



THE GREEN MOUNTAIN GEOLOGIST

QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

VGS Website: <http://www.uvm.org/vtgeologicalsociety/>

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PRESIDENT'S LETTER

I would like to catch you all up on some of the latest business of the Vermont Geological Society. *Please read carefully* because I would like feedback on some of the items from the membership (jon.kim@state.vt.us).

Winter Meeting 2014: The VGS will not have a winter meeting in 2014. We will, however, pursue this meeting in future years. In the past, the winter meeting has been a conference with talks or a guest lecturer event with potluck meal. Do you have an opinion on what we should do for future winter meetings?

VGS Guest Lecturer: Marjie Gale is stepping down after giving eight lectures on the new Vermont bedrock geologic map. The VGS Executive Committee has proposed that, instead of a single lecturer, we have a rotating panel of three or more different guest lecturers that interested parties can choose from. If any VGS member would like to be on the guest lecturer panel, please let me know.

Sandy Partridge Gift: Before he passed away last year, long-time VGS member Sandy Partridge left the society \$4000.00. The executive committee is in favor of using these funds to supplement the research grant program. Two additional ideas were put forth for some of these funds: a) give career service awards (plaques) to special retired or retiring geologists or b) use some of the money to promote/ enhance geology in Vermont (i.e. prepare new and collate existing educational materials that explain special field sites such as the Champlain Thrust at Lone Rock Point etc.). Do you have any ideas on how these funds should be used?

2014 Field Trips: We need volunteers to run the summer and fall field trips. If you have an idea, let me know. I reached out to the New Hampshire Geological Society about a possible joint trip in the next year or two

Elections: We need to have elections. A link to Survey Monkey can be found at the end of this issue of the Green Mountain Geologist as well as a paper ballot. Please vote.

Vermont Geological Society Publications: The executive committee discussed the possibility of producing a Vermont Geological Society Volume 9 in 2014. The last issue of Vermont Geology (Volume 8) was published in March 2001. Such an effort would solicit manuscripts on Vermont geology that would be reviewed externally and be published online and in hard copy. Would you support this publication?

The Vermont Geological Society will hold its Spring 2014 meeting on Saturday, April 26th, 2014 at Middlebury College. The Call for Abstracts is in this newsletter (p.3). Like last year, this will be a joint meeting with the Lake Champlain Research Consortium (LCRC).

Respectfully submitted,
Jon Kim, President

TREASURER'S REPORT

Finances: The Society remains in good financial health. Since the last report when we had a balance of \$10,606, we have spent received \$430, with \$310 income as dues and \$120 income to the research fund. Expenses were high at \$2,755, as follows:

- \$700 Research award to Kevin Chu, Middlebury College undergraduate: Cartographic analysis of watershed scale surface and groundwater interactions in Bristol, Vermont
- \$675 Research award to Julia Favorito, Middlebury College undergraduate: An analysis of the lithologic control on major elements, radionuclides, and other trace elements in groundwater south of Bristol, Vermont
- \$696 Research award to Samuel Lagor, UVM Masters student: The relationship between magmatism, deformation, and metamorphism during the Acadian Orogeny: A case study from the Knox Mountain Pluton, Green Mountains, Vermont
- \$335 Research award to Zach Perzan, Middlebury College undergraduate, Evolution and paleoclimatic history of Weybridge Cave, Weybridge, Vermont
- \$101 Executive Committee meeting expenses
- \$248 Dues mailing expenses

This leaves us a current balance of \$8,281 with most of the 2014 dues and research fund gifts still to be received.

New Members: Please join me in welcoming a new member:
Cynthia Norman with the Lake Champlain Basin Program

Respectfully submitted,
David S. Westerman, Treasurer

ADVANCEMENT OF SCIENCE COMMITTEE REPORT

The Advancement of Society Committee funded four student research grant proposals that were submitted by the October 1, 2013 deadline. Please see the Treasurer's Report for the list of awards.

Please consider a gift to the Vermont Geological Survey Research Grant Program.

