Phase 1 (Lp1/T): effusive dominated eruption of pillow lava mounds under relatively thick ice [no evidence for explosivity]

Phase 2 (Lp2/TB): intrusions feed new pillows; some areas collapse to form deposits of pillow breccia that fill-in topography

Phase 3 (Ld/LT): new magma erupts explosively (fire fountaining) producing LT with vitric bombs.

Phase 4 (Lp3/LpW): eruptions switches to dominantly effusive.
DEPARTMENT OF GEOLOGY

TWENTY-EIGHTH ANNUAL REPORT

August 2014

A. Phase 1 (Lp1/T): effusive dominated eruption of pillow lava mounds under relatively thick ice [no evidence for explosivity].
B. Phase 2 (Lp2/TB): intrusions feed new pillows; some areas collapse to form deposits of pillow breccia that fill in topography.
C. Phase 3 (Ld/LT): new magma erupts explosively (fire fountaining) producing LT with vitric bombs.
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Dear Alumni and Friends:

I am pleased to introduce the 2013-2014 annual report from the Department of Geology at The College of Wooster. It has been a full year of activities and we wish the class of 2014 the best as they head off into the next step in their lives. With so many opportunities in the geological sciences and their strong Wooster training, we know that they will do well.

The big news this past year is the promotion with tenure of both Drs. Meagen Pollock and Shelley Judge. They are superb educators, researchers, and colleagues, and we all greatly look forward to continuing to work together educating Wooster Geologists in the years to come. You can read more of their accomplishments in the following pages, so I will just say a few words. Dr. Pollock has begun a new project in British Columbia where she brought several students this past summer. Dr. Judge continues her research in Utah with Wooster students ranging from first-years to a recent graduate. Both Meagen and Shelley plan to continue their highly successful collaborative student research in Utah in the summer of 2015.

Dr. Mark Wilson has returned from his highly productive leave and extensive travels. This academic year geology is at full strength. In addition to the four full-time professors, we are pleased to introduce Caitlin Current (adjunct instructor) to the teaching staff. Caitlin and her family recently relocated to Wooster from North Carolina. She is a consulting geologist with expertise in contaminant hydrogeology and locating waste and energy facilities. She will be teaching Environmental Geology in the fall and a Hydrology course in the spring. We are excited that she is now part of the team.

Patrice Reeder, our administrative coordinator, continues to provide leadership in the room-by-room renovation of Scovel Hall and the everyday running of the department. She keeps the department on track and goes beyond the call of duty with our many research trips and fieldtrips, providing logistical support that is greatly appreciated.

Nick Wiesenberg continues to serve as departmental technician. Supporting the department in many ways, his competence in building and maintaining equipment and anticipating needs of the many research and teaching labs and shops is indispensible.

Our custodians Sue DeCapua and Samantha Mowrer continue to keep our facilities one of the cleanest geology departments around. This is a great challenge considering the almost daily muddy boots, rock and saw dust that we bring into the building. We greatly appreciate their work.

At the end of this report is the Alumni Information Sheet with an online update link. Please keep in touch with us and send us updates and news when you can.
Wooster Geology regularly reports our activities in the departmental blog at: http://woostergeologists.scotblogs.wooster.edu/

Best wishes and we look forward to hearing from you,

Greg Wiles, Chair

Environmental Geology Fieldtrip

Team Utah, OSU students, and Wooster alum. Hot springs near Spanish Fork, Utah.
Shelley A. Judge
Associate Professor of Geology (B.S. Mount Union University, 1991; M.A.T. Kent State University, 1993; M.S. Ohio State University, 1998; Ph.D. Ohio State University, 2007; Wooster since 2008).

During the fall semester, Shelley taught Oceanography and Introduction to GIS; during the spring semester, she taught Processes and Concepts of Geology, Structural Geology, and separate tutorials in Advanced Structural Geology, Introduction to GIS, and Integrating GPS and GIS.

Shelley worked with Kyle Burden ('14) and Tricia Hall ('14) on their I.S. projects in Utah, and both students presented their work at the 2013 annual meeting of the Geological Society of America in Denver. Kyle worked on the explosive processes directly associated with Miter Crater, which is a cinder cone in the Ice Springs Volcanic Field (Black Rock Desert). Tricia worked on joints and deformation bands in Cretaceous sandstones located in Sixmile Canyon, an area of geologic complexity near Palisades Lake State Park. Shelley had the good fortune to “adopt” several I.S. students while Greg Wiles and Mark Wilson were on research leave. During the fall semester, she worked with Andy Nash ('14) and Abby VanLeuven ('14); while in the spring, she worked with Oscar Mmari ('14). Andy and Abby focused on Alaskan dendroclimatology and paleoclimatology under the direction of Greg, and Oscar focused on Cretaceous phosphorites in the Mishash Formation (Israel) under the direction of Mark.

During the 2014 summer, Shelley spent nearly two months in the field. In early June, she once again co-taught The Ohio State University’s field camp based in Ephraim, Utah, and this proved to be a very enjoyable field camp class. Then, after teaching field camp, four Wooster students came out to Utah to work on several ongoing structural, stratigraphic, and sedimentologic research projects. Team Utah 2014 consisted of Chloe Wallace ('17), Sarah McGrath ('17), Kelli Baxstrom ('16), and Michael Williams ('16). Chloe concentrated on oncolites in the North Horn Formation and Flagstaff Limestone, while Sarah was interested in paleosol development in the Colton Formation. Both Kelli and Michael worked in the Sixmile Canyon Formation on the relationship of fractures to fluid flow and on deformation bands, respectively. The four students continued their work in the lab at Wooster until classes for the fall semester began.
Meagen Pollock
Associate Professor of Geology (B.S. Marshall University, 2001; Ph.D. Duke University, 2007; Wooster since 2008).

During the fall semester, Meagen taught Mineralogy and a First Year Seminar called Nature Walks, in which students conducted service projects at Wooster Memorial Park (Spangler). In the spring semester, she taught Geology of Natural Hazards and Petrology.

Meagen continues her research on lava-ice interactions. She advised Alex Hiatt’s ('14) Senior I.S. project on subglacial pillow lavas from Iceland. Alex collected his samples in the summer of 2013 and analyzed his data at the UMass Amherst FTIR lab. By analyzing water concentrations in the glassy rinds of pillow lavas, Alex was able to constrain paleo-ice thickness at the time of eruption. He presented his results at the December meeting of the American Geophysical Union (AGU). Adam Silverstein ('16) is following up on some of Alex’s interesting results. Meagen published an article in Lithos on the stratigraphy and geochemistry of the Iceland field site with her Dickinson and Iceland collaborators and two former students, Becky Alcorn ('11) and Lindsey Bowman ('12). In the summer of 2014, Meagen moved her field study from Iceland to the Mt. Edziza Volcanic Complex in northern British Columbia, where she was joined by Mary Reinthal ('16), a Clare Boothe Luce Scholar, and Julia Franceschi ('16).

The work of Team Utah continues as well. Candy Thornton’s ('14) Senior I.S. focused on the emplacement of the Ice Springs lava flows. Candy combined high-resolution GPS surveys with volcanic stratigraphy and morphological observations to interpret that inflation occurred in the lava flows. Cam Matesich ('14) used geochemistry to “fingerprint” the lava flows and interpret their sequence of emplacement. Both projects alter the current understanding of the development of the Ice Spring lava flow field.

Meagen continues to pursue her interests in undergraduate research. In her capacity as a CUR Councilor, she was a co-leader for AGU and GSA workshops on establishing an undergraduate research program for new and future faculty. In the summer of 2014, Meagen began working on Wooster’s behalf on a 2-year multi-institutional research project that focuses on mentoring in undergraduate research.
Gregory C. Wiles  
Geology Department Chair (fall semester), Professor of Geology,  
and Ross K. Shoolroy Chair of Natural Resources (B.A. Beloit, 1984;  
M.S. SUNY Binghamton, 1987; Ph.D. University at Buffalo, 1992;  
Wooster since 1998).

Greg was on research leave during the fall of 2013 and taught  
Geomorphology and Environmental Geology spring semester.

Greg advised I.S. students Abby VanLeuven (’14) and Andy Nash  
(’14). Abby studied the recent decline of Shore Pine along the Gulf  
of Alaska discovering that a marked reduction in bioproductivity  
noted in this species of lodgepole pine has been ongoing for the last few decades. Andy used tree-ring and radiocarbon  
dating to document an ice expansion about 3000 years BP in Glacier Bay  
National Park and Preserve.

During the summer of 2014, Greg traveled to Glacier Bay with Willy Nelson (’15) and Zachery  
Downes (’15) for their I.S. projects. Willy plans to extend climate reconstructions for the Gulf  
of Alaska based on tree-rings by sampling ancient logs that were overrun by ice about 2000 years ago.  
Zach will compile and add to the strong record of ice advance across the Gulf of Alaska during the  
first millennium CE. Sarah McGrath (’17) worked with Greg and Nick Wiesenberg on cedar trees  
from Alaska that were stripped by the Tlingit people over the past few hundred years. The dates of  
stripping were determined by Sarah using tree-ring analysis.

Sarah Frederick (’15) spent three weeks with Greg and Russian colleagues in Kamchatka where  
they collected multiple tree-ring sites across the peninsula. Sarah will use this collection as her I.S.  
work on climate variability in the Western Pacific.

Kaitlin Starr (’16) and Nick Wiesenberg spent a stormy week with Greg in Columbia Bay, Alaska.  
Here the Columbia Glacier has retreated over 10 km since student/faculty research in the region  
over ten years ago. Greg’s time in Columbia Bay brought back many memories of past Wooster  
adventures in this spectacular fiord. All the summer 2014 students will be presenting results of their  
research this fall at GSA in Vancouver.

Greg published a long tree-ring record for the Gulf of Alaska in The Holocene with Wooster student  
co-authors, Stephanie Jarvis (’11) and Lauren Vargo (’13). He also published a climate  
reconstruction for Sakhalin Island, Russia, in Climate Dynamics, and was co-author of an AGU  
Monograph on tree growth and climate change in northern forests.

Greg continues as associate editor of Tree Ring Research and serves as a member of the U.S. National  
Committee of the International Quaternary Society.
Greg will teach Climate Change in the fall and Environmental Geology and Geomorphology in the spring semester.

Mark A. Wilson
Professor of Geology, and Lewis M. and Marian Senter Nixon Professor of Natural Sciences (B.A. Wooster, 1978; Ph.D. Berkeley, 1982; Wooster since 1981).

Mark taught History of Life and Invertebrate Paleontology in the fall. He was on a research leave in the spring semester.

