

THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

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*The Vermont Geological Society
Winter Meeting
April 4, 2009, 1:00 PM
Delehanty Hall, Room 219
University of Vermont, Burlington, Vermont*

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WINTER MEETING PROGRAM

1:00PM	Potluck Lunch
1:55PM	Introduction of Keynote Speaker, Stephen B. Mabee
2:00PM	Stephen B. Mabee: "Fracture Characterization Mapping in Bedrock: How Useful Is It?"
3:00PM	Members' Roundtable And Executive Committee Meeting

ABSTRACT

FRACTURE CHARACTERIZATION MAPPING IN BEDROCK: HOW USEFUL IS IT?

MABEE, Stephen B., Massachusetts State Geologist; Department of Geosciences, 269 Morrill Science Center, University of Massachusetts, 611 North Pleasant Street, Amherst, MA 01003-9297; sbmabee@geo.umass.edu

Bedrock geologic maps, while important primary resources, often lack information on the brittle structure of the bedrock and do not necessarily provide the right kinds of information to address some of today's topical issues, such as groundwater. At the Office of the Massachusetts State Geologist, we have been developing a new suite of fracture characterization mapping products at 1:24,000-scale using the "hydrostructural domain" concept to augment the traditional bedrock geologic map. Engineers and the consulting community have found the maps useful for a variety of purposes including ground-truthing lineament analyses, developing better conceptual models of fractured-bedrock aquifers and making better decisions on how to plan subsurface boring investigations. However, the maps still only provide a qualitative approach to understanding fluid flow in fractured-rock aquifers. What is still lacking is a more quantitative measure of the hydrologic properties of the bedrock. This talk will describe what fracture characterization maps are, how we construct them and then briefly mention some of the new work we have undertaken to test the applicability of the hydrostructural domain concept in a quantitative manner.

PRESIDENT'S LETTER

I'd like to encourage all of you to attend the upcoming "Winter" Meeting at UVM on April 4th. Here are three great reasons to attend: 1) Our speaker will be Massachusetts State Geologist Steve Mabee, who will be giving a detailed presentation on the status of fracture studies related to groundwater in Massachusetts (I can testify that Steve is a great speaker); 2) his talk will be preceded by a potluck lunch, coordinated by our own chef/geologist Jon Kim; and 3) following Steve's talk there will be an important members' roundtable discussion about ways we can improve member participation in our meetings and field trips and recruit new members as well. The Executive Committee has some good ideas on these topics, but we really want to hear from you. What topics do you want at our meetings? What format should we use for the meetings?

When should they be held? Where? How can we get the word out better? How can we interest more students to join the VGS and attend the meetings?

I urge you to come to the April meeting and share your thoughts. If you can't attend, send your comments to me at gsprings@norwich.edu and I'll bring them up at the meeting. We'd like to hear from you!

If indoor meetings don't suit you, then keep an eye out for announcements of the Summer and Fall VGS field trips and the 101st meeting of the New England Intercollegiate Geologic Conference (NEIGC), based this year out of Lyndonville on September 25th to 27th. Visit the NEIGC website at <http://w3.salemstate.edu/~lhanson/NEIGC/> for details.

Sincerely,
George Springston, President

ANNUAL MEETING MINUTES & ELECTIONS

The Executive Committee of the Vermont Geological Society met in Waterbury following the Fall Field Trip to the Craftsbury–Northfield area led by Dave Westerman on October 25, 2008. As Secretary Dave West was not able to attend the Annual Meeting, Steve Howe took the minutes.

Steve Howe, as Treasurer, reported that the financial condition of the Society is extremely strong. As of October 25, 2008, the checking account balance was \$6,838.70.

Steve Howe, as Chair of the Advancement of Science Committee, reported that no Research Grant proposals were submitted by the October 1, 2008 application deadline.

Steve Howe, as Chair of the Publishing Committee, reported that the publication of the *Green Mountain Geologist* (GMG) continues to proceed smoothly with editing, formatting, layout, and .pdf file creation and mailing being handled by Steve and Kathy Howe, while photocopying and postal mailing of paper copies is handled by Dave West. Steve noted that the electronic GMG delivery option has significantly reduced costs associated with the production and mailing of the GMG and that he would continue to recommend that members still receiving the GMG by postal mail consider switching to electronic delivery instead.

