



Granite State Geologist

The Newsletter of the Geological Society of New Hampshire,
Summer Edition – June 2015 – Issue No. 89

Newsletter Editor: Wayne.Ives@des.nh.gov

Website: <http://www.gsnh.org/>

2014-2016 GSNH Officers:

President – Wayne Ives
NHDES, Concord, NH
Wayne.Ives@des.nh.gov

Vice President - Council – Russ Wilder
AECOM Corporation, Manchester, NH
russ.wilder@aecom.com

Vice President – Society - Thor Smith
US Geological Survey, Pembroke, NH
tesmith@usgs.gov

Secretary – Lea Anne Atwell
Sanborn, Head & Associates, Concord,
NH
latwell@sanbornhead.com

Treasurer – Bill Abrahams-Dematte
AECOM, Wakefield, MA
Bill.Abrahams-
Dematte@aecom.com

Past-President – Julie Spencer
AECOM, Chelmsford, MA
julie.spencer@comcast.net

Member-at-Large - Doug Allen
Haley & Aldrich, Inc., Bedford, NH
dallen@HaleyAldrich.com

Member-at-Large - Erin Kirby,
Geosyntec Consultants, Inc., Bedford,
NH
EKirby@Geosyntec.com

Member-at-Large – Abby Fopiano -
Epping Well & Pump, Epping, NH
abby@eppingwell.com

Membership - Doug Allen
Haley and Aldrich, Bedford, NH
dallen@HaleyAldrich.com

Education and Outreach
Tina Cotton – jt_cotton@comcast.net
Lee Wilder - geology@des.nh.gov

Website webmaster@gsnh.org
Trent Hayden - thayden@fsengrs.com
Abby Fopiano - abby@eppingwell.com

Newsletter Editor
Wayne Ives
Wayne.Ives@des.nh.gov

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- MA forms a Geological Society
- Stone and philosophy
- Another ice age coming?
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- Get your **GSNH TEE SHIRTS!!!!**
- Upcoming Events and Much More!

MESSAGE FROM THE PRESIDENT

Wow, what a summer coming up-so many activities. Check the Dates to Remember page. The GSNH Summer Field Trip (July 11) will look at the sedimentation and geomorphology of the Suncook River avulsion and the Merrimack Village Dam removal. If you haven't signed up, hurry, because the deadline is June 26. Get your bus money and reservation in to Bill Abrahams-Dematte quick! Read-ahead materials and trip plans are on the GSNH webpage. There are also several mineral shows coming up and the GSA meetings in Baltimore and Albany. And there are other field trips including one to Mount Washington, a Maine to Quebec trip, and the inaugural field trip of the Massachusetts Geological Society.

What Massachusetts Geological Society, you say? The Massachusetts Geological Society is formed now. I sent an email congratulating them on behalf of the NH Society. The GSNH board is already interacting with their leaders to coordinate meetings and events to allow people to attend both. Their first meeting June 4 was well attended. There's a brief article with links later on in this edition. (Take a look at their membership form and see if it reminds you of one you may have seen before!)

Our April GSNH meeting was held at the Puritan Backroom which was very comfortable except for finding a parking space. The Puritan seems like a likely candidate for future meetings. Let a board member know what you thought. We are grateful to Woody Thompson who stepped in to cover for our scheduled speaker who fell sick and could not make it. Woody described the extent of glacial moraines and glacial lake deltas in Littleton-Berlin region that were more readily identified using LiDAR technology and allowed a reinterpretation of the deglaciation of the area.

Besides all of the summer's activities, this edition is so full of bad jokes and great pictures and stories that you

should have plenty to do until the fall edition!

NH Geological Survey's Summer Field Trip

FLUVIAL GEOMORPHOLOGY MERRIMACK VILLAGE DAM REMOVAL AND SUNCOOK RIVER AVULSION

Saturday July 11th 2015, 8 am - 4:30 pm

Trip leaders: Matt Collins - NOAA and Noah Snyder - Boston College at Merrimack Village Dam; and Shane Csiki - NHGS; Thor Smith – USGS; and Meghan Arpino - UNH at the Suncook River

We will meet at the NHDES Parking Lot, 29 Hazen Drive, Concord, NH and travel by Coach Bus to Trip Stops

BUS LEAVES 8:30 SHARP!!!

\$20 per person - DEADLINE FOR SIGN UP/PAYMENT IS JUNE 26, 2015

Bring your own lunch and water - There is no rain date. CEH certificates will be available at the end of the program for **6.0 hours**. Fill out & submit the [REGISTRATION FORM](#) to RSVP for the Field Trip. See more information and documentation about the Dam Removal and Avulsion on our [Field Trips Page - CLICK HERE](#)



Russ Wilder scouting on the bank of the Souhegan River below the former Merrimack Village Dam location. Photo by Wayne Ives

WHAT IS YOUR BOARD DOING? By Lea Anne Atwell

On March 12th, Lee Wilder hosted the quarterly Board meeting at Toad Hall in Hopkinton, NH. Key topics discussed included:

- We finalized details for GSNH t-shirts. The t-shirts will be available in time for the summer field trip on July 11th for a price of \$18 each. Proceeds from the sale of the t-shirts will go to GSNH's Charles Spalding Speaker Fund. If you can't make the field trip, don't worry - we plan to sell t-shirts at upcoming dinner meetings!
- Thanks again to Woody Thompson who stepped in at the last minute to present at the April dinner meeting! Attendance was down slightly from recent meetings, with 65 people in attendance. - We are looking for feedback about the venue and location in Manchester. Overall, the feedback we have received was generally positive, although we understand that parking was challenging. We would consider having another meeting at the Puritan in the future. Please share your thoughts with a BOD member.
- We developed a system for allocating membership dues to the various funds that the society maintains - general fund, Charles Spalding Speaker's Fund, and education/grants fund. For each \$20 in dues collected, \$5.00 will go to the speaker's fund, \$2.50 will go to the education/ grants fund, and \$12.50 will go to the general fund, which subsidizes GSNH field trips and dinner meetings.
- Several board members will be reaching their term limits when their terms expire in 2016; we discussed ways to get potential board members involved with the society prior to our next elections in October 2016. If you or someone you know might be interested in serving on the board, please let one of us know and consider attending one of our BOD meetings in 2015/2016.
- GSNH, the NH Geological Survey, and the Capital Mineral Club will be co-sponsoring a mineral identification workshop for teachers in late September. Attendees will receive their own mineral kit, identification key, and continuing education credits.

Our next meeting will be on Thursday, September 10, 2015 at the offices of Haley & Aldrich in Bedford, NH. All members are welcome to attend our meetings. Please let a Board member know if there is something you would like included in the agenda!

SERICITE THE MICA MINERALS

Sericite is a name for muscovite with extremely small grains. Sericite is typically found in low-grade metamorphic rocks like slate and phyllite. In the literature you'll see the term "sericitic alteration" referring to this kind of metamorphism.



