Parks & Monuments, Bureau of Land Management, National Forests, Corps of Engineers, etc) are all 1/2 price camping and free entry with our "antique cards" (i.e. the "Golden Eagle" Pass).

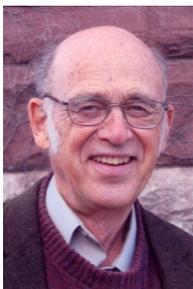


Dave and Donna, Crater Lake 2010

Not much special other than the travels to report for now. Oh yes there is! We have another granddaughter. Katy (now Katherine Sonnicks) presented Charlotte (pronounced the North Carolina way) Rose to the world about 5 months ago.

Donna & I extend our warm best wishes to all of you.

Our new email address is: [ddbucke@gmail.com](mailto:ddbucke@gmail.com) . I think my UVM mail still works & flips into the gmail box -- but maybe not.



**Allen Hunt:** Greetings from Bakersfield where we still live on Prospect Hill Farm. Last Spring we sold our herd of registered Angus cattle to reduce our responsibilities. Our three sons are scattered across the country. Edwin, our eldest, is single and lives in Nevada. Harry, our middle son, is an architect and lives in Stowe with his wife and two children -- a girl and boy. Jesse continues to live in Park City, Utah, with his wife and three children -- two girls and a boy. We no longer have an excuse for not traveling except that we love our farm in Vermont. Other than an occasional family trip west or to our cottage in Maine, we are home and enjoy visitors who may be traveling in our area.

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**Presentations at Recent Meetings** (2011 GSA Meeting, Denver, Colorado, references in Geologic Society of America 2011 Annual Meeting, Denver, Colorado Program and Abstracts) (UVM faculty and staff in **bold** and students in *bold*)

**Webb, L.E.**, Taylor, J.P., Heumann, M.J., Johnson, C.L., *Stypula, M.J.*, and *Hagen-Peter, G.A.*, 2010, Thermochronologic Records of Intraplate Deformation in the Northern East Gobi Fault Zone, Mongolia (EOS, Transactions, American Geophysical Union).

*Stypula, M.J.*, and **Webb, L.E.**, 2010, Microstructural and U-Pb Zircon Constraints on the Relationship between Partial Melting and Ductile Shear in the East Gobi Fault Zone, Southeast Mongolia (EOS, Transactions, American Geophysical Union).

*Ashley K.T.*, **Webb, L.E.**, Spear, F.S., and Thomas, J.B., 2010, Constraining P-T-t-D Histories with the TitaniQ Thermobarometer: Preliminary Findings from the Strafford Dome, Vermont. EOS, Transactions, Fall 2010 American Geophysical Union Meeting.

*Stypula, M.J.*, and **Webb, L.E.**, 2010, Microstructural and U-Pb Zircon Constraints on the Relationship between Partial Melting and Ductile Shear in the East Gobi Fault Zone, Southeast Mongolia. EOS, Transactions, Fall 2010 American Geophysical Union Meeting.

**Graham Hagen-Peter, Laura E. Webb, and Merril Stypula**, 2010, Timing and significance of large-scale folding in the Tavan Har basement block in southeastern Mongolia relative to Late Triassic sinistral shear. The Green Mountain Geologist, Spring 2010, vol. 37, No. 2.

**Donald Hefferon**, 2010, Petrographic and geochemical analysis of basement rocks in the East Gobi Fault Zone, Mongolia. The Green Mountain Geologist, Spring 2010, vol. 37, No. 2.

*Ashley K.T.*, **Webb, L.E.**, Spear, F.S., and Thomas, J.B., 2010, Constraining P-T-t-D Histories with the TitaniQ Thermobarometer: Preliminary Findings from the Strafford Dome, Vermont (EOS, Transactions, American Geophysical Union).

**Webber, J.R., Klepeis, K.A., Webb, L.E.**, Cembrano, J., Morata, D., Mora-Klepeis, G., Arancibia, G., 2011, reconstructing the kinematics of magmatic flow during pluton emplacement in the coastal batholith, central Chile, Abstracts of the American Geophysical Union, in press.

**Maloney, K.**, Clarke, G., Quevedo, L., and **Klepeis, K.**, 2011, Relation of plate kinematic parameters to deformation along the Andean margin from Late Jurassic to the present, AGU San Francisco, in press.  
**Klepeis, K.A., McAtamney, J., Mehrstens, C.**, Thomson, S., **Betka, P.**, and Mosher, S. 2011, Along-strike variability of coupled hinterland-foreland processes during formation of the Magallanes foreland basin, Patagonian Andes, Geological Society of America Abstracts with Programs, in press

**Betka, P., Klepeis, K.A.**, and Mosher, S., 2011, Along-strike change in structural style and tectonic shortening during the development of the Patagonian retroarc fold-thrust belt, southern Andes, Geological Society of America Abstracts with Programs, in press.