Mark had five Senior Independent Study students in the fall semester: In the summer of 2013, Steph Bosch (’14), Lizzie Reinthal (’14) and Oscar Mmari (’14) traveled with Mark to Israel for fieldwork in the Negev. Steph and Lizzie worked in the Matmor Formation (Middle Jurassic) of Makhtesh Gadol, a place now familiar to a dozen Wooster alumni. Steph collected and studied the rare bryozoans encrusting crinoid and other shelly debris. She, Mark, and Paul Taylor (Natural History Museum, London) now have a paper in press with the Bulletin of Geosciences describing four new bryozoan species. Lizzie worked on the taphonomy and pathology of the common crinoids in the Matmor. She, Mark, and Bill Ausich (The Ohio State University) have a paper in press with the Journal of Paleontology interpreting parasitic galls in some of these crinoids and describing a new crinoid species. Oscar studied a phosphorite unit in the Upper Cretaceous at Wadi Hawarim, concentrating on both its geological context and its economic value. Like Lizzie and Steph, Oscar presented his work as a poster at the 2013 annual meeting of the Geological Society of America in Denver. In the fall semester Mark also advised Scott Kugel (’14), who participated in a Keck Geology Consortium project in the Connecticut River Valley, and Kevin Silver (’13) who finished his I.S. thesis on xenoliths in basalts of the Black Rock Desert in southern Utah. Mark is very grateful to Greg Wiles, Shelley Judge, and Meagen Pollock who took over the advising of his students while he was on leave in the spring.

Mark had eleven papers and numerous abstracts published this year on geological and paleontological research in Israel, Jordan, Morocco, Estonia, Canada, and the USA. The papers include descriptions of new fossil taxa (brachiopods and hederelloids), analyses of trace fossils, reinterpretation of a Cambrian “bryozoan”, and a history of the last 50 years of paleontology (with Tricia Kelly (’75) as the leader of a multi-author team).

Because of his leave, Mark had a limited time with students in the spring and summer of 2014. He took two students on one-day field trips into the Cincinnatian (Upper Ordovician) of Ohio, Indiana, and Kentucky, to support their Junior and Senior Independent Study projects. William Harrison (’15) is working on symbiotic systems recorded in the skeletons of trepostome bryozoans. Coleman
Fitch ('15) is studying the bioerosion of bryozoans and the complex interactions between the borings and early taphonomic processes. Ian Tulungen ('15) will be investigating the encrusting fauna found on platyceratid gastropods that lived high up on crinoids found in the Waldron Shale (Silurian) of Indiana. Sarah Bender ('15) completed a Keck project this summer on coral reefs in Belize.

Mark had several research trips during the spring semester and summer. In April he spent three weeks in Israel doing fieldwork in Triassic, Jurassic, and Cretaceous sections. Much of the time he worked with his friend Yoav Avni of the Geological Survey of Israel. He gave a talk at the GSI headquarters in Jerusalem on Jurassic bryozoans. In June Mark went to Poland for a Larwood Meeting in Sopot on bryozoans (where he gave a talk), then worked with Michal Zaton at the University of Silesia, followed by a week with Paul Taylor at the Natural History Museum in London (where he made another presentation). In July Mark had an epic trip (albeit short) to China to meet new friends from Northeastern University in Shenyang.

This year Mark was honored as the namesake of a new species of brachiopod from the Triassic of southern Israel: Menathyris wilsoni Feldman, 2013.

Mark continues his service as the Secretary of the Paleontological Society, and he is an Overseas Representative for the Palaeontological Association. He also is a member of the review board for Choice, a journal for librarians.

Mark will teach History of Life and Invertebrate Paleontology during the coming fall semester, and then History of Life and Sedimentology & Stratigraphy in the spring.

Patrice Reeder
Administrative Coordinator for the Departments of Geology, Philosophy, and The Pre-Law Advising Program. Wooster since 2000.

Patrice attended several sessions for The College of Wooster Academic Administrative Coordinators. She organized many special activities hosted by both Geology, Philosophy, and The Pre-Law Advising Program, including The Thirty-Third Annual Osgood Lecture, The Seventh Bell Distinguished Lectureship in Law, The Eighth Lindner Lecture in Ethics, Philosophy’s Phi Sigma Tau (Honor Society) dinner and induction ceremony, and the holiday luncheon for Geology and Philosophy majors. She was again the Tournament Coordinator of the American Collegiate Moot Court Association Midwest Regional Tournament. Also this year, Patrice completed ALICE Training (Alert Lockdown Inform Counter Evacuate). This is a training of
how to respond to armed intruders and teaches a set of proactive strategies that increase chances of survival during an armed intruder event.

Patrice’s daughter, Danielle, graduated from the College this spring. She majored in English and minored in Education. She is currently pursuing her teaching certification. Patrice and her husband Kevin also became grandparents again in September 2013. Their son and daughter-in-law now have two sons; Colin turned 2 in June and Luke will be 1 in September. Patrice enjoys sewing, knitting, playing with her grandsons, and spending time with family.

Nick Wiesenberg
Geology Department Technician
Wooster since 2009.

Nick’s daily duties include maintaining the department’s equipment, conducting safety checks, and keeping consumable items stocked. Nick is a curator for the Fern Valley field station’s weather and stream-monitoring data collection and Geographic Information Systems (GIS) based image collection. He has received additional training in chemical safety and the handling of hazardous materials, in operating GIS equipment and software, and has audited geology courses to better assist students with their work. He also monitors the College’s seismic station and is in charge of archiving data and samples, as well as assisting students with equipment usage and software training. This spring, Nick helped manage the Chemistry Department stockroom while the current stockroom manager was on maternity leave.

Nick joined Team Alaska in Columbia Bay this August for support and logistics in the field. This year he also helped with community outreach including nursery and grade school tours of rocks and dinosaurs, the Fredericksburg Explorers tour of the Wooster campus trees, and other dendrochronology and structure dating outreach. Currently Nick is assisting with preparing samples for Senior I.S. projects as well as archiving all samples gathered this summer.

This past year Nick was able to do quite a bit of non-work related traveling. He traveled to Tennessee, Costa Rica, Canada, Alaska, and a National Park Tour which included Colorado, Utah, Arizona, and Nevada.

Nick continues to volunteer for the Wayne County Historical Society, Friends of Ohio Barns, Killbuck Marsh Wildlife Area, and the Malabar Farm Foundation. In his spare time Nick enjoys working on home improvement projects and being outdoors.
The following attended the annual GSA Alumni Reception held October 27–30 at the Colorado Convention Center, Denver, Colorado:

Stephanie Bosch (’14)  Shelley Judge  Lizzie Reinthal (’14)
Lindsey Bowman (’12)  Tricia Kelley (’75)  Kristin Riker-Coleman (’97)
Travis Brown (’10)  Scott Kugel (’14)  Fred Siewers (’85)
Kyle Burden (’14)  Sophie Lehmann (’08)  John Sime (’09)
Andrew Collins (’12)  Katherine Marenco (’03)  Candy Thornton (’14)
George Davis (’64)  Cameron Matesich (’14)  Abby VanLeuven (’14)
Merrily Davis  Oscar Mmari (’14)  Lori Bettison-Varga
Dori Farthing (’95)  Andy Nash (’14)  Bob Varga
Nick Fedorchuk (’12)  Tina Niemi (’85)  Michael Williams (’16)
Tricia Hall (’14)  Lisa Park Boush (’88)  Greg Wiles
Andy Horst (’07)  Meagen Pollock  Mark Wilson (’78)

The 2014 GSA Annual Meeting will take place October 19—22, 2014, in Vancouver, British Columbia, Canada. We will take a group photo at 8:00 p.m. during the Alumni Reception. ✤
Once again Wooster was well represented at the 2013 Annual Meeting of the American Geophysical Union (AGU) in San Francisco, California. Greg Wiles presented a poster on developing a network of tree ring chronologies from the eastern part of Russia. Alex Hiatt (’14), Mary Reinthal (’16), and Meagen Pollock presented their work on estimating paleo-ice thickness from glaciovolcanic pillow lavas from southwest Iceland, with important contributions from Adam Silverstein (’16) and Michael Williams (’16). Meagen was also co-leader of a workshop on getting started in undergraduate research, sponsored by the Council on Undergraduate Research. The Wooster crew also caught up with several Wooster alumni: Nicolas Young (’05), Lauren Vargo (’13), Lily Christman (’13), and Katherine Schleich (’12).
Fern Valley, Wooster’s Outdoor Classroom

Fern Valley was donated to The College of Wooster by David and Betty Wilkin (David has been an emeritus faculty member since 2002, and Betty is a Wooster alumna, class of 1964). The 55-acre rural station is currently used in Geology and Biology courses. This field station in Holmes County continues to provide field experiences for Wooster geologists and data collection and archiving is now in its third year. The site lies at the margin of the terminal moraine of the Laurentide Ice sheet and contains excellent exposure of glaciolacustrine, and ice-contact drift along with associated mass movements.

Nick Wiesenberg (Geological technician) has installed environmental monitoring equipment that includes timed cameras mounted in the valley to record mass movements and stream levels, stream gauges that take hourly measurements of water temperature and water levels, and temperature and precipitation loggers. In addition, erosion monitoring has also been initiated and this site is part of a larger study to compare modern erosion rates and place them into a longer-term geologic perspective. This environmental monitoring will be maintained by the department in the years to come.

The College’s new quadcopter flying at Fern Valley. This instrument allows us to take photos such as the one of the Fern Valley moraine below. This aerial shot is the ice-contact stratified drift in the Wisconsin terminal moraine that cuts across the field station.
Geology Majors

Class of 2014
Stephanie Bosch
Elkins Park, PA
Kyle Burden
New Providence, NJ
Tricia Hall
Marion, OH
Alexander Hiatt
Cass City, MI
Scott Kugel
Anchorage, AK
Cameron Matesich
Brownsville, PA
Oscar Mmari
Moshi, Tanzania
Andy Nash
Cleveland, OH
Elizabeth Reinthal
Danville, OH
Candice Thornton
McKees Rocks, PA
Abby VanLeuven
Portland, OR

Class of 2015
Sarah Bender
Twinsburg, OH
Olivia Brown
St. Clairsville, OH
Zachery Downes
Howard, OH
Coleman Fitch
Columbus, OH
Sarah Frederick
Shorewood, WI
Elisabeth Gresh
West Liberty, OH
George Harrison
Cincinnati, OH
Thomas Herold
Massillon, OH
Leo Jones
Columbus, OH
Wilson Nelson
Bemus Point, NY
Christian Tulungen
Culver, IN

Class of 2016
Kelli Baxstrom
Wooster, OH
Julia Franceschi
Ann Arbor, MI
Madeline Happ
Mequon, WI
Natalie Kahn
Seattle, WA
Mae Kemsley
Milton, VT
Meredith Mann
Massillon, OH
Daniel Misinay
Leavittsburg, OH
Brittany Nicholson
Wooster, OH
Eric Parker
Berea, OH
Mary Reinthal
Danville, OH
Krysden Schantz
Bethlehem, PA
Trevor Shoemaker
Millbrook, NY
Adam Silverstein
Forest Hills, NY
Kaitlin Starr
Wooster, OH
Michael Williams
San Diego, CA
Katherine Zeigler
Greenwich, CT

Class of 2017
Andrew Conaway
Rock Hill, SC
Clara Deck
Homewood, IL
Jeffrey Gunderson
San Ramon, CA
Cassidy Jester
Akron, OH
Daniel Peraza-Rudesill
Chapel Hill, NC
Galen Schwartzberg
Seattle, WA
Helen Siegel
East Amherst, NY
Achievements of the Class of 2014

Awards Scholarships, Prizes, and Activities

**Stephanie Bosch**
2014 GeoCUR Award for Outstanding Research in the Geosciences
Archaeology research/lab assistant
Archaeology Student Colloquium Vice-President
Departmental Honors in Archaeology
Geology Club President
Geology/Archaeology double major
Geology Department teaching assistant, fall and spring semesters
Presented Archaeology I.S. research at the Society for American Archaeology Annual Meeting in Austin, Texas
Presented Geology I.S. research at the Geological Society of America annual meeting in Denver, Colorado, and at the North American Paleontological Convention in Gainesville, Florida
Recipient of the Vivian L. Holliday Prize
This summer Stephanie attended the Miami University field camp in Wyoming, Idaho, and Montana. In the fall she will begin the Ph.D. program in Geology at Miami University (in Ohio).
Kyle Burden
Geology Club Treasurer
Geology Department teaching assistant, spring semester
Participated in College of Wooster Senior I.S. Research Symposium
Pipe Band Bagpiper and Wooster Scottish Arts Society
Presented I.S. research at the 2013 Geological Society of America annual meeting
Kyle is currently working as a Field Inspector at Carlin Simpson and Associates.