Sericite is also an industrial mineral, commonly used in makeup, plastics and other products to add a silky shine. Makeup artists know it as "mica shimmer powder," used in everything from eye shadow to lip gloss. Craftspeople of all sorts rely on it to add a shimmery or pearly gleam to clay and rubberstamping pigments, among many other uses. Candy makers use it in luster dust, a type of decorating powder used in cake and candy decorating to add color and sparkle to desserts.

<http://geology.about.com/od/minerals/i/g/minpicmicas/sericite.htm>

GOLD IN QUARTZ, MOTHER LODE BELT, CALIFORNIA

The Mother Lode gold belt carries the most productive and best-known mining districts in California's gold country. Although the entire foothill region of the Sierra Nevada is sometimes loosely termed the "Mother Lode Country," technically the Mother Lode is a 120-mile-long system of linked or *en echelon* gold-quartz veins and mineralized schist and greenstone that extends from the town of Mariposa, north and northwest to northern E1 Dorado County.

The most productive portion of the Mother Lode has been the 1 mile segment between Plymouth and Jackson in Amador County. Other major sources of gold in the Mother Lode have been the Angels Camp, Bagby, Carson Hill, Coulterville, Georgetown, Greenwood, Jacksonville, Jamestown, Kelsey, Mount Bullion, Nashville, and Placerville districts. From <http://www.mindat.org/loc-216804.html>.

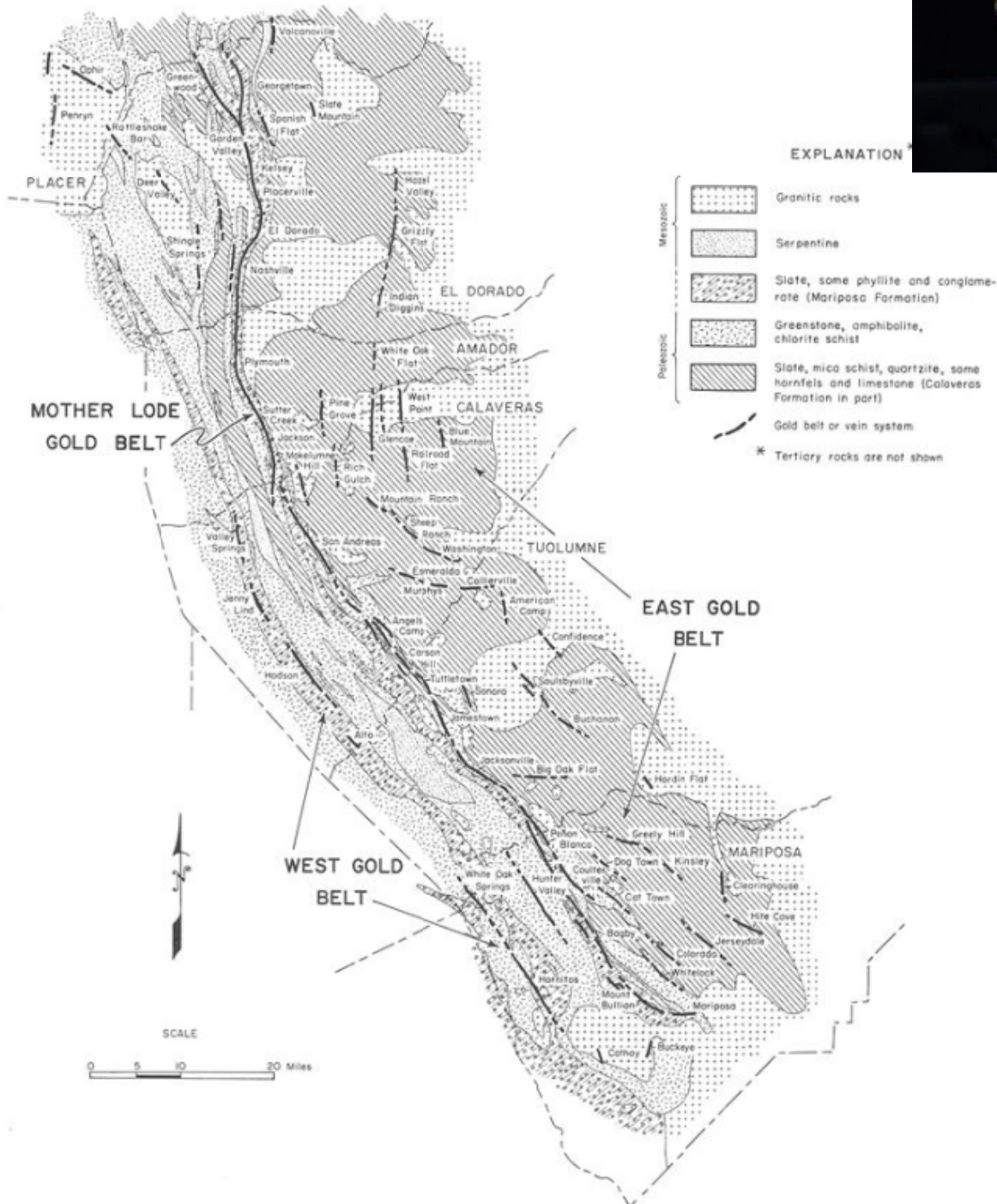


Figure 4. Map of Major Rock Units and Lode-Gold Belts, Central Sierra Nevada. The Mother lode and the related East and West gold belts are shown.

DINNER MEETING PICTURES



Lee Wilder looks for a volunteer to pull a winning raffle ticket at the April 2015 GSNH meeting at the Puritan in Manchester, NH. Photo by Abby Fopiano.

GSNH MEMBER RIDES 192 MILES TO HELP FIND A CURE FOR CANCER

GSNH member/Member-at-Large/membership chair Doug Allen will be participating in the 2015 Pan-Massachusetts Challenge (PMC), a two-day, 192 mile bicycle ride fundraiser to benefit the Dana-Farber Cancer Institute. With over 5,000 riders participating this year, the PMC hopes to raise \$45 million for cancer research and advanced treatment at Dana-Farber! Doug has two challenges - first, to ride his bike 192 miles (Sturbridge to Provincetown, MA) in two days! Second, his goal to raise \$4,300 in donations for Dana-Farber. Please consider generously supporting Doug's efforts and cheering him on! The PMC is considered a nationwide model of fundraising efficiency with 100% of every dollar donated going to cancer research and treatment. Donations for Doug's ride can be made online at: www.pmc.org/profile/DA0092

Checks made payable to "PMC" can be mailed directly to Doug at PO Box 295, Warner, NH 03278. Thank you!

UMASS PROVIDES A GEOSCIENCES CAREER OPPORTUNITIES PAGE

Links to trends in job openings, increase in women in the geosciences, salary surveys and occupational outlooks for geosciences and related fields. Find at <http://www.geo.umass.edu/career-opportunities-geosciences>.