**Mora-Klepeis G.** and **Klepeis, K.A.**, 2011, Magma reservoir characterization and tectonic transitions during construction of the Coast Mountain batholith, SE ALaska, British Columbia, Geological Society of America Abstracts with Programs, in press.

Thomson, S.N., **Klepeis, K.A.**, Hervé, F., and Calderón, M., 2011, Late Oligocene erosion of Cordillera Darwin (southernmost South America) associated with rift margin uplift and opening of the west Scotia Sea, 11th International Symposium on Antarctic Earth Sciences, Edinburgh, July.

Kim, J., **Klepeis, K.**, Ryan, P., Gale, M., and **McNiff, C.**, 2011, Structural and Lithologic Controls on Hydrogeology and Groundwater Chemistry in the Taconian Foreland of NW Vermont, NGWA Focus Conference on Fractured Rock and Eastern Groundwater, Abstract #8018.

\***McMillan, M.**, Kim, J., **Klepeis, K.**, 2011, A Survey of Microstructures Across a Major Lithotectonic Boundary in the Town of Craftsbury, Northern Vermont, Geological Society of America Abstracts with Programs, in press.

**Klepeis, K.A.**, **K. Maloney**, G. Clarke, M. Fanning, S. Baldwin, 2011, Exhumation of moderate pressure (12 kbar) kyanite-staurolite-bearing schists driven by continental subduction during the compressional closure of a back arc basin in the Patagonian Andes, Geological Society of America Abstracts with Programs, v.43(1), 128.

### **UVM Geology at 2011 NEIGC**

**Char Mehrstens, Stephen Wright** and **Keith Klepeis** led field trips over a rainy weekend in October for the New England Intercollegiate Geologic Conference hosted by Middlebury College this year.

**Char**, David Griffing of Hartwick College in NY and a previous M.S. student, **Lauren Chrapowitzky**, led a trip exploring reef horizons on Isle la Motte, VT and biodiversification between carbonate units.

**Stephen Wright** was involved in two trips. The first described recent work in Bolton and Jericho, VT on the environment during the retreat of the Laurentide ice sheet. Stephen co-lead the second trip with Rick Dunn and George Springston of Norwich University highlighting the glacial geology of areas north and south of Waterbury. A recurring theme on both field trips was field evidence for readvancement of the ice sheet interpreted from deformed sediments.

**Keith** was also involved in two trips. The first was a collaboration with Jon Kim of the Vermont Geological Survey, Peter Ryan of Middlebury College and three students at UVM— graduate students, **Christine McNiff** and **Jeff Webber**; undergraduate student, **Abigail Ruksznis**. This trip explored the close link between bedrock structures and hydrogeology in the Champlain Valley of NW Vermont. The second trip was co-led by **Keith**, Jon and **Jeff** and Dave West of Middlebury College and showcased classic bedrock teaching localities between Burlington and Middlebury, VT.

NEIGC is held every fall and hosted by an academic institute within New England or Quebec. It is not often that this conference comes so close to UVM— it was hosted by UVM in 1999 and by Lyndon State College in 2009. It was a treat to experience the conference so close to home and share our recent works with the earth science community. More information about NEIGC is available at its website: <http://neigc.org>.

## **RECENTLY COMPLETED M.S. THESES**

Go to <http://www.uvm.edu/~geology/?Page=gradresearch.html&SM=oppmenu.html>  
in order to access copies of theses and progress reports 2011

### **2011**

**Kyle T. Ashley** - TitaniQ thermobarometry of fabric development in the Strafford Dome, Vermont: Linking microstructures to orogenic processes.