Tricia Hall
ABLE and APEX peer tutor
Clare Boothe Luce research
Dean’s List, fall and spring semesters
Received Departmental Honors and Honors on I.S.
Geology Club member
Geology Department teaching assistant, spring semester
Participated in College of Wooster Senior I.S. Research Symposium
Presented I.S. research at the 2013 Geological Society of America annual meeting
Robert W. McDowell Prize in Geology recipient
Varsity Track team captain
In the fall Tricia will be going to The Ohio State University to obtain her Masters Degree in geology.

Alexander Hiatt
Geology Club member
Geology Department teaching assistant, spring semester
Participated in College of Wooster Senior I.S. Research Symposium
Presented poster of preliminary I.S. results at American Geophysical Union 2013 Fall Meeting in San Francisco, California
Received Honors on I.S.
Alex spent the summer working as a research assistant for the Woody Perennial Polyculture program at University of Illinois Urbana-Champaign.

Scott Kugel
Eta Pi member
Geology Club member
For the foreseeable future (probably the next year) Scott will be in Alaska and hopes to find a job relating to geology, either in industry or with the government.

Cameron Matesich
Co-President and instructor for the Let’s Dance! Society
Dean’s List, fall semester
Geology Club member
Participated in College of Wooster Senior I.S. Research Symposium
Wooster Chorus member and Wooster Scott Marching Band percussionist
Cam has accepted the position of physical science technician at Death Valley National Park and will begin in October. He plans to attend graduate school in the fall of 2015 with a focus on volcanology.
Oscar Mmari
Geology Club member
Participated in College of Wooster Senior I.S. Research Symposium
Wooster Cricket team

Thomas (Andy) Nash
Charles B. Moke Prize recipient
Dean’s List, fall semester
Geology Club Vice-President
Geology Department teaching assistant, spring semester
Jack Lengyel Courage, Character, and Commitment Endowed Award recipient
Participated in College of Wooster Senior I.S. Research Symposium
Peer Tutor
Presented Geology I.S. research at the Geological Society of America annual meeting
Tree Ring Lab research assistant for Dr. Wiles
Varsity Football
Andy’s summer included an internship with the Illinois State Geological Survey in the Quaternary Geology section. In the fall he will start a graduate program at the University of Illinois and will be working towards his M.S. His advisor is Jessica Conroy (’03).

Elizabeth Reinthral
EARTH Magazine Extern, Summer and Fall 2014
Geology Club member
Geology Department teaching assistant, fall and spring semesters
Kirtlandia Society Research Intern, Invertebrate Paleontology Department at Cleveland Museum of Natural History, Summer 2014
Participated in College of Wooster Senior I.S. Research Symposium
Lizzie has been hired as a GeoCorps America Paleontology/Museum Assistant at Florissant Fossil Beds National Monument, Florissant, Colorado, for Fall 2014/Winter 2015

Candice Thornton
Geology Club member
IT department employee
Participated in College of Wooster Senior I.S. Research Symposium
Resident Assistant

Abby VanLeuven
Composed and played the music for a dance I.S.
Eta Pi member
Geology Club member
Geology Department teaching assistant, spring semester
Participated in College of Wooster Senior I.S. Research Symposium
Poster presentation of I.S. research at Geological Society of America annual meeting
Gave cello lessons
Ultimate Frisbee, team captain. Competed in the national tournament.
Meagen Pollock, Julia Franceschi ('16) and Mary Reinthal ('16) in British Columbia.

Sarah Bender ('15) in Belize.
Achievements of our Current Students

Class of 2015
Sarah Bender
Alpha Gamma Phi, New Member Educator and President
COW4Kids Mentor
Entrepreneurship Club
Ilgen Family College Scholarship recipient
Intergreek Council member
McGrew Scholarship recipient
Research Intern at CSIRO Marine and Atmospheric Research Division in Brisbane, QLD
Study abroad in Byron Bay, Australia, fall semester
Summer Senior I.S. research on the Keck Belize Coral Reefs Project

Olivia Brown
Geology Club member
Geology Department teaching assistant, fall and spring semesters
Highland Dancer with the Scot Band

Zachery Downes
Geology Club member
Residence Life employee
Science Day volunteer
Scot Lanes employee
Summer Research Assistant in the Tree Ring Lab
Summer Senior I.S. research in Glacier Bay National Park and Preserve, Alaska, with Dr. Wiles

Coleman Fitch
CrossFit Club President
Event supervisor for the Columbus Comets
Geology Club member
Summer Senior I.S. research in Richmond, Indiana, with Dr. Wilson

Sarah Frederick
Completed an REU at the Great Lakes WATER Institute in Milwaukee, Wisconsin
Digital Scholarship and Services office assistant
Geology Club member
Peer Tutor, Learning Center
Study abroad in Scotland at the University of St. Andrews, fall and spring semesters
Summer Senior I.S. research in Kamchatka, Russia, with Dr. Wiles
Wisconsin Colonial Dames XVII Century scholarship recipient

Elisabeth Gresh
Geology Club member
Geology Department teaching assistant, spring semester
**William Harrison**  
Dean’s List, fall semester  
Geology Club member  
Karl Ver Steeg Prize in Geology and Geography recipient  
Summer internship with Dr. Kristin Jaeger, School of Environment and Natural Resources, Ohio Agricultural Research and Development Center  
Summer Senior I.S. research on bryozoans in Panama

**Thomas Herold**  
Geology Club member  
Phi Omega Sigma Vice President  
Summer Senior I.S. research on the Keck Belize Coral Reefs Project  
Varsity lacrosse player, honorable mention for all-NCAC team

**Leo Jones**  
Geology Club member  
Off campus study in Scotland, spring semester  
Sophomore research assistant for Dr. Pollock

**Wilson Nelson**  
Men’s Tennis NCAC Player of the Week and honorable mention  
Summer Research Assistant in the Tree Ring Lab  
Summer Senior I.S. research in Glacier Bay National Park and Preserve, Alaska, with Dr. Wiles

**Christian Tulungen**  
Geology Club member  
Secretary of WooUndead (Humans vs. Zombies games organizers for The College of Wooster)  
Xi Chi Psi member

**Class of 2016**  
**Kelli Baxstrom**  
APEX Fellows summer intern with ASPO  
Dean’s Scholarship recipient  
Geology/Religious Studies double major  
Geology Club member  
PUSH Club member  
Religious Studies Club Vice-President  
Soccer team member  
STEM member  
Summer research assistant in Utah with Dr. Judge  
UU Ministries member  
Williams Fitness Center-recruiting assistant and student athletic trainer  
WOODS member  
This summer Kelli worked as a volunteer intern at Cuyahoga Valley National Park as part of a trails and grounds maintenance crew.
Julia Franceschi
Geology Club member
Member of NFHCA National Academic Squad (honoree)
Research assistant for Dr. Pollock, spring semester
Summer research assistant in the lab and also in British Columbia with Dr. Pollock
Varsity Field Hockey team
Varsity Softball team
Wooster Club Ice Hockey member

Madeline Happ
Geology Club member
Environmental Club
Women’s Ultimate Frisbee team

Natalie Kahn
Dean’s List, fall and spring semesters
Geology Club member
Religious Studies Club member
Soccer Club member
Sustainability Suite

Mae Kemsley
Geology Club member
Women’s Ultimate Frisbee team, co-captain
This summer Mae had an internship at the University of Vermont measuring the flow of carbon and other sediments into Lake Champlain.

Dan Misinay
Geology Club member
Varsity Football

Brittany Nicholson
Charles Moke Endowed Scholarship recipient
Dean’s List, spring semester
Don J. Miller Memorial Fund Scholarship
Geology Club member
Karl Ver Steeg Memorial Scholarship recipient
Margaret Moke Endowed Scholarship co-recipient
Margaret Reed and John O. Clay Endowed Scholarship recipient
Registrar’s Office employee
Volleyball Team
Woo Crew Member
Eric Parker
Geology Club member
This summer Eric worked with the Cleveland MetroParks Institute of the Great Outdoors as an outdoor recreation specialist leading trips and activities.

Mary Reinthal
Clare Boothe Luce Scholar
Geology Club member
Greenhouse member
Intermural Soccer captain
Phi Alpha Theta member
Science Day Volunteer
Summer research assistant in the lab and also in British Columbia with Dr. Pollock

Krysden Schantz
Geology Club member
Pipe band member
Wooster Scottish Arts Society President

Adam Silverstein
Geology Club member
Sophomore Research assistant for Dr. Pollock

Kaitlin Starr
Dean’s List, spring semester
Delta Theta Psi member & Publicity Chair
Frederic Kent Warner Endowed Scholarship recipient
Margaret Moke Endowed Scholarship co-recipient
Peer Tutor
Sophomore Research Assistant for Dr. Wiles in the Tree Ring Lab, spring and summer
Scot Center employee
W.A.C. (Wooster Activities Crew) member

Michael Williams
Dean’s list, fall semester
Geology Club member
Poster presentation at Geological Society of America annual meeting
Sophomore research assistant for Dr. Pollock in the fall semester and for Dr. Judge in the spring semester
Summer lab and field assistant in Utah with Dr. Judge

Katherine (Spencer) Zeigler
Dean’s List, fall semester
Geology Department teaching assistant, spring semester
Students Helping Students
Wooster VOX Vice President

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Class of 2017
Andrew Conaway
Geology Club member
Wooster Christian Fellowship member
Wooster Cricket Club member
This summer Andrew served as the Leader of Recreation at his church’s Vacation Bible School

Clara Deck
A Round of Monkeys A Capella, Treasurer
Dean’s List, fall semester
Geology Club member
W.A.C. (Wooster Activities Crew)
Wooster Chorus
During the summer Clara worked with the Interlochen Center for the Arts at their summer camp in northern Michigan.