GSNH TEE SHIRTS

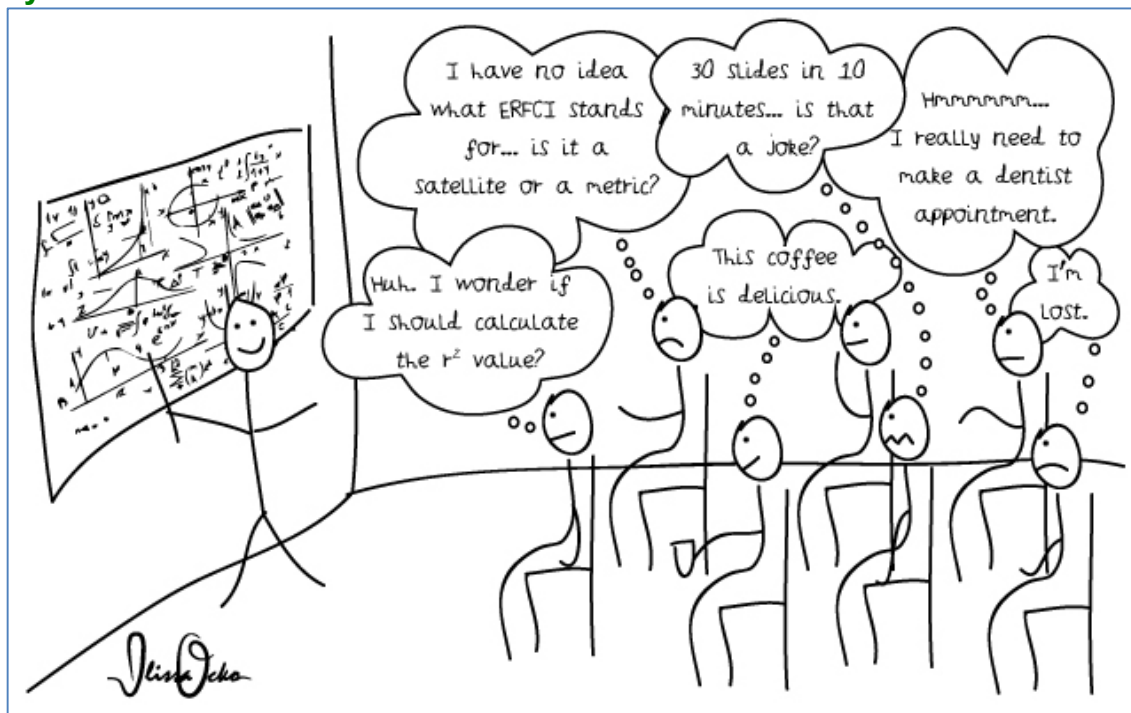
Yes! Finally! Limited edition GSNH tee-shirts will be available at the field trip and the next dinner meeting. Six color GSNH logo on the back and black Old Man with hammer and auger logo on the front of high quality, grey, cotton tee shirts. Looking something like below. Shirts will come in a variety of sizes and cost \$18. Proceeds go to the Society's Charles Spalding Speaker's Fund to support the quality dinner meeting programs we've come to expect.



Promoting Geological Science & Education

An astronaut broke the law of gravity but only got a suspended sentence.

SCIENTISTS SHOULD SPEAK SIMPLY TO OTHER SCIENTISTS, TOO – Submitted by Tina Cotton



The canonical rule of thumb for *scientists speaking to nonscientists* is to talk as if you were speaking to eighth graders, but as a scientist-audience member who has left many scientific talks dazed and confused, this blogger says that *scientists speaking to scientists* should follow this rule as well.

So try it out. Use less jargon, less math, less text, and less figures on each slide. Use more analogies, more graphics, and more background. Ground your work in something meaningful. Speak slowly, pause occasionally, and discuss the big picture. Read the three challenges that a scientist audience faces, and how a speaker can evade them at <http://blogs.agu.org/sciencecommunication/2015/05/28/scientists-should-speak-simply-to-other-scientists-too/>.

UPDATE FROM THE INAUGURAL MEETING OF THE MA GEOLOGICAL SOCIETY – from <http://massgeosociety.org/events.html>

The inaugural meeting of the Massachusetts Geological Society was held on June 4, 2015, at the offices of AECOM in Chelmsford, MA. We had a great turnout, with approximately 60 people in attendance!

The keynote speaker was Dr. Stephen Mabee, P.G., the Massachusetts State Geologist, whose presentation was entitled, "So Massachusetts Has a Geological Survey?" After providing an historical overview of the Survey from its inception, Steve proceeded to describe the activities the Massachusetts Geological Survey has been engaged in since he took over the helm. He closed the talk with his vision for the future of the Survey and what he sees as priorities moving forward.

The meeting concluded with a reminder that the organizing committee of the Massachusetts Geological Society hopes to make this a true grassroots organization, with inspiration and ideas for future activities coming from the membership. If you are interested in having a role in shaping the Society's future, please contact the organizing committee at geoinfo@massgeosociety.org. MaGS is actively recruiting volunteers for multiple committees, including: Steering, Activities, Outreach, Membership, and Communications. They hope all those with an interest in one or more of these activities will get involved, and if you have other ideas for what the Society can be doing, please let them know.

CHILE'S SPECTACULAR CALBUCO VOLCANO ERUPTION

The Calbuco volcano in southern Chile erupted unexpectedly on Wednesday 22 and Thursday 23 of April, blanketing local towns in ash and forcing the cancellation of flights from cities in both Chile and Argentina. <http://www.ibtimes.co.uk/chiles-spectacular-calbuco-volcano-eruption-lightning-lava-ghost-town-covered-ash-photos-1498144> The volcano is erupting for the first time in 42 years, spewing huge amounts of ash into the atmosphere and prompting evacuations across a 24-mile wide area. <http://indefinitelywild.gizmodo.com/this-huge-volcanic-eruption-in-chile-is-stunningly-beau-1699612788>



Pyroclastic lightning crackles around the erupting volcano (David Cortes Serey/AFP)



A man removes volcanic ash from his car in La Ensenada, Chile (Martin Bernetti/AFP)

STOCHASTIC GRAVITATIONAL WAVES

Stochastic gravitational waves are the relic gravitational waves from the early evolution of the universe. Much like the Cosmic Micro-wave Background (CMB), which is likely to be the leftover light from the Big Bang, these gravitational waves arise from a large number of random, independent events combining to create a cosmic gravitational wave background. The Big Bang is expected to be a prime candidate for the production of the many random processes needed to generate stochastic gravitational waves (and the CMB), and therefore may carry information about the origin and history of the universe. If these gravitational waves truly originated in the Big Bang, these waves will have been stretched as the universe expanded and they can tell us about the very beginning of the universe—they would have been produced between approximately 10^{-36} to 10^{-32} seconds after the Big Bang, whereas the CMB was produced approximately 300,000 years after the Big Bang. The sound these gravitational waves would produce is a continuous noise (much like static) and will be same from every part of the sky (just like the CMB). Similar backgrounds could be produced by a combination of many simultaneous inspirals, bursts, or continuous signals from throughout the Universe. See more at:

<http://www.ligo.org/science/GW-Stochastic.php#sthash.rPZHUKRs.dpuf> and
<http://www.ligo.org/science/GW-Stochastic.php>.