Most of the remainder of the meeting was devoted to a discussion of how best to rejuvenate the Society's Winter meetings, including having a single keynote speaker, moving the venue to a more central location, changing the time of day the meeting is held, and including some sort of catered or potluck luncheon or dinner. Jon Kim and George Springston said they would take the lead in identifying a potential speaker, and Jon said he would investigate the possibility of holding the meeting in Waterbury. Several dates for the meeting were discussed and there was general agreement that the meeting time should be moved to early afternoon.

There was a brief discussion of potential field trips, including one along the Connecticut River, for 2009 and 2010.

The Committee confirmed the unanimous election of the following VGS officers for the 2008-2009 year:

President	George Springston
Vice-President	John Van Hoesen
Secretary	Dave West
Treasurer	Steve Howe

Rick Dunn, Les Kanat, and Jon Kim were all elected to new two-year terms on the Board of Directors. In addition, Jon Kim was elected as Chair of the Advancement of Science Committee, replacing Steve Howe who had served in that capacity for the past eight years.

Respectfully submitted,
Stephen S. Howe

TREASURER'S REPORT

The financial condition of the Society continues to be extremely strong. As of March 15, 2009, the Society's checking account balance was \$8,584.11. No Research Grant proposals were submitted by the October 1, 2008 deadline, despite the Society's commitment to increase the award level to \$700.00. I expect to be able to support the Research Grant Program at a similar level for the foreseeable future, given the relatively stable income derived from membership dues, additional research grant contributions, and publications sales. To my knowledge, there are no outstanding bills.

The following members have been approved for membership in the Society since the last report: Thomas Eliassen, Montpelier, Vermont, Kate Gladstein, Burlington, Vermont, and Amanda Northrop, Burlington, Vermont.

The 2009 membership renewal and directory information form was mailed to all members before December 31, 2008. The deadline for renewal was January 31, 2009. Despite the impending increase in postal service rates, I will recommend that dues remain at the same level as last year. I would like to express my appreciation to all of the members who have chosen to receive the *Green Mountain Geologist* electronically as a .pdf file, so as to help keep the Society's publication and mailing costs low, which will, in turn, allow us to keep membership in the VGS the bargain that it already is.

Respectfully submitted,
Stephen S. Howe, Treasurer

ADVANCEMENT OF SCIENCE COMMITTEE REPORT

The Advancement of Science Committee, along with President George Springston, suggested that the Society try a different format for this year's "Winter" Meeting, to be held Saturday, April 4th at the Geology Department at the University of Vermont. Instead of having multiple Vermont Geological Society professionals giving short talks in the morning, we will have an early afternoon potluck lunch followed by a single speaker giving a 45 minute-1 hour talk. This meeting's speaker will be the Massachusetts State Geologist, Dr. Steve Mabee, who will speak on "Fracture Characterization Mapping in Bedrock: How Useful Is It?" Steve's talk will focus on his recent work that integrates the characteristics of fractures seen in surface outcrops with those of fractures observed in boreholes. A one-hour Roundtable Discussion for members and an Executive Committee meeting will follow this talk. I hope you will all attend to support this new format.

Although March is now half over, we have not received any applications to the Society's Research Grant Program (April 1st deadline). The maximum grant award was recently increased to \$700. Details about this grant program are available on the Society's website.

Respectfully submitted,
Jon Kim, Chair

VERMONT STATE GEOLOGIST'S REPORT

Radon Conference

On Thursday, January 15, 2009, Larry Becker and Jon Kim of the Vermont Geological Survey (VGS) co-presented a 45-minute talk with the Radon Program of the Vermont Department of Health (VDH) entitled "Geologic Context of Radon Levels in Vermont." Radon is the second leading cause of lung cancer in the United States. 6000+ radon-in-air tests were connected (geocoded) with specific addresses by the VDH and these results were plotted on geologic maps. The VGS established preliminary correlations between the bedrock and surficial (glacial) geology and the statewide radon levels. Further collaboration between the VGS and the VDH is planned to seek additional geologic correlations. The conference was sponsored by the American Lung Association of New England and the VDH.