Galen Schwartzberg
Dean’s List, spring semester
Geology Club member

Senior I.S. Symposium, Geology presenters
Scholarships and Awards

Below are brief descriptions of the Geology scholarships and awards presented to our Geology majors during this year.

The Charles B. Moke Prize is given in memory of Charlie Moke ('31) who taught in the Department of Geology for 36 years. The prize consists of a field instrument or device which is awarded to the graduating senior who plans to make Geology a vocation and who, in the judgment of the Geology staff, has shown the greatest improvement during his or her college career. This year’s recipient was Andy Nash ('14).

The Robert W. McDowell Prize in Geology was established in 1945 by Philip C. ('14) and Sarah Wright McDowell ('14) in memory of their son, Robert W. McDowell ('45), who lost his life in World War II. It is awarded annually to the geology major who has the highest general standing during the junior and senior years. This year’s recipient was Tricia Hall ('14).

The Karl Ver Steeg Prize in Geology and Geography, established in 1958, honors Karl Ver Steeg who taught in the Department of Geology and Geography from 1923 until 1952. This prize is awarded annually to the Geology major who has the highest general standing at the middle of the Junior year. This year’s recipient was William Harrison ('15).
The Margaret Reed and John O. Clay Endowed Scholarship was established in 1985 by John R. Clay, the son of Margaret ('45) and John Clay ('43). This scholarship is awarded annually to a student who has demonstrated academic achievement. This year’s recipient was Brittany Nicholson ('16).

The Don J. Miller Memorial Fund was established in 1961 by the family and friends of Don J. Miller, of the class of 1940. In recognition of Mr. Miller’s devotion to the science of geology, the scholarship which this fund provides is awarded annually to a student who is majoring in geology. This year’s recipient was Brittany Nicholson ('16).

The Karl Ver Steeg Memorial Scholarship is in honor and memory of Karl Ver Steeg, who taught in the Department of Geology from 1923 until 1952. It is awarded annually to a deserving student who is majoring in Geology. This year’s recipient was Brittany Nicholson ('16).

The Charles B. Moke and Margaret Kate Moke Endowed Scholarships were established in December of 1983 with a generous donation provided by Fritz Kate ('38), Margaret’s brother. These two scholarships are awarded annually to Geology majors who have distinguished themselves by dedication to quality in their academic work, have demonstrated self-reliance, and have a sincere interest in and a concern for other people, characteristics which were exemplified by Charlie and Margaret Moke. This year’s recipients were Brittany Nicholson ('16) and Kaitlin Starr ('16).

The Frederic Kent Warner Endowed Scholarship Fund was established in 1986 by family and friends in memory of Fred Warner ('76). Fred, originally from Orrville, Ohio, was killed in 1985 in a helicopter crash en route to an off-shore Alabama oil rig to examine a core while working for ARCO. This scholarship is awarded annually to a Geology major. This year’s recipient was Kaitlin Starr ('16).
Sarah Frederick ('15) in Russia

Geomorphology coring from the ice at Brown’s Lake Bog. Photo by Jesse Wiles.

William Harrison ('15) in Indiana
Geology Club

During the 2013-2014 academic year, the College of Wooster Geology Club was involved in many geology related activities both on and off campus. Members volunteered at local elementary schools, helping local children engage in a variety of geological topics, including tree-rings, fossils, dinosaurs, and sedimentary, igneous, and metamorphic rocks. Geology Club also spent time working in the X-ray Lab with girls from Expanding Your Horizons, a program dedicated to helping young women pursue careers in the sciences. The year culminated with the Geology Club’s participation in The College of Wooster’s Science Day, during which children from the community had the opportunity to learn about different rocks and fossils, watch the eruption of a volcano made of Coke and Mentos, and dig for fossils in a sand pit. In addition to these outreach activities, the Geology Club helped many majors travel to and present their original research at the Geological Society of America’s Annual Meeting in Denver, Colorado, as well as the American Geophysical Union’s Annual Meeting in San Francisco, California.

2013-2014 Geology Club Officers:
President: Stephanie Bosch
Vice President: Andy Nash
Treasurer: Kyle Burden

2014-2015 Geology Club Officers:
President: Zachery Downes
Vice President: Wilson Nelson
Treasurer: Coleman Fitch

Front Row: Patrice Reeder, Tricia Hall ('14), Zach Downes ('15), Candy Thornton ('14), Lizzie Reinthal ('14), Steph Bosch ('14), and Elisabeth Gresh ('15). Second Row: Andy Nash ('14), Adam Silverstein ('16), and Dan Misinay ('16). Third Row: Abby VanLeuven ('14), Cameron Matesich ('14), Scott Kugel ('14), Kyle Burden ('14), and Willy Nelson ('15). Fourth Row: Mark Wilson, Spencer Zeigler ('16), and Michael Williams ('16). Fifth Row: Meagen Pollock, Oscar Mmari ('14), Eric Parker ('17), Mary Reinthal ('16), and Shelley Judge. Sixth Row: Kaitlin Starr ('16), Kelli Baxstrom ('16), Danielle Slichenmyer ('16), and Sarah McGrath ('17).
Geology Club Presentations

August 29  Departmental Meeting and Geology Club Photograph
September 5  “What I Did Last Summer” slideshow
September 12  Grad School Day
September 26  Senior I.S. Seminars
   Scott Kugel  –  “Discerning Extreme Weather Events in the Connecticut River System Through the Study of Sediments in Flood Control Reservoirs of Western Massachusetts and Southern Vermont”
   Cameron Matesich  –  “Geochemical Analysis of High-Silica and Low-Silica Basalt Flows from Miter Crater in Ice Springs Volcanic Field, Black Rock Desert, Utah”

October 3  Senior I.S. Seminars
   Oscar Mmari  –  “Syndepositional Faulting, Shallowing and Intraformational Conglomerates in the Mishash Formation (Upper Cretaceous, Campanian) at Wadi Hawarim, Southern Israel”
   Andy Nash  –  “Tree-Ring Dating the Neoglacial Ice Advance of Wachusett Inlet, Glacier Bay National Park and Preserve, Southeast Alaska, USA”

October 10  Senior I.S. Seminars
   Tricia Hall  –  “Petrologic and Kinematic Analysis of Deformation Bands in the Late Cretaceous Sixmile Canyon Formation, Central Utah”
   Alex Hiatt  –  “Using Volatile H₂O in Basalt Pillows to Reconstruct Paleo-Ice Thickness at Undirhliðar Quarry, Southwest Iceland”

October 17  Earth Science Week – Geology Family Feud

October 24  Mock GSA

October 31  Senior I.S. Seminars
   Candice Thornton  –  “Determination of Inflation within the Miter Flow Depression, Ice Springs Volcanic Field”
   Abby VanLeuven  –  “Case Studies of Climate Change, Forest Health and Divergence, along the North Pacific Rim”

November 7  Senior I.S. Seminars
   Stephanie Bosch  –  “First Bryozoan Fauna Described from the Jurassic Tropics: Specimens from the Matmor Formation (Middle Jurassic, Upper Callovian) in Southern Israel”
   Kyle Burden  –  “Reconstruction of Eruptive Conditions Based on Crater Rim Stratigraphy at Miter Crater, Ice Springs Volcanic Field, Black Rock Desert, Utah”

November 14  Senior I.S. Seminars
   Kevin Silver  –  “An Analysis of Sedimentary Xenoliths: Ice Springs Volcanic Field, the Black Rock Desert, Utah”
   Elizabeth Reinthal  –  “Taphonomy and Pathology of Crinoid Ossicles in a Middle Jurassic Shallow Marine Community”
November 21  Dr. Brian Lutz ('05), Assistant Professor in the Biological Sciences Department, Kent State University – “Mountaintop Removal Coal Mining and Hydraulic Fracturing: Comparing Impacts on Water Resources”

December 6  Holiday Luncheon

January 16  Welcome Back, Old and New Business.

January 23  Senior I.S. Seminars
   Scott Kugel – “Discerning Extreme Weather Events in the Connecticut River System Through the Study of Sediments in Dams and Flood Control Reservoirs of Western Massachusetts and Southern Vermont”
   Cameron Matesich – “Geochemical Analysis of Basalt Flows from Miter Crater in Ice Springs Volcanic Field, Black Rock Desert, Utah”

January 30  Senior I.S. Seminars
   Oscar Mmari – “Syndepositional Faulting, Shallowing and Intraformational Conglomerates in the Mishash Formation (Upper Cretaceous, Campanian) at Wadi Hawarim, Southern Israel”
   Andy Nash – “Tree-Ring Dating and Climate Analysis of the Neoglacial Ice Advance of Glacier Bay National Park and Preserve, Southeast Alaska, USA”

February 6  Senior I.S. Seminars
   Tricia Hall – “Petrologic and Kinematic Analysis of Deformation Bands in the Late Cretaceous Sixmile Canyon Formation, Central Utah”
   Alex Hiatt – “Estimated Hydrostatic/Cryostatic Pressures during Emplacement of Pillow Lavas at Undirhliðar Quarry, Reykjanes Peninsula, southwest Iceland”

February 13  Senior I.S. Seminars
   Candice Thornton – “Determination of Inflation within the Miter Flow Depression, Ice Springs Volcanic Field”
   Abby VanLeuven – “A Dendrochronological Study of the Shore Pine as a Case Study to look at Climate Change, Forest Health and Divergence along the North Pacific Rim”

February 27  Senior I.S. Seminars
   Stephanie Bosch – “First Bryozoan Fauna Described from the Jurassic Tropics: Specimens from the Matmor Formation (Middle Jurassic, Upper Callovian) in Southern Israel”
   Kyle Burden – “Reconstruction of Eruptive Conditions Based on Crater Rim Stratigraphy at Miter Crater, Ice Springs Volcanic Field, Black Rock Desert, Utah”

March 6  Senior I.S. Seminars
   Elizabeth Reinthal – “Taphonomy and pathology of crinoid ossicles in a Middle Jurassic shallow marine community”

March 27  Wooster Geologists Talk About Grad School – Andrew Collins ('12), The Ohio State University and Jenn Horton ('13), University of Toledo

April 4  Dr. Jessica Conroy ('03), Assistant Professor, Department of Geology & Plant Biology, University of Illinois Urbana-Champaign
   “A Lake in the Middle of the Ocean: Interpreting Past Tropical Pacific Climate Variability from Galápagos Lake Sediments”
April 17  Caitlin Current, Enercon, Houston, Texas, Senior Hydrogeologist
“Speaking a Language Most People Don't Understand. What Does a Geologist in the Consulting Sector Actually Do?”