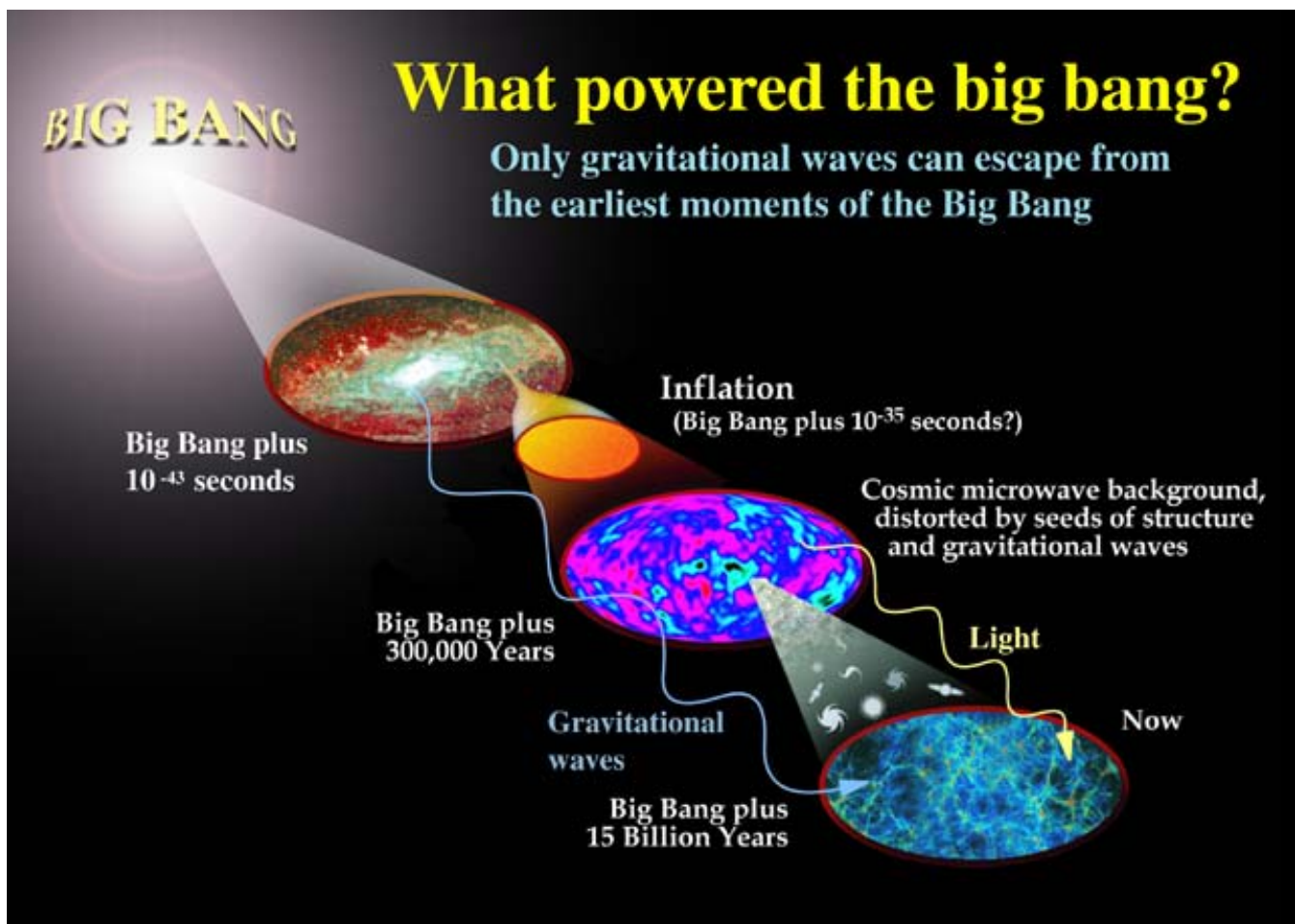


Diagram showing different stages in the evolution of the universe since the Big Bang and when gravitational waves and the Cosmic Microwave B came into existence. [Image: NASA]

COPPER FROM TIMNA VALLEY, ISRAEL

The Timna Valley in Israel, north of Eilat, is believed to be the source of King Solomon's mines. Copper ore found in the sandstone outcropping here is striking. The greenish copper color was so bright that there was no mistaking it, even from hundreds of meters away. Ancients who lived in the valley would likely have been attracted to this area by the unique color of the rocks. In fact, copper has been mined here for approximately 1500 years.

<http://epod.usra.edu/blog/2015/05/copper-from-timna-valley-israel.html>



THE NH GEOLOGICAL SURVEY GROUND WATER LEVEL NETWORK SUMMARY

Submitted by Lee Wilder of the NHGS

February 2015 NH Groundwater level measurements were collected by the NH Geological Survey staff and volunteers from February 24 – March 1, 2015. The statewide February 2015 average groundwater level for **wells in the overburden** (in soils on top of the bedrock) showed a decrease of -0.48 feet from January 2015. When compared with February 2014, the statewide average groundwater level for February 2015, in these wells, increased +0.17 feet. The February 2015 average groundwater level in the new **bedrock wells** showed a decrease of -0.36 feet when compared with January 2015. When compared with February 2014, the bedrock wells showed a decrease of -0.67 feet for February 2015.

March 2015 NH Groundwater level measurements were collected by the NH Geological Survey staff and volunteers from March 26 – April 1, 2015. The statewide March 2015 average groundwater level for **wells in the overburden** (in soils on top of the bedrock) showed a decrease of -0.23 feet from February 2015. When compared with March 2014, the statewide average groundwater level for March 2015, in these wells, decreased -0.45 feet. The March 2015 average groundwater level in the new **bedrock wells** showed an increase of +0.22 feet when compared with February 2015. When compared with March 2014, the bedrock wells showed a decrease of -0.74 feet for March 2015.

April 2015 NH Groundwater level measurements were collected by the NH Geological Survey staff and volunteers from April 27 – May 1, 2015. The statewide April 2015 average groundwater level for wells in the overburden (in soils on top of the bedrock) showed an increase of +1.39 feet from March 2015. When compared with April 2014, the statewide average groundwater level for April 2015, in these wells, decreased -0.50 feet. The April 2015 average groundwater level in the new bedrock wells showed an increase of +0.45 feet when compared with March 2015. When compared with April 2014, the bedrock wells showed a decrease of -0.60 feet for April 2015.

The groundwater level measurements for the deeper of the two Concord bedrock wells (CVWB-1) are **not** presently available in real-time. Past data are on the USGS website at: http://waterdata.usgs.gov/nh/nwis/uv/?site_no=431034071340501&PARAMeter_cd=72019.

The data for all of the wells in the NH Groundwater Level Network are shared with and posted on the USGS website at: <http://groundwaterwatch.usgs.gov/StateMaps/NH.html>.