Groundwater Mapping, One-Time Appropriation

The State Geologist is managing the overall integration of a \$335,000 appropriation passed at the end of the legislative session in 2007 for "Groundwater Mapping." A number of work elements are underway, some conducted by the VGS. In presentations before groundwater study and legislative committees, the State Geologist projected that preliminary versions of maps would be available early in 2009. During the week of December 15th, the State Geologist met with those conducting the studies to discuss preparation of cartographic versions of preliminary products. The well interference analysis contractor (Eric Hansen of Vermont Rural Water/Stone Environmental), contracted with the Water Supply Division in the Department of Environmental Conservation (DEC), is constructing preliminary maps of public water supply pump tests sites showing a local example of a density of wells monitored in relation to pump test locations,

monitored wells that have shown a response, and test graphics to bring visual understanding. Higher groundwater use by census track and where groundwater use is expected to grow statewide will be shown on maps by the USGS (Laura Medelie). Marjorie Gale of the VGS is focusing on a general statewide understanding of the availability of groundwater through an analysis of statewide water well data placed over bedrock geology. *Preliminary* maps are posted at: <http://www.anr.state.vt.us/dec/geo/gwaterSTATEinx.htm>

George Springston of Norwich University is developing a version of one county that is the prototype for sand and gravel favorability mapping at the 1:100,000 scale. Land use activities as point sources that may have an influence on groundwater quality will be shown by the DEC IT-GIS group (a number of these data sets are also available on the DEC web site). Updates of these databases and transfer of water quality data from other State departments is a future hoped-for step.

Respectfully submitted,
Laurence R. Becker, State Geologist

CALL FOR STUDENT ABSTRACTS

SPRING MEETING OF THE VERMONT GEOLOGICAL SOCIETY SATURDAY, APRIL 25, 2009

The Vermont Geological Society will hold its Spring 2009 Meeting in Delehanty Hall at the University of Vermont, Burlington, Vermont. 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 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. An example of last year's judging form will be placed on the Society's website shortly.

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 sent to Kathleen Howe at khowe@uvm.edu

If electronic submission is not possible, please mail your abstract well in advance of the deadline to:

Kathleen D. Howe
University of Vermont
Office of Health Promotion Research
1 South Prospect Street, Room 4428A
Burlington, VT 05401

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

Deadline for abstracts: Monday, April 6, 2008 at noon

For additional information regarding capabilities for presentations at the meeting, contact Stephen Wright at (802) 656-4479 or stephen.wright@uvm.edu

ANNOUNCEMENTS

STUDENT RESEARCH GRANT APPLICATIONS DUE APRIL 1, 2009

Students and secondary school teachers are encouraged to apply to the VGS Research Grant Program by April 1, 2009. Downloadable Research Grant Program applications are available from the Society's website at <http://www.uvm.org/vtgeologicalsociety/>. For those without Internet access, forms may be obtained by writing to Jon Kim at the Vermont Geological Survey, 103 South Main Street, Logue Cottage, Waterbury, VT 05671, e-mail: jon.kim@state.vt.us, or by calling (802) 241-3469.

VERMONT GEOLOGICAL SOCIETY CALENDAR

April 1:	Student Research Grant Program applications due
April 4:	Winter Meeting, Delehanty Hall, University of Vermont
April 6:	Student abstracts for Spring Meeting due
April 6:	Executive Committee reports due
April 25:	Spring Meeting, Delehanty Hall, University of Vermont

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	George Springston	(802) 485-2734	gsprings@norwich.edu
Vice President	John Van Hoesen	(802) 287-8387	vanhoesenj@greenmtn.edu
Secretary	David West	(802) 443-3476	dwest@middlebury.edu
Treasurer	Stephen Howe	(518) 442-5053	showe@albany.edu

Board of Directors

Richard Dunn	(802) 485-2304	rdunn@norwich.edu
Les Kanat	(802) 635-1327	les.kanat@jsc.edu
Jon Kim	(802) 241-3469	jon.kim@state.vt.us

Chairs of the Permanent Committees

Advancement of Science	Jon Kim
Geological Education	Christine Massey
Membership	Stephen Howe
Public Issues	Laurence Becker
Publishing	Stephen Howe

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ADDRESS CHANGE?

Please send it to the Treasurer at the above address

Vermont Geological Society
Winter Meeting
April 4, 2009, 1:00 PM
Delehanty Hall, Room 219
University of Vermont, Burlington, Vermont

Directions to the University of Vermont:

Delehanty Hall is located on the old Trinity College campus adjacent to the University of Vermont. From I-89, take Exit 14 (Main Street–Route 2 exit), and go west (towards the lake) to East Avenue. Turn right on East Avenue and go to the end of East Avenue. At the stoplight, proceed straight across Colchester Avenue and into the driveway ahead of you. Once on the driveway, bear around to the left and the parking lot is in the rear of Delehanty Hall, which has a slate exterior and large granite blocks in front of it.