April 24  Dr. Andrew Horst ('07), Visiting Assistant Professor, Oberlin College
“Using Paleomagnetism to Study Deformation at Oceanic Transform Boundaries”

May 1  GeoClub Picnic

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Senior Reception, May 2014
Front: Abby VanLeuven, Tricia Hall, and Andy Nash.
Back: Kyle Burden, Scott Kugel, Lizzie Reinthal, Cam Matesich, and Steph Bosch.
First Bryozoan Fauna Described from the Jurassic Tropics:
Specimens from the Matmor Formation
(Middle Jurassic, Upper Callovian) in Southern Israel

by Stephanie Bosch

The focus of this study is on the bryozoan species that are present within subunit 51 of the Matmor Formation (Upper Callovian) exposed in Hamakhtesh Hagadol of the Negev in southern Israel. The Matmor sediments were deposited close to the paleoequator in the Ethiopian Province of the Tethyan Faunal Realm, and thus represent one of the few exposed Callovian sites that was formed in the tropics. The paleoenvironment was a shallow water embayment with a marly substrate, and was dominated by corals, sponges, and crinoids whose skeletal debris provided substrates for the bryozoans to encrust. These areas were part of a high disturbance regime environment and were periodically buried in thick marl that limited diversity and kept the community in its early successional stages. The bryozoans present within the Matmor Formation suggest that they existed in a shallow, warm-water, oligotrophic environment.

The Matmor bryozoan assemblage is dominated by the runner-type cyclostome *Stomatopora* and the sheet-like *Hyporosopora*, though it also includes examples of *Oncousoecia, Microeciella*, and *Idmonea*. Though the bryozoans from the Matmor Formation host genera that are similar to those found in the Middle Jurassic throughout the world, the species are very distinct. This study has identified five genera and six species of bryozoan within the Matmor Formation. Four of these species have not previously been described. Compared to equivalent bryozoan faunas in Europe, the Matmor assemblage shows relatively low species diversity. Taylor and Ernst (2008) indicate that Middle Jurassic bryozoan assemblages contain an average of 5.2 species, and a median of 17 species. The Matmor bryozoan fauna meets this average but falls well short of the median, suggesting that the Middle Jurassic Matmor assemblage is among the smallest. This study is the first to systematically describe the bryozoan assemblage from the Matmor Formation or any other tropical Jurassic location.❖
Reconstruction of Eruptive Conditions Based on Crater Rim Stratigraphy at Miter Crater, Ice Springs Volcanic Field, Black Rock Desert, Utah

by Kyle Burden

This study focuses on Miter Crater, the best-preserved cone of the Holocene, basaltic, Ice Springs Volcanic Field, located in the Black Rock Desert, Utah. The primary objective of this research is to construct a detailed eruptive history of the late stages of growth of Miter Crater by interpreting the volcanic stratigraphy on both the inside and outside walls of the cone. The study takes advantage of a newly excavated, inward-facing wall near the top of the crater rim that exposes an 8.3m high section of pyroclastic rocks. Methods include constructing several stratigraphic columns using both traditional measured section techniques and a laser range finder with DGPS system (cm-scale accuracy in the horizontal and vertical). Panoramic images of the inside and outside walls were also taken using Gigapan high-resolution photography. The volcanic stratigraphy from the inside of Miter Crater reveals a sequence, from bottom to top, of welded spatter and large bombs (≤ 97 cm width, 30 cm height), welded spatter and small bombs (≤ 27 cm width, 16.5 cm height), ash lapilli, and a highly weathered layer of loose blocks and bombs. 104 individual bombs within the inner wall were identified and measured for their height (ranging from 32 to 5 cm), width (ranging from 97 to 11.5 cm), and approximate vesicularity (ranging from 5 - 30%). 4 samples were collected for detailed petrologic and vesicularity analyses in the laboratory. A Strombolian eruption style is inferred for this section. A Strombolian eruption style can be inferred for Miter crater due to the presence of scoria and scoriaceous bombs. Other characteristics of Strombolian eruption deposits present at Miter Crater are fluidally shaped bombs and lapilli and bomb-sized fragments.
Kinematic and Dynamic Analysis of Deformation Bands in the Late Cretaceous Sixmile Canyon Formation, Central Utah

by Tricia Hall

Deformation bands are the most common form of strain localization in porous sandstones and sediments (Fossen et al. 2007). In central Utah, several Cretaceous units exhibit pronounced deformation bands. These porous rocks contain diagenetic paleoflow fronts that have been influenced by the presence of deformation bands. The study area in central Utah is located in the Basin and Range/Colorado Plateau Transition Zone, where Mesozoic and Cenozoic strata in this region have been affected by multiple stages of deformation. Late Jurassic-Early Paleogene structures of the Sevier fold-thrust belt have been overprinted by both pre- and regular Basin and Range extension.

This study focuses on the Late Cretaceous (Campanian) Sixmile Canyon Formation (Indianola Group), located on the Wasatch Plateau. The Sixmile Canyon Formation is dominated by grey, medium- to coarse-grained sandstones and pebbly sandstones, interbedded with mudstones and rare coal beds. The unit is inferred to be marine/marginal marine at its base, grading into terrestrial alluvial plain (Weiss 1994).

The Sevier Orogeny initiated diaparic action of the Arapien Shale, and this forced folding of the Sixmile Canyon Formation. Kinematic data indicate geometric and genetic relationships between deformation bands, as well as joints. Generally, deformation banding was the initial active deformation mechanism prior to and during the early stages of folding the Sanpete-Sevier Valley Anticline. As folding progressed, and deformation banding continued, a localized tensile stress regime was introduced which allowed for joint formation.

The dominant stress regime transitioned to tensional related to pre-Basin and Range extension, and the associated jointing enhanced fluid flow within the Sixmile Canyon Formation. Ultimately, the interaction of deformation bands and joints acts as a control on the ability of a reservoir rock, the Sixmile Canyon Formation being analogous, to conduct fluid.
Estimated Hydrostatic/Cryostatic Pressures During Emplacement of Pillow Lavas at Undirhliðar Quarry, Reykjanes Peninsula, Southwest Iceland

by Alexander Hiatt

Undirhliðar Quarry exposes the interior of Sveifluhals Ridge, a Pleistocene-Holocene subglacial pillow lava ridge located on one of several SW-NE-trending fissure zones on the Reykjanes Peninsula in southwest Iceland. Many estimates of paleo-glacier extents in Iceland have been made using geological evidence, but an increasingly popular technique for estimating paleo-ice thickness is the use of solubility-pressure models to relate dissolved volatile content to quenching pressure. The primary goals of this study were to test the reproducibility of paleo-ice thickness reconstructions using volatiles and to use this method for the Sveifluhals Ridge at Undirhliðar. Using Fourier Transform Infrared Spectrometry, 98 H₂O analyses were performed on 30 doubly polished glass wafers taken from the partially degassed quenched rinds of basaltic pillow lavas representing four pillow-dominated lithostratigraphies. Analyses revealed variability within and between various levels of measurement, with average percent standard deviations ranging from 6% to 7.6%. A pressure-solubility model developed by Papale et al. (2006) was used to calculate quenching pressures, which ranged from 23 to 42 bars among all units. From these pressures, ice thicknesses and water depths were calculated, resulting in a mean estimate of 450 m of ice atop the inferred basal pillow unit. This estimate represents the ice sheet thickness for the initial stage of eruption of the ridge and is consistent with previous estimates for the region by Schopka et al. (2006), Mercurio et al. (2009), and others.
Discerning Extreme Weather Events in the Connecticut River System
Through the Study of Sediments in Upland Dams and Flood Control Reservoirs of
Western Massachusetts and Southwestern Vermont

by Scott Kugel

In 2011, Hurricane Irene was responsible for many unusual events along the Connecticut River, with the most notable being a large amount of flooding in the upland areas surrounding the river and its tributaries. This mobilized large amounts of lacustrine sediments that were deposited in glacial Lake Hitchcock. Stream gauge data shows that there was a delay of 1.4 days in the movement of this sediment from the Deerfield River, which contributed 40% of the total sediment load during the storm, into the Connecticut River due to flood control measures. Previous analyses found that accumulations of this sediment can be characterized as incongruous, inorganic, and fine-grained layers that have a low elemental abundance. This study seeks to identify these layers in multiple flood control reservoirs and dams on upland tributaries of the Connecticut River and compare them to the sediment record to identify previous storm events that are similar to Hurricane Irene. Our analysis focuses on the organic content, grain size, and mercury concentration of the cores that were collected. We found that the samples that were collected from the four upland flood control reservoirs in this study do not match the expected characteristics of sediment deposited by Hurricane Irene.

❖
Analysis of Ice Springs Volcanic Field Structures, Black Rock Desert, Utah

by Cameron Matesich

The Basin and Range Province is dominated by the extension of Earth’s crust. In Utah, this crustal extension created volcanism in the form of many lava fields, which are collectively known as the Black Rock Desert. One of these fields is the Ice Springs Volcanic Field, which consists of four craters and many different lava flows. Ice Springs Volcanic Field is unique from the other fields in the Black Rock Desert in that the geochemistry of the flows differ despite originating from the same volcanic complex. From previous research by Thompson (2009), it was stated that the Crescent and the earlier Miter flows were high-silica, while the later Miter, Terrace, and Pocket flows were low-silica. Using major element geochemical analysis, field observations, and thin section analysis, this study found that the olivine phyric basalt flow (OPBF), described by Sims (2013), is a high-silica 'āā basalt flow. This flow contains structures that were found to be rafted debris from a pāhoehoe crust that formed in the center of the flow. From the geochemical data and GIS analysis, it was proposed that the OPBF is a western flow from Crescent. This would separate the Crescent flows (entirely high-silica) from the Miter flows (entirely low-silica). ❖
The effect of local tectonics and marine erosion on the Cretaceous phosphorite in the
Mishash Formation (Upper Cretaceous, Campanian) at
Wadi Hawarim, southern Israel

by Oscar Mmari

The Mishash Formation (Mount Scopus Group; Upper Cretaceous, Campanian) in Israel
contains significant amounts of phosphorite important to industry. It is stratigraphically divided
into two parts: a lower Chert Member and an upper Phosphate Member. We found evidence in
exposures of the formation in Wadi Hawarim, southern Israel, that a significant east-west trending
steeply dipping normal fault was active during the early deposition of the Phosphate Member. This
faulting was synchronous with the Syrian Arc compressional structures active at the time that
produced a series of anticlinal ridges and synclinal basins in the region. The fault, with a
displacement of at least 50 meters, produced a drag fold against the footwall composed of the
underlying Menuha Formation chalks. The hanging wall is composed of the Chert Member that is
folded nearly 90 degrees along the fault plane. The Phosphate Member begins with 2-3 meters of
phosphorite and is followed by a meter-thick marly bed rich with the crustacean burrow trace fossil
*Thalassinoides*. Immediately above the trace fossils is a siliciclastic layer composed of chert
fragments. This layer is a very coarse conglomerate near the fault that thins down-dip for several
hundred meters, grading into discontinuous sandstone layers less than a centimeter thick.