IAPETAN CROSSING FIELD TRIP ANNOUNCEMENT 7/26-8/1/2015 – from the Geological Society of Maine webpage at <http://www.gsmmaine.org/2015/04/iapetan-crossing-field-trip-announcement-726-812015/>.

“Iapetan Crossing: A Travelling Geology Course from Maine to Quebec” will be offered through the Eagle Hill Institute this summer, July 26-August 1. It is patterned after Hank Williams’ legendary trans-Newfoundland trip, and has been run in various forms around a dozen times since 1992. Please see link for details. Questions may be addressed to Marilyn Mayer, the coordinator at Eagle Hill Institute (marilyn@eaglehill.us) and/or Doug Reusch, trip leader (reusch@maine.edu). This field trip is pretty much a repeat of the GSM-sponsored trip of summer 1999 (see page 2 of July 1999 newsletter: http://gsmmaine.org/newsletters/1999_v25_n2.pdf. http://www.eaglehill.us/programs/nhs/seminar-flyer-pdfs/2015iapetan_Reusch.pdf

Did you hear the infinity joke? It doesn't have a good ending.



Wayne Ives describes a mineral raffle prize while Lee Wilder shakes up tickets at the January 2015 meeting at Makris Lobster House. Photo by Abby Fopiano.

LIFE TRUSTEE AND PAST PRESIDENT OF THE BOARD BRIAN FOWLER IS APPOINTED THE NEW PRESIDENT OF THE MOUNT WASHINGTON OBSERVATORY

North Conway, NH—June 2, 2015—The Board of Trustees of nonprofit Mount Washington Observatory announced the appointment of Brian Fowler as the new President. Brian will fill the vacancy created by Scot Henley's departure as the Executive Director in December 2014. The position has been temporarily filled for a brief tenure by Ed Bergeron as the Interim Executive Director who stepped in to implement organizational change and spearhead the search for a new President.

"After a lengthy and very involved interview process that included our Board of Trustees we are pleased to announce this appointment," said Interim Executive Director, Ed Bergeron. "Brian's management experience, knowledge of complex business systems and background in research brings a level of diversity we need to lead this organization and will allow us to focus on our roots and mission"

Brian has a BS in Geology from Marietta College and a Certificate in Management from Harvard. Prior to becoming semi-retired he led his own management firm for 5 years which specialized in mergers and acquisitions, operations, finance and personnel integration for clients in the mining, and heavy construction industry. His prior experience also includes being President of North American Reserve, Inc. for 16 years and early in his career he worked for several firms in the geotechnical consulting industry and the NHDOT.

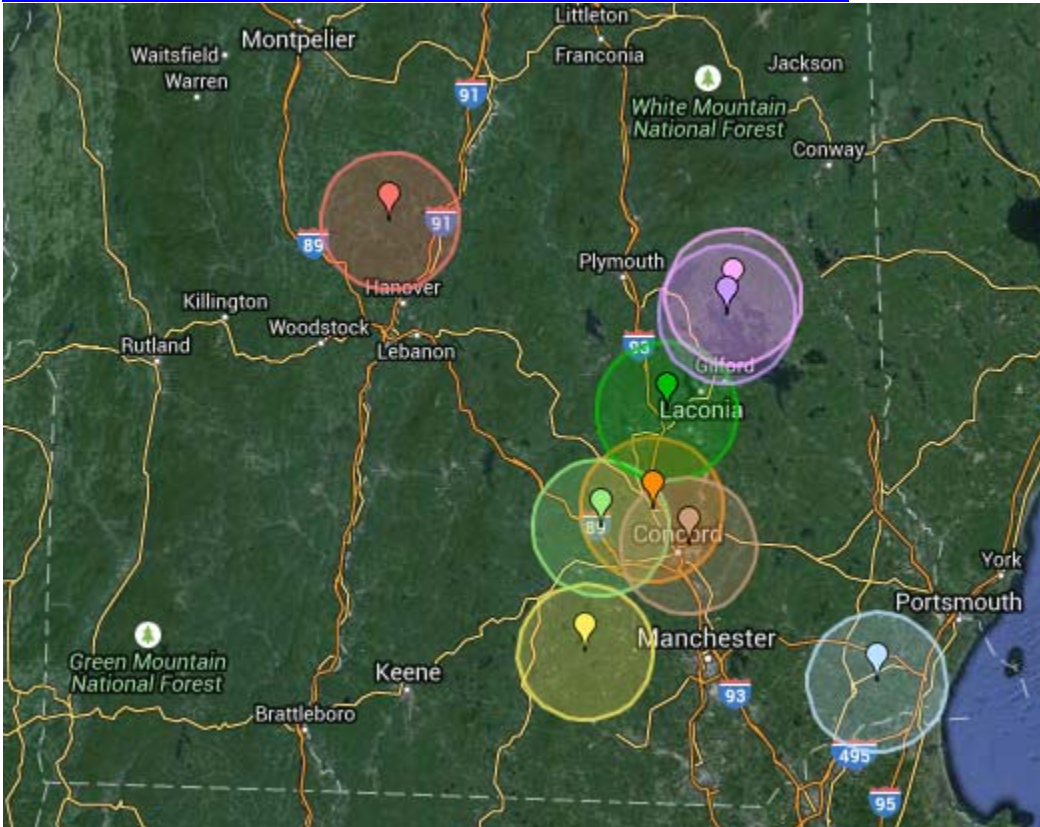
Brian is a licensed professional geologist in many states and is widely published in the field of geology and engineering geology. Currently a Life Trustee of the organization he also acted as the President of the Board of Trustees throughout the 1980s.

Brian lives in Madison, NH with his wife Betsy and will be starting work in early June.

"This is a labor of love for me...I have been involved with this legendary organization and associated organizations in various capacities for almost 50 years and around the mountain with my work in geology ever since I was a kid," said Fowler. "I am excited to work with this dedicated staff and Board of Trustees to continue the important work in weather observation, research and education all surrounding the mission of the Observatory."

RECENT NH EARTHQUAKES

New Hampshire is no stranger to earthquakes. Sunday, May 24, 2015 at 14:12 a magnitude 2.3 quake was felt with an epicenter near Boscawen. This followed a magnitude 1.6 quake near Francestown on May 11th at 23:28. Most of the recent earthquakes have been about this strength, but a nearby quake three years ago in the Hollis/Waterborough area of Maine measured 4.0. Check for yourself whether it was a quake or just a big truck by looking at <http://earthquaketrack.com/p/united-states/new-hampshire/recent>.



Map of recent NH-area earthquakes from <http://earthquaketrack.com/p/united-states/new-hampshire/recent>

GEOPHILIA, OR THE LOVE OF STONE

Jeffrey Jerome Cohen (<http://jeffreyjeromecohen.com/>) has written an article called “Geophilia, or the Love of Stone” that had such an interesting title I had to toss it out here to see if it intrigued anyone else. It deals with the nature of stone’s being. “The smallest pebble is upon deeper contemplation a durable link to a dynamic cosmos.” And that was a part I could understand—not all if it is that straightforward. It is challenge to read. Let me know if you do.

<http://continentcontinent.cc/index.php/continent/article/view/181>.