Respectfully submitted,
Jon Kim, Chair

SPRING MEETING & CALL FOR ABSTRACTS

The Vermont Geological Society Spring 2014 meeting is on Saturday, April 26th, 2014 at Middlebury College. The meeting is dedicated to students conducting research in the geological sciences. Undergraduate and graduate students are encouraged to submit abstracts outlining the results of their research. Abstracts covering all aspects of the geological sciences are welcome and will be published in the Spring issue of the Green Mountain Geologist. The Charles Doll



Our fearless leader for the Fall Field Trip - Stephen Wright



At the crest of an esker

Award for the outstanding undergraduate paper will be presented. Cash awards for the top three papers will also be presented based on quality of the research, the abstract, and the presentation of the paper.

Abstracts should be prepared using the style employed for abstracts submitted to Geological Society of America meetings (maximum of 2,000 characters without spaces). We strongly encourage speakers to send their abstracts electronically as a Word file with a .doc extension attached to an e-mail message to Will Amidon at wamidon@middlebury.edu.

Presentations will be limited to 12 minutes with 3 additional minutes for questions. A computer projection system is available for PowerPoint presentations.

Like last year, the Lake Champlain Research Consortium (LCRC) will meet simultaneously.

Deadline for abstracts: Friday, April 4, 2014 at 5:00 pm

FALL FIELD TRIP

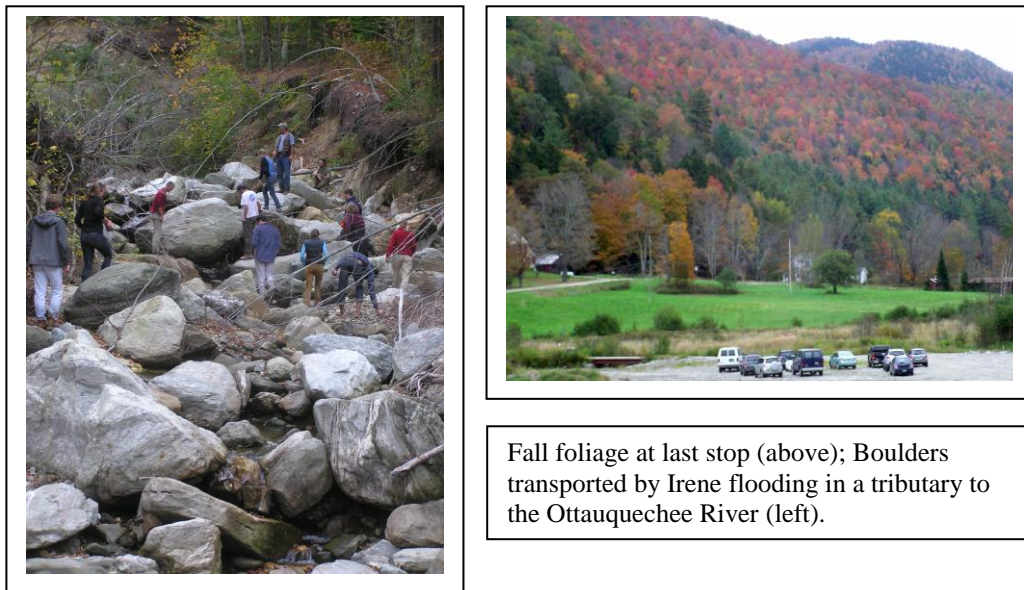
On Saturday October 5, 2013, the Vermont Geological Society fall field trip was led by Stephen Wright of the University of Vermont and was entitled "Glacial Geology of the Pico Peak Quadrangle". The attendance for this trip was 50, the largest in recent memory. The field trip description from Stephen follows with photos from Jon Kim.

The Pico Peak Quadrangle straddles the Green Mountains at the latitude of Sherburne Pass. The field trip began with visits to field sites along the Wheelerville Road (NE of Rutland) and the new sections exposed in the upper reaches of Mendon Brook (along Route 4) following the Irene floods. From there we drove up to the Inn at Long Trail and hiked a short distance south to look at outcrops depicting 2 different directions of ice flow. We then drove east into the upper Ottauquechee River valley where many alluvial fans were active during the Irene flood. Finally, we drove up to the drainage divide between the Ottauquechee River and the South Tweed River valleys to visit the outlet of a glacial lake that occupied the South Tweed valley as the ice sheet

retreated to the north.