**Lee Corbett** – Investigating the timing of deglaciation and the efficiency of subglacial erosion in central-western Greenland with  $^{10}\text{Be}$  and  $^{26}\text{Al}$

**Andrew Koff** - A multi-proxy paleolimnological study of holocene sediments in Missisquoi Bay, USA-Canada

**Eric Portenga** – Using  $^{10}\text{Be}$  to constrain erosion rates of bedrock outcrops globally and in the central Appalachian Mountains

**Charles Trodick Jr.** - In situ and meteoric  $^{10}\text{Be}$  concentrations of fluvial sediment collected from the Potomac River Basin

### **2010**

**Joseph L. Graly** - Ice sheet modeling and paleoclimate of Greenland

**Janelle McAtamney** – Structural evolution and basin analysis of the Magallanes Basin, southern Patagonia, Chile

### **2009**

**Will Hackett** – Modeling of the hydrologic impacts of highway construction and climate change in Vermont

**Lydia Smith** – Organic phosphorus cycling, mobility and bioavailability for cyanobacteria in sediments of Missisquoi Bay, Lake Champlain

**Julie Rumrill** - Using GPS to assess the spatial and temporal variation of seasonal velocity changes on the Greenland ice sheet, near Swiss Camp Greenland.

**THIS YEAR'S OUTSTANDING GRADUATE TEACHING ASSISTANT WENT TO**

**Nikki Shufelt**



**HURRAY FOR THE LIBERAL ARTS!!**



**The Graduating Class 2011**

**From left to right: Rebecca Derr, Coleman Adams, Laura Wilson, Donald Hefferon, Ted Crook, Mike Ingram, and Maggie McMillan**

**RECENT**  
**UNDERGRADUATE AWARD WINNERS!**

**A NEW UNDERGRADUATE SCHOLARSHIP IN GEOLOGY!**



**JOSEPH TINKER AWARD**

Thanks to a donation to UVM by Claire and Arthur Heiser, the Geology Department is able to offer the Joseph Tinker Award to an outstanding senior majoring in Geology. Mr. Tinker, the father of Mrs. Heiser, was a Vermont resident, farmer and amateur geologist.

Congratulations to the 2011 recipient - **Matthew Sweeney**

The Charles Doll Award is given to the most outstanding graduating senior in geology. Charles Doll was the state geologist and he began teaching full-time at UVM in 1927. He was chairman of the department of geology from 1946 until his retirement in 1964. He also produced the first state bedrock geologic map. The selection criteria for the Doll Award is based on a combination of overall grade point average, grade point average in geology, undergraduate research and service to the department. The department faculty makes the selection of the Doll winner during the spring semester. The recipient of this award receives a gift and their name is engraved on a plaque that hangs in the department seminar room. The list of Doll Award winners is a distinguished one and includes individuals who have gone on to significant professional achievements.

**CHARLES DOLL AWARD**



Congratulations to **Laura Wilson** and **Maggie McMillan**, 2011 Charles Doll Award winners!!

## **DAVID P. BUCKE AWARD**

The David P. Bucke award for the outstanding student in introductory Geology went to **Douglas MacCleod and Travis Dawson**

## **HAWLEY AWARDS and MUDGE AWARDS**

Congratulations to successful recipients of **Hawley Awards** and **Mudge Awards** to support undergraduate research:

### **Spring 2010 Hawley Awards**

Donald Hefferon “**Igneous intrusions in the East Goby Fault Zone**” Hawley Award

Alyssa Findlay “**Mineralogy of VAG mine waste**” Hawley Award

Maggie McMillan “**Bedrock geologic mapping to address groundwater issues in the town of Craftsbury, Vermont**” Hawley Award

Coleman Adams “**Furthering the Structural Understanding of Jenson’s Canyon, Wyoming**” Hawley Award

### **Fall 2010 Hawley Awards**

Laura Wilson, **Reactivity of Stream Sediments Containing Nickel and Chromium**

Rachel Gregory, **Investigation into the effect of climate variables on  $\delta^{13}\text{C}$  in tree chronologies from Vermont**

### **Fall 2010 Mudge Awards**

Michael Ingram, **A bouger gravity survey of Chittenden County, Vermont**

### **Spring 2011 Hawley Awards**

Sandra Cronauer, **Changing Glacial Environments: Miller Brook Valley, VT**

Amanda Northrop, **Determination of the age of the Middlebury Formation using conodont stratigraphy**

### **Spring 2011 Mudge Awards**

Maggie McMillan, **A survey of microstructures across a major lithotectonic boundary in the town of Craftsbury, Northern VT**

### **Fall 2011 Hawley Awards**

Sandra Cronauer, **X-ray diffraction analysis of silty ice from GISP2 Ice core**

## **COME SEE US AT THE FOLLOWING:**

### ***NATIONAL GSA Meeting:***

4 – 7 Nov. 2012, Charlotte, NC

### ***NORTHEAST SECTIONAL GSA Meeting:***

18 – 20 March 2012, Hartford, CT

### ***National AGU Meeting:***

2010, 2011 Check AGU website for specific dates: <http://www.agu.org/meetings>

**NEIGC 2011:** Check <http://w3.salemstate.edu/~lhanson/NEIGC/> for information regarding dates and location

**Alumni/Reunion Weekend at UVM!!!! (Note that this coming year it is in the fall!)**

check <http://alumni.uvm.edu/reunion> for more information

Make sure that you get in touch with us so we can show you around!!