GSA FIELDBOOK PUBLICATIONS AVAILABLE

For \$5 or \$10 you can get your selection of a variety of northeastern field guide volumes. Titles include

From the Shield to the Sea: Geological Field Trips from the 2011 Joint Meeting of the GSA Northeastern and North-Central Sections, Mesozoic igneous rocks of northern New England and adjacent Quebec, Deglacial History and Relative Sea-Level Changes, Northern New England and Adjacent Canada and Decade of North American Geology (DNAG) Centennial Field Guide 5 - Northeastern Section. Look for these and more at

<http://rock.geosociety.org/Store/SearchResults.aspx?searchterm=NEFLDZ&searchoption=ALL>.

NEPAL EARTHQUAKE

The April 25, 2015 M 7.8 Nepal earthquake occurred as the result of thrust faulting on or near the main thrust interface between the subducting India plate and the overriding Eurasia plate to the north. At the location of this earthquake, approximately 80 km to the northwest of the Nepalese capital of Kathmandu, the India plate is converging with Eurasia at a rate of 45 mm/yr towards the north-northeast – a fraction of which (~18 mm/yr) is driving the uplift of the Himalayan mountain range. The preliminary location, size and focal mechanism of the April 25 earthquake are consistent with its occurrence on the decollément associated with the Main Himalayan Thrust, which defines the subduction thrust interface between the India and Eurasia plates. http://earthquake.usgs.gov/earthquakes/eventpage/us20002926#general_summary

By midafternoon, the United States Geological Survey had counted 12 aftershocks, one of which measured 6.6. http://www.nytimes.com/2015/04/26/world/asia/nepal-earthquake-katmandu.html?_r=0

Tuesday, April 28, 2015 *Kathmandu, Nepal (CNN)* More than 4,800 people dead. More than 9,200 injured. Eight million affected across [Nepal](#). One million children urgently in need of help.



As the country coped with the fallout of the quake, another natural disaster struck Tuesday (April 28) afternoon in a popular trekking area north of Kathmandu, and up to 200 people were feared missing as a result of a landslide, a trekking association official said. It happened around 4 p.m. in Langtang National Park <http://www.cnn.com/2015/04/28/asia/nepal-earthquake/>.

The May 12, 2015 M 7.3 Nepal earthquake (SE of Zham, China) occurred as the result of thrust faulting on or near the decollément associated with the Main Himalayan Thrust, The May 12, 2015 event is the largest aftershock to date of the M 7.8 April 25, 2015 Nepal earthquake – known as the Gorkha earthquake - which was located 150 km to the west, and which ruptured much of the decollément between these two earthquakes.

Prior to April 25, four events of M6 or larger had occurred within 250 km of this area over the past century. One, a M 6.9 earthquake in August 1988, 140 km to the south-southeast of the May 12 event, caused close to 1500 fatalities. The largest, an M 8.0 event known as the 1934 Nepal-Bihar earthquake, ruptured a large section of the fault to the south of this May 2015 event,

and east of the April 2015 main shock, in a similar location to the 1988 earthquake. It severely damaged Kathmandu, and is thought to have caused around 10,600 fatalities. Prior to the 20th century, a large earthquake in 1833 is thought to have ruptured a similar area as the April 25, 2015 event. To date, there have been 94 aftershocks of the Gorkha earthquake of M3 or larger. Three of these have occurred since the M 7.3 May 12 event, all to the south of that earthquake. http://earthquake.usgs.gov/earthquakes/eventpage/us20002ejl#general_summary

CHINA: EVEREST SHIFTED 3 CENTIMETERS AFTER NEPAL QUAKE BUT REMAINS SAME HEIGHT <http://www.cnn.com/2015/06/16/asia/nepal-china-everest-quake/index.html>

(CNN)Mount Everest, the world's highest peak, was moved 3 centimeters (about 1.2 inches) southwest by the magnitude-7.8 earthquake that devastated Nepal in April, Chinese authorities say. But the April 25 quake, which left more than 8,000 people dead, did not affect the height of the 8,848-meter (29,029-foot) mountain, according to the report by China's National Administration of Surveying, Mapping and Geoinformation. Chinese state media reported the administration had set a satellite monitoring system on the peak in 2005 to observe the movement of the mountain. In the decade since, Everest had been moving northeast at a speed of 4 centimeters a year, and had grown by 0.3 centimeters annually, state media reported.

The April earthquake reversed the direction of the mountain, shifting it to roughly where it would have been nine months earlier.

CONTINUOUSLY ACTIVE, BASALTIC SHIELD VOLCANO IN ERTA ALE, ETHIOPIA

ErtA Ale is a continuously active, basaltic shield volcano in the Afar Region of northeastern Ethiopia. Its caldera is notable for holding one of world's longest-existing lava lakes -- first reported in 1906. Volcanoes with lava lakes are quite rare. Only six are known worldwide. Photo taken on January 10, 2015. <http://epod.usra.edu/blog/2015/04/erta-ale-ethiopia.html>



GLACIAL & POST-GLACIAL GEOLOGY ON & NEAR MT. WASHINGTON A WORKSHOP & FIELD TRIPS - AUGUST 8-9, 2015 (RAIN OR SHINE)



This Workshop and Field Trips will introduce professional and amateur geologists, hikers, and interested lay people to the Pleistocene Ice Age and its surficial geologic effects on and near Mt. Washington. The program will review the processes, history, and distinctive geologic features created here by the continental ice sheet during and after the Ice Age, and it will review proposals emerging from recent research for new interpretations of some of these features both on and adjacent to Mt. Washington.

The Workshop will be led by local geologist and Mount Washington Observatory President Brian Fowler who has studied the surficial geology of the Presidential Range for more than 45 years. He will begin the workshop each day with an informal lecture presentation and then proceed to sites of geological interest on and near Mt. Washington. He will help participants understand the causes and processes of glaciation and deglaciation, and explain the factors that affected the creation of the geologic features that reveal their local histories.

Fowler has extensive practical and research familiarity with the region, and is the author of several maps and professional papers regarding its post-glacial and more recent geologic history. He is also a coauthor of the newly published book "[The Geology of New Hampshire's White Mountains](#)." He has led similar well-received workshops and field trips during past years in the region, and makes the presentations understandable for all levels of training, experience, and general interest. Past participants have ranged from complete novices and general hikers to teachers and active professionals.

Geoscience professionals and teachers can earn Continuing Education Credits (C.E.U.'s) by attending this Workshop. Persons interested can do this by simply requesting a Workshop Evaluation Form from Michelle Cruz, Director of Education, Mount Washington Observatory (mcruz@mountwashington.org) at the end of the program. A C.E.U. Certificate will be issued as soon as the Evaluation Form has been returned.

Schedule The workshop will meet at 8:30 am each day, and will conclude at about 5:00 pm on Saturday, August 8th and about 3:00 PM on Sunday, August 9th. It will begin each day at the Mount Washington Observatory [Weather Discovery Center](#) in North Conway, NH.