Field trip overview for 50 participants (left); George Springston (left) and Larry Becker (right) examining high-level glacial lake clays along Mendon Brook (right).



Fall foliage at last stop (above); Boulders transported by Irene flooding in a tributary to the Ottauquechee River (left).

VERMONT STATE GEOLOGIST'S REPORT

State Climatologist and groundwater as safeguard against drought: UVM Professor and State Climatologist, Lesley-Ann Dupigny Giroux, combined with the State Geologist, Laurence Becker, and the Vermont Geological Survey (VGS) for a grant application to the National Oceanic and Atmospheric Association (NOAA). Through its Climate and Societal Interactions Program, NOAA maintains a National Integrated Drought Information System (NIDIS). The grant proposal is intended to support the NIDIS. Justification is through the Vermont State

Hazard Mitigation Plan that includes Action Item 5.1.10: “Develop groundwater resource maps for towns, and conduct ongoing statewide assessments to support community planning and identification of future water supplies, particularly for times of drought”. As groundwater is a safeguard against drought, the proposed project will focus on locating water well data and hydrogeologic data coding to support the development of VGS groundwater favorability maps.

Radon and Geology – Multistate Group: A Center for Disease Control (CDC) multistate initiative for national environmental public health tracking (EPHT) is focusing on radon. The inhalation of radon gas above standards can be associated with elevated lung cancer risk. From the geology beneath, the gas can reach homes through several pathways. The Vermont Geological Survey is working with the Vermont Department of Health to integrate radon test data and geological information. A multistate subgroup held a series of video conferences to share each state’s approach to data integration and presentation. The State Geological Surveys and the Health Departments from CO, KS, NH, NJ, OR, UT, and VT participated.

Geophysical Logs and Water Wells: Over the past two years, the Vermont Geological Survey partnered with the State University of New York at Plattsburg to log 17 bedrock wells in Vermont using modern geophysical logging techniques. Temperature, conductivity, gamma (~lithology), caliper (borehole diameter), and acoustic televiewer (radar imaging) data were acquired for each well. A presentation of a “Preliminary Hydrogeological Analysis of Selected Bedrock Wells in Vermont using Geophysical Logs” by Jon Kim to the State Groundwater Coordinating Committee (state and private sector membership) showed logs from selected wells with some preliminary hydrogeological analysis to stimulate discussion.

Media Interviews: The State Geologist appeared in a WCAX-TV story from the top of Mount Philo. The questions centered on the Green Mountains, Champlain Valley, Adirondacks, the White Mountains and the geologic history that explains the differences. The story aired during the 6:00 pm news on October 9, 2013. On December 31, 2013 and early January, 2014, the New England Cable Network and WCAX TV interviews focused on “Frost Quakes” also known as cryoseisms. When a cold snap freezes shallow groundwater, expansion can break rock or soil, releasing energy as booming sounds and/or ground shaking.

Geologic Map Advisory Committee: The STATEMAP geologic mapping grant applied for annually requires a meeting of an advisory committee to help set priorities. The committee met on Oct. 16. Bedrock and surficial projects to meet the Town of Calais’s interest in groundwater resources is the highest priority followed by a compilation of surficial geologic map data at a scale of 1:100,000 for the Montpelier one-degree sheet. Surficial mapping for part of the Sleeper’s River Research Watershed is the 4th priority. As a follow-up the State Geologist and Jon Kim of the Division visited the Calais Selectboard on Nov. 25 to explain the project and how the mapping will progress.

Geothermal: The VGS delivered the data collection portion of geothermal studies funded by the U.S. Department of Energy through the American Recovery and Investment Act. Marjorie Gale collected 40 rock samples and delivered complete geochemical analyses and thermal conductivity data. Temperatures from 17 water wells were collected by Jon Kim and Plattsburgh State. The VGS has additional funds from Central Vermont Public Service (now Green Mountain

The correct answer to Where's It, What's It came from John and Tina Cotton: *Photo is the Comerford Dam in Barnet, Vermont. This 170-foot hydroelectric dam spans the Connecticut River between Barnet, Vt and Monroe, NH, forming the Comerford Reservoir downstream of the larger Moore Reservoir.*

To learn about the Silurian Comerford Intrusives at the dam's spillway see: Rankin, D., et al, 2007, Silurian extension in the upper Connecticut Valley, United States and the origin of Middle Paleozoic basins in the Quebec embayment: *American Journal of Science*, vol. 307, p. 216-264.