**Visit our website for links to more department information and activities**

<http://www.uvm.edu/geology/> and <http://www.uvm.edu/perkins>

*Regional Geology in recent years*



Colorado Regional Geology class (2011) stymied by snow in the South Lottis Creek Valley. From left to right: Sam Hellman, Sam Kleh, Parker Richmond, Doug MacLeod, Abi Ruksznis, Ryan Stredny, Jo Palmer (TA), Hank Ainley, Sandra Cronauer, Abby O'Donnell, Emily Siegel, and Elizabeth (Ollie) Olliver.

Regional Geology  
Iceland, 2010





**2009 Regional geology students:** Matt Bansak, Ben Henry, Greg Parrish, Will Hackett (TA), Maggie McMillan, Tyler Vendituoli, Holly Crimmins, Mary Snyder, Mike Ingram, and Shane Snyder at the base of a weathered Tertiary lava flow near Del Norte, Colorado.

**Regional Geology, Italy, 2008**





**Regional Geology, Colorado, 2007:** Pat Niggel, Gary Peters, Pat Tobin, Corey Coutu (TA, partially hidden), Jessica Schechter, and Kirsten Stokes studying the contact relationships between Paleozoic carbonate rocks and Laramide intrusive rocks near Cumberland Pass, Colorado



**Regional Geology Class enjoying the good life in Italy  
Summer 2006**



**Regional Geology 2005 in front of the “Maroon Bells” near Aspen, Colorado**



**Iceland crew enjoying summer sun August 2004**



**Regional Geology 2003 enjoying the Maine coast**

**Last picture, but not least, a “blast from the past”  
Regional Geology 1986, Newfoundland (Can you identify these people?)**



**Alumni News: We hope that next year's newsletter will contain all of your alumni news updates**

**Please email your news for next year's update to [Robin.Hopps@uvm.edu](mailto:Robin.Hopps@uvm.edu) put *2012 newsletter* in the subject line so that your news will be directed automatically to the correct folder. We want to hear from **YOU!****

*And to conclude,*

*read a letter from the*

***first UVM Geology Graduate Student and Teaching Assistant:***

**Lawrence B. Cline**

**Cline, Lawrence B.** - *The Origin of Talc at Johnson, Vermont, and the Geology of its Occurrence*

**Ogden, Duncan G.** - *Geology and Origin of the Kaolin at East Monkton, Vermont*

Referred to in letter as "Another guy"

**Handwritten letter from Lawrence B. Cline is below**

This is a voice from the past, more specifically, the start of the graduate program. I am Lawrence B. Cline, MS in Geology, graduated in 1960.

I graduated from Middlebury College in the mid 50's with, of all things, a BA in psychology. I took a geology course in my senior year and loved it. Two years in the army got me the GI bill so I enrolled at UVM as a special student and I took all the courses required of a geology major. The year I finished UVM announced the opening of the MS in geology program. I enrolled and I was the first student in the program. I also was the first teaching assistant.

The faculty consisted of Dr. Charles Doll, chairperson and state geologist and Dr. Robert Dotch. The department was housed in a surplus WWII building used for a military training program.

I and \*another guy\* were the first 2 graduates. He enrolled the year after I did but was full time while I had an assistantship so it took me 2 years.

The name of your newsletter is the Champlain Thrust. I well remember field trips to the Champlain overthrust.

After UVM I did all the course work for a PHD at RPI. I didn't get the degree since I couldn't show a reading ability in German or Russian.

I went to the University of NY at Albany where I taught general science. After 7 years I had to leave; no PHD, no tenure. I then went to Schenectady county college where I stay for 23 years teaching geology and geography classes which I developed.

Not getting a PHD was one of the best things I ever did, it sent me to SCC where I belonged-in front of a class of 20+students who took my courses because they liked them and me. That was my place in life; the classroom and not in a lab or out in the field.

My compliments to the planners and managers at UVM who decided that the time had come for a MS program in geology. That opened the door for me and Dr. Doll invited me to come through the door.

I am delighted to share this with you and I wish you all the very best.

Larry

Lawrence B. Cline '60

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