Our hypothesis is that the fault was active during the late Campanian after the deposition of
the Chert Member and the lower part of the Phosphate Member of the Mishash Formation. The
Chert Member had considerable ductility and was folded along the fault scarp. Soon afterwards
relative sea level dropped, produced an oxygen-rich interval that enabled shrimp burrowing. The
drop in relative sea level also brought the chert-rich fault scarp into a high-energy zone of erosion,
producing a clastic wedge of cherty debris to spread seaward over the sediments, including the
shrimp burrows. Relative sea levels then rose again, terminating the supply of siliciclastics and
returning the sedimentation regime to dysoxic phosphorite. The trace fossils and this
intraformational clastic wedge indicate a regional sea level fall and rise. Moreover, the occurrence of
clastic wedges within the Mishash Formation demonstrates that shallow sea conditions prevailed in the
vicinity of the Syrian Arc structures during the late Campanian.
Tree-Ring Dating and Climate Analysis of Neoglacial Ice Advance of Wachusett Inlet, Glacier Bay National Park and Preserve, Southeast Alaska, USA

by Andy Nash

The retreat of glaciers coupled with high rates of uplift along the Gulf of Alaska has exposed new sequences of glacial deposits and buried forests with datable materials for study. These logs contain important paleoclimate proxy records imbedded within their ring widths. We focus our study on the trees overridden by the advancing Carroll Glacier at the head of Wachusett Inlet in upper Glacier Bay. Logs and stumps overridden and buried by Carroll Glacier were radiocarbon dated to ~3.2 through 3.6 cal yr BP years, a time referred to as the Neoglacial. From 49 of these logs, a floating ring width chronology was developed to form a Wachusett Inlet tree ring chronology. Next, ring width chronologies from Wachusett and Geikie Inlets were compared to each other to better understand the regional advance of ice within Glacier Bay National Park and Preserve. These chronologies correlate well with each other with a correlation coefficient of 0.54 over 475 years and show that ice began advancing in Geikie Inlet before ice advanced in Wachusett Inlet.

To better characterize climate changes in Glacier Bay, spectral analysis was performed on the combined Wachusett and Geikie 3k ring width series to identify oscillations within the ring width chronology. An oscillation with a period between 196-245 years was identified above the 99% confidence level. Wavelet analysis replicated this result and showed that this oscillation was persistent throughout the 345 year time series. This oscillation is likely related to the de Vries cycle of solar forcing recognized in other Holocene records. ☑
Taphonomy and pathology of a Middle Jurassic shallow marine crinoid community
(Matmor Formation, southern Israel)

by Elizabeth Reinthal

Fragments of the articulate crinoids Apiocrinites negevensis and Apiocrinites feldmani n. sp. are among the most common fossils in the Matmor Formation (Middle Jurassic) exposed in the Negev of southern Israel. These crinoids were pioneer colonists in shallow marine marls. During life, Apiocrinites feldmani n. sp. was often infected with what appear to have been parasites that produced gall-like swellings in their columns. After death, both species of crinoid provided skeletal debris that served as “benthic islands” for a diverse sclerobiont fauna in a classic example of taphonomic feedback and facilitated ecological succession. This paleoecosystem is of special significance because tropical marine communities of the Middle Jurassic are inadequately known.

A large collection of crinoid fragments was collected from exposures of the Matmor Formation in Hamakhtesh Hagadol, southern Israel. For stratigraphic and paleoenvironmental consistency, only those fossils from the informal “subunit 51,” a calcareous marl, were studied. This subunit is in the Peltoceras athleta Zone of the Upper Callovian. These sediments were deposited very close to the paleoequator in the Ethiopian Province of the Tethyan Faunal Realm.

Many of the crinoid pluricolumnals of Apiocrinites feldmani n. sp. have swellings that indicate infection during life. These gall-like cysts often have shallow pits associated with them. The galls are a type of embedment structure: the crinoid had a tissue growth reaction to an organism boring into its stem.

The crinoids partially disarticulated after death, releasing numerous pluricolumnals and large calyces onto the marly seafloor. These hard substrates facilitated the settlement of numerous sclerobionts including thecideide brachiopods, cyclostome bryozoans, oysters, plicatulids, serpulids, sabellids, scleractinian corals, calcisponges, and foraminiferans. Trace fossils on the crinoid fragments include the barnacle boring Rogerella, the bivalve boring Gastrochaenolites, the worm borings Talpina and Trypanites, and the echinoid grazing Gnathichnus. The bryozoans are especially notable because this tropical Jurassic fauna is only now being described. They are dominated by the runner-type cyclostome Stomatopora and the sheet-like Hyporosopora. Overall the sclerobiont diversity on these tropical Jurassic crinoid fragments is comparable to temperate equivalents in Europe and North America, with the exception of lower diversity and abundance among the tropical bryozoans.
Determination of Inflation Within the Miter Flow Depression in Ice Springs Volcanic Field

by Candice Thornton

Miter Flow Depression (MFD) is the boundary between Miter and Terrace flows as determined by Hoover (1974) within Ice Springs Volcanic Field, Black Rock Desert, Utah. Miter flow is an S-type pahoehoe flow (spongy: following Wilmoth and Walker, 1992). The depression is composed of tumuli, lava pillars, and a network of fractures. The tumuli had characteristic axial fracturing and a columnar jointed exterior. The walls bounding the MFD have a general stratigraphic trend of a central massive unit and units of increasing vesicularity moving toward the top and bottom of the flow. The upper flow unit of the walls features cavities ranging in thickness from 10 - 20 cm, most likely the product of gas exsolution or vesicle coalescence (Wilmoth and Walker, 1992). Three lava pillars are present in the MFD, named Pillars 1-3 from north to south. These pillars vary from previously documented lava pillars occurring within ponded lavas or subaqueous lavas due to their origins within an inflated lava flow. The pillars and flow walls were all within 1 m elevation of each other, with the exception of Pillar 3 which is structurally unique. Pillar 3 is elongated and features a large fracture through the middle, the eastern most half of pillar three is a vertical basalt column. The pillars each feature a stratigraphic sequence analogous to that of the flow walls that bound the MFD. Structural measurements of striations on features throughout the MFD indicate that it was affected by vertical motion. The presence of tumuli, megavesicles, and an inflated flow stratigraphic sequence in the MFD indicate that the region was initially emplaced as in inflated flow, which then underwent collapse.
A Dendroclimatology Study of Shore Pine as a Case Study to look at Climate Change and Forest Health, in Glacier Bay National Park and Preserve

by Abby VanLeuven

A recent 10-year dramatic decline in shore pine (*Pinus contorta var. contorta*) tree growth has been observed in the Gulf of Alaska. This decline was observed by the U.S. Forest Service and attributed to insects and pathogens in a low elevation transect. In the summer of 2013, tree cores were collected for a dendroclimatic study, from Gustavus, Alaska, and compiled into three chronologies from differing elevations, totaling 140 cores, covering a span of 447 years. The three chronologies were then correlated to monthly temperature averages from Sitka and precipitation from Gustavus. Although 95 miles from the field sites, temperature data was used from Sitka because it was a more complete database that extended back to the Little Ice Age (1832).

Correlations with precipitation and temperature varied across each elevational transect and through time. During the Little Ice Age, temperature correlated positively through the growing season at the mid and high elevations. Precipitation during this time correlated positively except for a strong negative correlation in October. At the MF (low elevation) site, temperature correlated mostly negative for the interval of 1940-1968 and positively from 1977-1993; precipitation showed the opposite relationship. At the YL (mid elevation) site, temperature correlated positively from 1940-1968 and mostly positively between 1977-1993. At the XRCL (high elevation) site, temperature correlated positively during the 1940-1968 interval. From 1977-1993 months of significance are negatively correlated with temperature. Precipitation at this site correlated mostly positive during the 1940-1968 interval and negative from 1977-2013.

Relationships between precipitation and temperature did not show any patterns between elevations. Differences in positive and negative correlations can be seen as the effects of climate change on different elevations and the time of year. Increasing amounts of precipitation, coupled with rising temperatures, are a recent trend and are advantageous for insects and pathogens that are attacking the shore pine, helping to explain their recent decline. Understanding the role that climate and climate change has on the shore pine will help inform conservation strategies for the shore pine and other tree species.
Kaitlin Starr ('16), Nick Wiesenber, and Greg Wiles in Alaska. Photo by Jesse Wiles.

Tom Herold ('15) in Belize

Coleman Fitch ('15), Richmond, Indiana
Jessica Conroy, assistant professor of geology at the University of Illinois at Urbana-Champaign and 2003 graduate from The College of Wooster, was our 33rd Annual Osgood lecturer. Her lecture titled, “Dust and Temperature Variability in the Himalayas and Southern Tibetan Plateau over the Last Millennium” was given on April 2.

Dr. Conroy received her undergraduate degree from Wooster, and her master’s and Ph.D. from the University of Arizona. Her research is focused on understanding the modern climate system and reconstructing past climate variability using biological, chemical, and physical archives of climate and environmental change found in lake sediments with the ultimate goal of placing recent climate change in a deeper and broader context to improve projections of future climate change. A major component of her research is also modern monitoring of lake systems and analysis of the stable isotopic composition of precipitation, seawater, and vapor.

She has been an author of many articles in peer-reviewed publications and holds memberships in the American Geophysical Union, the American Quaternary Association, the Geological Society of America, and Past Global Changes (PAGES).