Cost The fee for supporting members of the nonprofit Mount Washington Observatory is \$150 and \$195 for non-members. This fee includes instruction, maps and handouts. The fee for transportation on the Mt. Washington Auto Road is not included.

Reservations Reservations are required and can be made through this website or by phone at (603) 356-2137, ext. 225. Space is limited. Advanced registration is strongly encouraged. Refunds will be made available through **July 17, 2015**.

Physical Requirements No lengthy or strenuous hiking is involved, but participants must be in good physical condition.

Gear Requirements Participants should dress for hiking, and come equipped with warm clothing, rain gear, and sturdy footwear. Participants must also pack trail lunches and water for both days, along with a camera and copies of pre-meeting information items described below.

Transportation Participants will provide their own transportation to and from field locations. Car-pooling amongst participants will be encouraged.

Helpful Pre-Meeting Information Resources For those interested in a comprehensive introduction to the subject matter and localized map areas to be covered by the Workshop, log onto and download: <http://www2.newpaltz.edu/fop/pdf/FOP2012Guide.pdf>.

Also, general information about the geology of the region can be found in the book entitled: The Geology of New Hampshire's White Mountains. Currently available through Amazon and will be available at the Weather Store located in the Weather Discovery Center.

MASSACHUSETTS GEOLOGICAL SOCIETY - FIRST ANNUAL FIELD TRIP - July 18, 2015

Geology on Foot: Rocks and Landforms of the Lynn Woods and Breakheart Reservations

Leaders: Dr. Lindley Hanson and Dr. Rory McFadden, Salem State University

Start time: 8:30 am: Lynn Woods, Great Woods Road entrance by Walden Pond. End time: 3:30 pm

This trip will focus on the geology and geomorphology of the Lynn Woods Reservation. Time and permission allowing, we will continue to and finish up in the Breakheart Reservation. Plan to be on foot for most of the day. The morning will start with a walking tour of Lynn Woods Reservation where we will look at the Devonian Peabody Granite, the Walden Pond Fault, the Neoproterozoic Dedham North and surrounding Neoproterozoic volcanic rocks. In the Breakheart Reservation will take a close look at the Westboro Formation, the oldest formation in the Avalon Terrane, the overlying volcanic rocks, and their relationship with the Dedham (?) Granite.

We will present new data and bring up several controversial topic for discuss. The Walden Pond Fault is not exposed, but it is inferred from topography and the juxtaposition of Devonian against Precambrian rocks. The fault is somewhat enigmatic because its sense of motion, orientation, and timing are unknown. Does it in fact exist? What do the glaciated exfoliation domes in the Peabody Granite reveal about the depth of glacial erosion? What does Union Rock, a well-known glacial erratic, reveal about the Walden Pond Fault? Could the volcanic rocks, assigned to the Lynn Volcanic Complex, in the Lynn and Breakheart Reservations belong to the older Middlesex Fells Volcanic Complex? What's the evidence? Is Dungeon Rock a mafic dike or a lava flow? Are there blocks of eroded mylonite in the Westboro Formation and what could they indicate?

Pack your lunch, bring rain gear, and wear comfortable clothes and footwear. Ticks can be bad. We suggest you spray your clothes with a strong tick repellent (like permethrin). As there will be plenty of parking and only two stops, there should be no need to car pool. Nevertheless, there should be no problem getting a ride to the Breakheart Reservation from Lynn Woods, if necessary.

Dr. Lindley Hanson and Rory McFadden are professors of geology at Salem State University. Dr. Hanson's specialty is geomorphology and New England Geology. Dr. McFadden's specialty is structural geology and metamorphic core complexes. <http://massgeosociety.org/events.html>

OIL AND GAS DRILLING TRIGGERS MAN-MADE EARTHQUAKES IN EIGHT STATES, USGS FINDS

from <http://www.theguardian.com/world/2015/apr/23/oil-gas-drilling-triggers-man-made-earthquakes-usgs>

More than a dozen areas in the US have been shaken in recent years by small earthquakes triggered by oil and gas drilling, according to a government report released on April 23, 2015. The man-made quakes jolted once-stable regions in eight states, including parts of Alabama, Arkansas, Colorado, Kansas, New Mexico, Ohio, Oklahoma and Texas, according to researchers at the US Geological Survey.

Oklahoma has been rocked by more magnitude-3 quakes than California, the most seismically active of the lower 48 states, Petersen said. Oklahoma was not on scientists' radar until recently when the state experienced a spate of quakes, the largest registering a magnitude-5.6 in 2011. Earlier this week, the Oklahoma Geological Survey acknowledged that it was very likely most of the recent shaking was from wastewater disposal. Many faults awakened by drilling have not moved in millions of years, Geological Survey geophysicist William Ellsworth said.

See also http://www.usgs.gov/hydraulic_fracturing/; and https://profile.usgs.gov/myscience/upload_folder/ci2015jun1012005755600induced_egs_review.pdf and <http://earthquake.usgs.gov/research/induced/edge.php> and <http://www.nature.com/ncomms/2015/150421/ncomms7728/full/ncomms7728.html>.

GSNH LEGISLATIVE TRACKING 2015 BILLS – submitted by Russ Wilder

These are the 2015 Bills as of June 5, 2015 that may be of interest to members. This will be the last status report until September 2015

HB626	title:	relative to energy infrastructure corridors. Introduced and Referred to Science, Technology and Energy. 3/3/2015 Retained in Committee
	Sponsors:	(Prime) Suzanne Smith
HB227	title:	relative to eminent domain on public lands. This bill requires the approval of the appropriate legislative body before acquisition of land acquired with public funds or land donated to a public entity <i>House Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Senate Status:</i> IN COMMITTEE <i>Next/Last Comm:</i> SENATE PUBLIC AND MUNICIPAL AFFAIRS <i>Next/Last Hearing:</i> 04/08/2015 at 10:00 AM LOB 102 – Inexpedient to Legislate
	Sponsors:	(Prime) James Belanger
HB572	title:	relative to taking land by eminent domain for high pressure gas pipelines and requiring payment of the land use change tax when land is taken by eminent domain to build energy infrastructure; <i>G-Status:</i> SENATE <i>House Status:</i> PASSED / ADOPTED <i>Senate Status:</i> IN COMMITTEE <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 04/29/2015 SH 100
	Sponsors:	(Prime) James Belanger
HB 233	title:	Relative to local approval of mining activity. Prime sponsor: John Hunt. <i>G-Status:</i> SENATE <i>House Status:</i> PASSED / ADOPTED <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 05/06/2013 SH 100
	Sponsors:	(Prime) John Hunt
HB 113	title:	designating the mastodon as the official state fossil. <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE EXECUTIVE DEPARTMENTS AND ADMINISTRATION <i>Next/Last Hearing:</i> 02/17/2015 at 02:00 PM LOB 306
	Sponsors:	(Prime) David Borden
HB 216	title:	allowing regulatory boards and commissions to recover certain investigative costs. <i>G-Status:</i> SENATE <i>House Status:</i> PASSED / ADOPTED <i>Senate Status:</i> REREFERRED <i>Next/Last Comm:</i> SENATE EXECUTIVE DEPARTMENTS AND ADMINISTRATION <i>Next/Last Hearing:</i> 04/01/2015 at 09:00 AM LOB 101
	Sponsors:	(Prime) Carol McGuire