Power) through September 2014 and will continue to collect water well temperatures and investigate how to use models to project temperature at depth throughout Vermont.

Rockfall: George Springston of Norwich University and the State Geologist visited a home in Wells below a steep rock face and a talus slope. Rockfall events caused the family to vacate several times for fear of rocks reaching the domicile. A second field visit further mapped out the downslope extent of talus (some older rocks were found below the level of home) and a fresh boulder from one of the 2013 late spring or summer events was found in proximity to the home. The failed rock slope above displays a wedge of rock that appears to be unstable.

Seismic Studies Delivered to FEMA: The Vermont Geological Survey delivered reports, a map and powerpoint presentations to close-out an Earthquake Hazard Reduction State Assistance grant. Vermont receives funds due to earthquake hazards associated with the region from Southern Quebec to Ottawa and the Northern Adirondacks. The reports cover Seismic Hazard for the Burlington and Colchester, Vermont USGS 7-1/2 Minute Quadrangles and measurements of the shear wave velocity of soft soils as a measure of the potential for enhanced shaking. The map is titled: "Seismic Site Classification for Amplification Potential" for the two quadrangles. FEMA is happy that the studies have led to action items in the State's Hazard Mitigation Plan (SHMP). The SHMP strategies are: 1) Provide data to critical facilities on the impact of seismic shaking and landslides on their facilities 2) Identify the potential for enhanced shaking on soft soils and make outreach to critical facilities in these areas.

Respectfully submitted,
Laurence R. Becker, State Geologist

CALENDAR

February 24: UVM Lecture Series, *Ophiolites and Global Tectonics* presented by Yildirim Dilek at 4:15 pm in Delehanty Hall, Rm 219

March 10: UVM Lecture Series, *Chemistry of Suspended Sediment* presented by Diana Karwan at 4:15 pm in Delehanty Hall, Rm 219

March 23-25: Northeastern Section Meeting, Geological Society of America, Lancaster, PA

April 26: Vermont Geological Society Spring Meeting, Middlebury College, Middlebury, VT

EXECUTIVE COMMITTEE BALLOT

Please take a moment to vote in the Society's election of Executive Committee members.
You may vote on-line via the Survey Monkey (ctrl, click) at:

<https://www.surveymonkey.com/s/Q6XBNT9>

If you are unable to use the online option, please fill out the ballot below and mail it to Will Amidon (Dept. of Geology, Middlebury College, Middlebury, VT 05753).

BALLOT

One vote per officer position

President

Jon Kim _____

Other member (write in) _____

Vice President

Keith Klepeis _____

Other member (write in) _____

Secretary

Will Amidon _____

Other member (write in) _____

Treasurer

Dave Westerman _____

Other member (write in) _____

Board Member (vote for three)

Les Kanat _____

Kristen Underwood _____

George Springston _____

Other member (write in) _____

The **Vermont Geological Society** is a non-profit educational corporation.
The **Executive Committee** of the Society is comprised of the Officers, the Board of Directors,
and the Chairs of the Permanent Committees.

Officers

President	Jon Kim	(802) 522-5401	jon.kim@state.vt.us
Vice President	Keith Klepeis	(802) 287-8387	keith.klepeis@uvm.edu
Secretary	Will Amidon	(802) 443-5988	wamidon@middlebury.edu
Treasurer	David Westerman	(802) 485-2337	westy@norwich.edu

Board of Directors

Les Kanat	(802) 635-1327	les.kanat@jsc.edu
George Springston	(802) 485-2734	gsprings@norwich.edu
Kristen Underwood	(802) 453-3076	southmountain@gmavt.net

Chairs of the Permanent Committees

Advancement of Science	Jon Kim	jon.kim@state.vt.us
Membership	David Westerman	westy@norwich.edu
Public Issues	Laurence Becker	laurence.becker@state.vt.us
Publications	Marjorie Gale	marjorie.gale@state.vt.us

**Vermont Geological Society
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Northfield, Vermont 05663**

ADDRESS CHANGE?

Please send it to the Treasurer at the above address