The Richard G. Osgood, Jr. Memorial Lectureship in Geology was endowed in 1981 by his three sons in memory of their father, a paleontologist with an international reputation who taught at Wooster from 1967 until 1981. Funds from this endowment are used to bring a well-known scientist interested in paleontology and/or stratigraphy to the campus each year to lecture and meet with students.
<table>
<thead>
<tr>
<th>Year</th>
<th>Lecturer Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>1982</td>
<td>John Pojeta, Jr.</td>
<td>United States Geological Survey</td>
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<td>1983</td>
<td>J. William Schopf</td>
<td>The University of California, Los Angeles</td>
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<td>1984</td>
<td>David Jablonski</td>
<td>The University of Chicago</td>
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<td>1985</td>
<td><strong>Walter Manger ('66)</strong></td>
<td>The University of Arkansas</td>
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<td>1986</td>
<td>Susan Kidwell</td>
<td>The University of Chicago</td>
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<td>1987</td>
<td>Niles Eldredge</td>
<td>The American Museum of Natural History</td>
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<td>1988</td>
<td>Steven Stanley</td>
<td>Johns Hopkins University</td>
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<td>1989</td>
<td>Paul Taylor</td>
<td>The Natural History Museum, London</td>
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<td>1990</td>
<td>Erle Kauffman</td>
<td>The University of Colorado</td>
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<td>1991</td>
<td>Rodney M. Feldmann</td>
<td>Kent State University</td>
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<td>1992</td>
<td><strong>Molly F. Miller ('69)</strong></td>
<td>Vanderbilt University</td>
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<td>1993</td>
<td>John Van Wagoner ('72)</td>
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<td>1994</td>
<td>Adrienne Zihlman</td>
<td>The University of California, Santa Cruz</td>
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<td>1995</td>
<td>Martin Lockley</td>
<td>The University of Colorado at Denver</td>
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<td>1996</td>
<td>Timothy J. Palmer</td>
<td>The University of Wales, Aberystwyth</td>
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<td>1997</td>
<td>Jeffrey F. Mount</td>
<td>The University of California, Davis</td>
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<td>1998</td>
<td>Mary Droser</td>
<td>The University of California, Riverside</td>
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<td>1999</td>
<td>Bruce Latimer</td>
<td>The Cleveland Museum of Natural History</td>
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<td>2000</td>
<td>Paul C. Mayewski</td>
<td>The University of New Hampshire</td>
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<td>2001</td>
<td>Carlton E. Brett</td>
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<td>Douglas H. Erwin</td>
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<td>2003</td>
<td>Mark A. Norell</td>
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<td>2004</td>
<td>Lonnie Thompson</td>
<td>The Ohio State University</td>
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<td>2005</td>
<td><strong>Patricia H. Kelley ('75)</strong></td>
<td>University of North Carolina at Wilmington</td>
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<td>2006</td>
<td>Orrin H. Pilkey</td>
<td>Duke University</td>
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<td>2007</td>
<td>Richard Alley</td>
<td>Pennsylvania State University</td>
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<td>2008</td>
<td>Paul Olsen</td>
<td>Columbia University</td>
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<td>2009</td>
<td>David A. Burney</td>
<td>National Tropical Botanical Garden, Hawaii</td>
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<td>2010</td>
<td>James W. Hagadorn</td>
<td>Amherst College</td>
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<td>2011</td>
<td>M. Susan Lozier</td>
<td>Duke University</td>
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<td>2012</td>
<td><strong>George Davis ('64)</strong></td>
<td>University of Arizona</td>
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<td>2013</td>
<td>Michael D. Mann</td>
<td>The Pennsylvania State University</td>
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<tr>
<td>2014</td>
<td><strong>Jessica Conroy ('03)</strong></td>
<td>University of Illinois-Champaign-Urbana</td>
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The 2015 Osgood Lecturer will be Scott White, Associate Professor & Graduate Studies Director at the University of South Carolina.
Daniel J. Miles started in the class of ‘43, but due to a free tour of the Philippines courtesy of the U.S. Army, Dan graduated from the College in 1946. He received his Masters in Petroleum Geology at University of Pittsburgh in 1948. Dan was a Petroleum geologist for Gulf Oil and L.L.&E, as well as independent geologist around Texas and New Mexico. He moved to Los Alamos, New Mexico, where he started their newspaper, The Los Alamos Monitor. Later he worked for the Los Alamos National Labs as a geologist on their geothermal drilling project. Dan married Lois Wilson (’43) and they had four daughters. He continued swimming all his life, including on one of the oldest relay teams to swim the English Channel. For his 90th birthday, Dan swam 90 laps of the pool in Los Alamos. At 93 years old he is living a bachelor’s lifestyle in the mountains of northern New Mexico. (Information provided by his daughter, Judy Tudor.) ❖

Stan (’48) and Flo Gault are the inaugural recipients of the Wayne County Community Foundation’s Friend of Philanthropy Award. ❖

Ross Lessentine (’50) – “I had an interesting and productive career in petroleum exploration which if I had to do it over again, I would. After 34 years, I retired in April 1986. My wife and I were fortunate to reside with Dr. Moke while at Wooster; his wife had recently passed away. He needed someone to care for his two children, which my wife Marge did, in addition to managing the household, which included our young daughter.” ❖


David Privette (’55) – “Loved Wooster and Geology major, but after graduating I served in the Navy, worked professionally in the BSA and finally owned and operated a True Value Hardware with my wife Patricia (McClelland), Wooster Class of 1953. As octogenarians, we have returned to the state where we met and had our family. We love our home in Adrian, a city of ~23,000 which has 3 colleges (Adrian College [Methodist], Siena Heights [Catholic, Dominican], and Jackson Technical). We love Michigan’s forests and lakes. Last year we enjoyed our trip to Isle Royale in Lake Superior (highly recommended).” ❖

Stan Totten (’58) – “I am volunteer curator of the Hanover College Museum of Natural History. I have published three books and have written two more looking for a publisher.” ❖

Jane Ehemann (’60) has been retired about 10 years and still enjoys traveling and close communication with Shippensburg University Geography Department. ❖

George Davis (’64) – “It has been a full but enjoyable year, serving as immediate Past President of the Geological Society of America, teaching courses on Colorado Plateau geology and geological mapping as preparation for field camp. Published through the GSA Bulletin a paper on folding, an
important part of the research I’ve been doing in Greece. This summer brings opportunities for fieldwork in the Henry Mountains (Utah), followed by nearly a month in Scotland working with Midland Valley Exploration (Glasgow) on things related to 3D visualization of geologic structures. In a couple of days from this writing Merrily and I head to Wooster for my 50th reunion!! Looking forward to it immensely.”

Stephen Moran (‘65) – “Finally, more or less retired after numerous false starts over the past 5 years. We enjoy spending several days for wild bridge binge with Dick and Jan Liebe every winter either in our home in California or theirs in Tucson.”

John (Dave) Lazor (‘66) is currently semi-retired in western Washington state occasionally teaching a two day seminar titled, “Introduction to Geology For Non-Geologists” and working on oil and gas prospects located in Texas and Louisiana.

Trinda Bedrossian (‘69) recently published several maps and articles related to the identification of potential alluvial fan flooding hazards in southern California. She is currently compiling the 165-year history of California’s State Geological Survey.

Steven Emerson (‘69) studies the exchange of gases between the ocean and atmosphere. He tells us, “About 40% of the anthropogenic CO₂ that has entered the atmosphere has ended up in the ocean. This has consequences for climate change and ocean acidification.”

Scott Bair (‘73) received the 2013 George Burke Maxey Distinguished Service Award through the GSA Hydrogeology Division. “After 29 years at Ohio State University, I packed up the chalk, tossed the files, kept the books, and moved to the Outer banks of North Carolina with my wife of 36 years. We plan to stay here until sea level rises and carries us away. Not that it is going to happen in the next 100 or so years, mind you. Our house sits 28 feet above sea level atop an ancient sand dune that is presently covered by a maritime forest of oak, hickory, holly, pine, ironwood, and sassafras trees, plus poison ivy vines as big as your forearm. If you are ever near Kitty Hawk, please stop by. We are the only Bairs on the island.”

Dale Hostenske (‘73) stopped by for a visit in October.

Jeffrey Yarus (‘73) – “I joined Landmark Graphics Corporation, a division of Halliburton in 2006 when they acquired my company, Quantitative Geosciences, Inc. At Landmark, I initiated and managed the development of the company’s earth modeling software until 2014 at which time I was appointed to the position of Halliburton Technology Fellow. My current responsibilities involve innovative research in the geosciences and reservoir engineering disciplines. I am married to Beth Schaberg of Cleveland, Ohio, and have 3 children, 2 stepchildren, and 3 grandchildren.”

Patricia Hagelin Kelley (‘75) was very honored to receive the University of North Carolina Wilmington Distinguished Teaching Professorship Award, Board of Trustees Teaching Excellence awards, and a University of North Carolina Board of Governors Award for Teaching Excellence this
past year. Her family continues to do well - Timothy, his wife Lisa, and three-year-old daughter McKenzie continue to live in Arlington, Virginia, and Katherine and her husband John in Albuquerque, New Mexico.

Karen Havholm ('76) says, “Having now worked in university administration full-time (running the research office) since 2006, my geology is a little rusty. I have been active in Council on Undergraduate Research activities as a Councilor in the Undergraduate Program Directors’ division and worked as a facilitator to support campuses in advancing undergraduate research. In Wisconsin I helped lead the development of the Wisconsin System Council on Undergraduate Research over the last couple of years. Basically, I am an advocate for I.S. everywhere! My daughter is married and in graduate school (Economic Geology) and my husband and I are contemplating retirement plans. We continue to enjoy living in western Wisconsin.”

Kurt Leckler ('78) – “I never really did get over Spring Break, so I decided to make a career in south Florida as a hydrogeologist. My territory spans between Disney World and Key West. I was honored to participate in the 100th Anniversary Beta Kappa Phi Reunion in Wooster this past April.”

Alan Spencer ('78) recently had an exhibit of his artwork in a gallery in Worthington, Ohio. The exhibit had 12 ceramic vases, one for each of the geologic periods. His work can be seen at [www.spencerceramics.com](http://www.spencerceramics.com).

Jeffrey Spatz ('79) is moving to Houston in the summer of 2015.

Anne (Scales) Crafts ('83) tells us, “Our eldest son just started medical school and our younger son started his sophomore year at IU with a double major in the Kelly School of Business and the Jacobs School of Music. Yes, we are proud parents.”

Sally (Widman) Ferree ('83) is applying for positions in the environmental field. She welcomes an online update (sustainable).

Brad Leach ('83) has retired from Newmont Mining Corp after working there for 23 years. He and his wife have opened a small home-based consulting firm specializing in mining project development, exploration, and due-diligence services. “This allows us to have a more flexible schedule, with more free time to enjoy the country around us.”

Richard Wurster ('83) is retired, raising children and being a domestic engineer. His kids are off to college and changing the world!

Nancy (Neagoy) Rice ('85) “I have been working for the Ohio EPA 28 and one-half years and counting! The retirement light at the end of the tunnel is getting brighter. I am still in the drinking water program which has been touched more recently by the shale gas boom in Ohio as well as what seems like constant regulatory changes to ensure our drinking water is safe.”
Abe Springer ('87) will be on sabbatical leave from Northern Arizona University during the 2014-2015 academic year. He hopes to see a lot of alumni during his travels.

Congratulations to Lisa Park Boush ('88) who is now the Director for Integrative Geosciences at the University of Connecticut.

Luke Blair ('94) – “14 years with the USGS Earthquake Science Center and still no major earthquake on the west coast, coincidence?”

In October Vince Dalchuk ('98) stopped by to visit Scovel Hall.

Camron Miller ('98) and his wife, Janna, have two sons - Jace (10) and Brett (8).

Halle Morrison ('99) is working on her MS in chemistry, and still teaching.

Megan Hooker ('00) recently had a law review article published in the University of Oregon’s Journal of Environmental Law and Litigation about hydropower licensing, recreation and aesthetics. Also, last year she completed a yoga teacher training and has been enjoying teaching gentle yoga classes.

Jim Roche (former Wooster faculty member) stopped by to visit us in October.

Russell Kohrs – ('01) “This last academic year brought with it many new and exciting developments for me both personally and professionally. Sarah (Nichols ’01) and I had our third child in January, Gratian Azariah Kohrs. Our older boys are finding him to be much fun and are full of wonder. Sarah is homeschooling them, Joey in particular, and he has excelled in his first year of Kindergarten under her tutelage. As a family, we have also enjoyed supporting Sarah in her artistic endeavors, through her poetry, photography, and ceramics. It’s been a busy year, but a good one! Professionally, I was named NAGT’s Outstanding Earth Science Teacher for both Virginia and the Eastern Section for work I have done with my Astronomy students. I am now also serving in a new role as the Mid-Atlantic Regional Director for NESTA (National Earth Science Teachers Association). A busy 2013-2014 school year has brought opportunities to teach Physical Geology, Astronomy, and Earth Science to students in grades 9-12. I also had the joy of teaching an online course in Aerospace Engineering through the Virginia Aerospace Science and Technology Scholars (VASTS) program, which includes an upcoming summer academy at NASA Wallops Flight Facility where we will come up with ideas and detailed plans for a manned Mars mission with the active participation of NASA scientists and engineers. This fall looks to be busy as I teach my first community college course NOT associated with the dual-enrollment program with my high school, and do it through a hybrid online/onsite delivery. I have much to learn! I also plan on starting an Educational Specialist degree program at Virginia Tech in Integrative STEM Education. I hope to bring these ideas into both my classroom and into my district’s classrooms. My Wooster experience
has, of course, made all of this possible! Many thanks to the Geology Department and the College for four very memorable and foundational years!”

Kirk Lapham ('01) – “We are expecting a baby in July. Older brothers Grant (5) and Blake (2) are very excited to meet their new sibling!”

Aaron Shear ('01) – “My second child, Susan Tamzin Shear, was born on March 28, 2014. Our 2-year old son, Micah, enjoys having a little sister.”

Jerome Hall ('02) just moved from Shell’s Onshore Unconventionals business back to deep water exploration, working South Atlantic opportunities. He is looking forward to staying involved with Wooster Geology.

Suzanne (Boyenton) Bartley ('05) is moving to Budapest, Hungary, with her husband! She will be returning to school to get a certificate in ELL (English Language Learning) to add to her teaching license.

Elyse Zavar ('07) married Erik Larson on December 30, 2013, and received her Ph.D. in May 2014.

Sophie Lehmann ('08) “Continuing work on terrestrial paleoclimate and paleoecology in southern Africa using isotope geochemistry (and sedimentology). Actually, I am currently in Cape Town!”

Kelly Aughenbaugh ('10) is working towards a Master of Divinity at Church Divinity School of the Pacific in Berkeley, California.

Adam Samale ('10) has a 6 month-old “geologist in training” named Levi. Adam works at ConocoPhillips and says, “Please feel free to pass my email address along to any geology majors that are interested in petroleum geology.” His email is asamale10@gmail.com.

Jesse Davenport ('11) received his Master’s degree from the University of Notre Dame during the summer of 2013. In July 2013 he married Katie O’Sullivan, and in October moved to Nancy, France, where Jesse took a Ph.D./research position. Jesse has an article titled “GPS measurements of ground inflation help forecast ash plumes” in the online version of Earth

Andrew Retzler ('11) is an Assistant Scientist at the Minnesota Geological Survey in St. Paul, Minnesota. He tell us, “I survived the winter of ’13-’14.”

Lindsey Bowman ('12) now has a STEPPE science policy internship at The Geological Society of America.
Congratulations to **Nick Fedorchuk ('12)** for successfully defending his M.S. thesis on April 29, 2014.

In May **Katharine Schleich ('12)** graduated from Ohio University with a Master of Science Degree. Congratulations!

**Richa Ekka ('13)** is working on her Masters at The University of Melbourne, the Office of Environmental Programs. She is enrolled in a tailored program focusing on sustainable development and taking classes like energy efficiency technology, community natural resources, sustainability governance and leadership, and environmental assessment and evaluation. Good luck, Richa!

**Matt Peppers ('13)** spent most of this summer interning at Chesapeake Energy in Oklahoma City as a geologist. He was in a 3-month program that culminated with a presentation on the project he worked on. After giving several presentations to many various groups he was offered a full-time position (and accepted!) as an exploration geologist in Oklahoma City to begin next summer after he completes his MS thesis.

Matt says, “It was a really exciting opportunity for me, and I’m thrilled to have the chance to experience that industry. I wanted to send along a “thank you” to you and the department, as the geology background I got at Wooster was a large part of my success this summer. My experiences presenting and working on my undergraduate thesis were integral to the work that I did at Chesapeake.”

**Kit Price ('13)** is attending the University of Michigan School of Business to complete a Masters in Management (MM).

**Whitney Sims ('13)** is in graduate school at Bowling Green State University.

**Lauren Vargo ('13)** - “I’m beginning the second year of my M.S. degree at the University of New Mexico in Albuquerque, using climate models to look at changes in precipitation in South America during the LGM. I’ve spent this summer TAing UNM’s Field Camp, and then spent some time exploring NM geology with *Jonah Novek ('13)* and *Joe Wilch ('13).*”
We are saddened by the deaths of the following alumni and friends:

**Carl G. Gonzalez ('41)**
September 3, 2013

**Frederick B. Fowler ('51)**
October 9, 2013

**Charles W. Achauer ('50)**
October 11, 2013

**Robert M. Junkin ('51)**
February 1, 2014

**David E. McGuire ('49)**
February 24, 2014

**Margaret Chaffee ('48)**
May 11, 2014

Wilbert R. “Ted” Danner (1924-2012)

“Wilbert R. “Ted” Danner was born in Morningside, King County, Washington on February 28, 1924, the son of Imogene Breed and William Delbert Danner, a farmer and salesman in a florist shop. Danner received his Ph.D, in Washington and came to Vancouver and the University of British Columbia as a Professor of Geology in 1954. He had no close family, and never married, but dedicated much of his life to scouting, his geological research and his university teaching position.


As a Professor and eventually Professor Emeritus at UBC, Danner’s main field of professional interest was carbonate petrology. He taught the introductory geology course for many years, and sparked an initial interest in geology among many students. His advanced courses were mainly in his field of professional interest but he also took delight in occurrences of placer minerals such as gold and platinum, unusual mineral specimens and unique geological situations. He taught a gem mineralogy course at UBC that was very popular and continued teaching this course into his late 70’s.

His corresponded with people all over the world who shared his interests of geology, stamp collecting or coins. His Christmas cards always had a unique photo of a scene or geologic detail from somewhere in the world that his recent travels had taken him and were awaited with interest.
each year by his correspondents. In 1970 he became a charter subscriber to *The Mineralogical Record* and never let his subscription lapse.

Danner was active in the Boy Scouts, both in the US and Canada. He loved the outdoors and took his Scouts on numerous wilderness adventures, passing on to most of them a similar appreciation and respect for our planet. The boys were always encouraged to leave a campsite in better shape than they found it. Many of these wilderness trips were also geological field trips where Danner would continue his research studies of the geological history of the Pacific Northwest. He educated the boys about rocks, minerals, and fossils, and a great number of them went on to take courses or pursue careers in the geological sciences.

Danner was a respected professor and teacher, and a positive influence on many of his students. He established two geological scholarships at UBC with the proceeds of the return of bottles and cans that he collected weekly on campus. Rather than have the awards in his name, as the administration would have preferred, he insisted it be called the “Beer-Pop Can-Bottle Deposit Refund Award.”

Wilbert Danner died in Vancouver on May 26, 2012.”
http://www.minrec.org/labels.asp?colid=1683

A sunset view from basecamp, British Columbia. Pictured on the horizon is Eve Cone, one of the youngest cinder-cone volcanoes in the provincial park. Photo by Julia Franceschi (’16).
Special Thanks

Thank you to the following individuals for their gifts to our various accounts (descriptions below):

- The estate of Dr. W. R. Danner - gift to The W.R. “Ted” Danner Fund for Student Geological Fieldwork.
- Kirk Lapham ('01) - gift to the Geology Department.
- David Morse ('67) - gift to the Geology Department, which was placed in The W.R. “Ted” Danner Fund for Student Geological Fieldwork.
- Becky Jensen ('78) - gift to the Geology Department, which was placed in The James R. Baroffio Fund for Geologic Research.
- Larry and Jean Funkhouser for supporting the American Association of Petroleum Geologists Foundation’s newly Release Publications Program. With their support and through this program, the College has a new set of publications in our geology library each year.
- Jennie Granato and the Delaware County Historical Society for their gifts to The W.R. “Ted” Danner Fund for Student Geological Fieldwork.
- George Davis ('64) for establishing The George H. Davis Endowed Research Fund.

If you would like to give a gift to the Geology Department, feel free to send your gift directly to the Department or to the College Development Office. It is very helpful to us if you designate how you would like your gift to be used, or if you would like it placed in a specific fund. Gifts that are not specifically designated will go in the general Geology Department annual budget to be used for the day-to-day operations of the department. Below is a summary of our endowed accounts.

**The James R. Baroffio Fund for Geologic Research** - To help defray expenses for analytical work (i.e., major element, trace element, isotopic, and geochronologic studies) for Seniors I.S. engaged in Independent Study.

**The George H. Davis Endowed Research Fund** - To support creativity and fieldwork carried out by geology majors engaged in Senior Independent Study (travel, field, lab, or other research related expenses) when the I.S. includes geologic mapping and/or field-based structural geology as core components.

**The W. R. “Ted” Danner Fund for Student Geological Fieldwork** - To help defray field expenses for students and faculty engaged in geological fieldwork, whether in courses or in Independent Study.

**Karl Ver Steeg/C.B. Moke Fund for Geologic Research** - To help defray field expenses for students and faculty engaged in Senior Independent Study.

**Stanley M. Totten Geology Student Research Fund** - To support The College of Wooster Geology majors and their research related to their major.

**The Sherman A. and Florence M. Wengerd Department of Geology Endowed Fund** - To help purchase equipment and supplies for undergraduate teaching and research in the areas of sedimentology and stratigraphy. The fund also supports faculty travel in preparation for Senior Independent Study projects in any geological field.
Central Utah, view across Sanpete Valley.

Climate Change Fieldtrip, Spring 2014

Ice Cave in Alaska. Looking from the back to the front.
Name: ____________________________________________________________

Maiden Name (if applicable): ________________________________________

Class: ___________________ I.S. Advisor: ______________________________

Home Address: ______________________________________________________

____________________________________________________________________

Telephone: ___________________ E-mail: ________________________________

Advanced Degrees: ___________________ Year: _________________________

Institution: _________________________________________________________

Position Title: ______________________________________________________

Business Name and Address: __________________________________________

____________________________________________________________________

Telephone: ___________________ E-mail: ________________________________

Occupation: _________________________________________________________

If your occupation is related to geology, please check one or more of the following:

_____ Environmental

_____ Petroleum

_____ Government

_____ Student

_____ Hydrogeology/Hydrology

_____ Teaching

_____ Minerals

_____ Other (please explain)

_____ Energy (Other)

____________________________________________________________________

Other news you’d like to share:

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Scovel Hall, originally built in 1902 and renovated in 1983-1984, is the home of the Departments of Geology, Philosophy, and The Pre-Law Advising Program. It bears the name of Dr. Sylvester F. Scovel, the third president of The College of Wooster.

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