HB 431	title:	relative to the placement of all new elective electric transmission lines in New Hampshire. <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE SCIENCE, TECHNOLOGY AND ENERGY <i>Next/Last Hearing:</i> 02/19/2015 at 11:00 AM LOB 304
Sponsors:		(Prime) Laurence Rappaport
HB 244	title:	relative to the permissible level of methyl tertiary butyl ether (MTBE) in drinking water <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE ENVIRONMENT AND AGRICULTURE <i>Next/Last Hearing:</i> 02/10/2015 at 10:30 AM LOB 303
Sponsors:		(Prime) Jim McConnell
HB 248	title:	directing the university system of New Hampshire to conduct a study of prolonged human consumption of and exposure to methyl tertiary butyl ether (MTBE). <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE ENVIRONMENT AND AGRICULTURE <i>Next/Last Hearing:</i> 02/10/2015 at 01:00 PM LOB 303
Sponsors:		(Prime) Jim McConnell
HB 208	title:	repealing the New Hampshire regional greenhouse gas initiative program. <i>G-Status:</i> SENATE <i>House Status:</i> NONCONCURRED REQUEST CONFERENCE <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 04/08/2015 at 09:45 AM SH 100
Sponsors:		(Prime) Richard Barry
HB 451	title:	Relative to local approval of mining permits. <i>G-Status:</i> PASSED <i>House Status:</i> CONCURRED <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 05/06/2015 at 09:15 AM SH 100
Sponsors:		(Prime) Franklin Sterling
HB 462	title:	repealing an increase in the fuel oil discharge cleanup fund fee. <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE WAYS AND MEANS <i>Next/Last Hearing:</i> Time not specified LOB 202
Sponsors:		(Prime) James Spillane

HB 272	title:	(New Title) designating the Ham Branch River watershed in Easton as a protected river, and exempting portions of the Ham Branch River watershed from the shoreland water quality protection act. <i>G-Status:</i> SENATE <i>House Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Senate Status:</i> INEXPEDIENT TO LEGISLATE <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 04/15/2015 at 09:45 AM SH 100
	Sponsors:	(Prime) Susan Ford
HB 368	title:	relative to the selection of engineers used as part of the planning board review process. <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE MUNICIPAL AND COUNTY GOVERNMENT <i>Next/Last Hearing:</i> 02/05/2015 at 10:00 AM LOB 301
	Sponsors:	(Prime) Edward Butler
SB196	title:	Appropriating funds to the department of environmental services for the purpose of funding eligible water supply land protection costs under the state aid grant program. Prime sponsor: Martha Fuller Clark. Introduced and Referred to Senate Energy and Natural Resources. Ought to Pass: MA, VV; Sen. Bradley Moved Laid On Table, MA, VV
	Sponsors:	(Prime) Martha Fuller Clark , Judith Spang , Thomas Bucu , Suzanne Smith
SB38	title:	establishing a commission to develop a land conservation plan. <i>G-Status:</i> PASSED <i>House Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Senate Status:</i> CONCURRED <i>Next/Last Comm:</i> HOUSE RESOURCES, RECREATION AND DEVELOPMENT <i>Next/Last Hearing:</i> 03/18/2015 at 10:30 AM LOB 305
	Sponsors:	(Prime) Martha Fuller Clark , Jeanie Forrester , Gerald Little , Dan Feltes , Judith Spang , Suzanne Smith
HB 376	title:	appropriating funds to the department of environmental services for the purpose of funding eligible and completed drinking water, wastewater, and landfill closure projects under the state aid grant program. <i>G-Status:</i> HOUSE <i>House Status:</i> RETAINED IN COMMITTEE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE FINANCE <i>Next/Last Hearing:</i> 01/29/2015 at 11:15 AM LOB 210-211
	Sponsors:	(Prime) Thomas Bucu , Suzanne Gottling , Peter Leishman , Laura Pantelakos , Jeb Bradley , Martha Fuller Clark , Karen Umberger , Richard Ames , Karen Ebel , David Danielson
HB278	title:	relative to town clerk fees for fill and dredge permit applications. <i>G-Status:</i> HOUSE <i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE WAYS AND MEANS <i>Next/Last Hearing:</i> 01/28/2015 at 10:30 AM LOB 202

		<i>Hearing:</i>
	Sponsors:	(Prime) David Danielson
SB168	title:	Relative to the duties of the commissioner of the department of environmental services. <i>G-Status:</i> SIGNED BY GOVERNOR <i>House Status:</i> PASSED / ADOPTED <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> HOUSE RESOURCES, RECREATION AND DEVELOPMENT <i>Next/Last Hearing:</i> 04/07/2015 at 11:00 AM LOB 305
	Sponsors:	(Prime) David Watters , Martha Fuller Clark , Russell Prescott , Judith Spang , Adam Schroadter , Peter Bixby , Carol Bush
HB377	title:	establishing a commission to study the establishment of a state geographic information system office and the position of state geographic information officer. <i>G-Status:</i> HOUSE <i>House Status:</i> RETAINED IN COMMITTEE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE EXECUTIVE DEPARTMENTS AND ADMINISTRATION <i>Next/Last Hearing:</i> 02/17/2015 at 10:00 AM LOB 306
	Sponsors:	(Prime) Alfred Baldasaro , Edith Hogan , Robert Theberge , Daniel Itse , Daniel Tamburello , Timothy Twombly , Jeanine Notter , Leon Rideout
HB281	title:	defining "exotic aquatic species of wildlife" and relative to the duties of the exotic aquatic weeds and species committee. <i>G-Status:</i> PASSED <i>House Status:</i> CONCURRED <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 04/01/2015 at 09:15 AM SH 100
	Sponsors:	(Prime) Suzanne Gottling , Judith Spang , Chris Christensen , Martha Fuller Clark , Jeb Bradley , Gerald Little , James Grenier , Suzanne Smith
HB 498	title:	Relative to notification of radon and arsenic testing. <i>G-Status:</i> PASSED <i>House Status:</i> PASSED / ADOPTED <i>Senate Status:</i> PASSED / ADOPTED <i>Next/Last Comm:</i> SENATE HEALTH AND HUMAN SERVICES <i>Next/Last Hearing:</i> 04/14/2015 at 01:20 PM LOB 101
	Sponsors:	(Prime) John Hunt , Sam Cataldo
HB349	title:	Relative to state buffers for projects requiring wetland permits. <i>G-Status:</i> HOUSE <i>House Status:</i> LAID ON TABLE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE RESOURCES, RECREATION AND DEVELOPMENT <i>Next/Last Hearing:</i> 02/10/2015 at 01:00 PM LOB 305-307
	Sponsors:	(Prime) Judith Spang , Suzanne Gottling , Jane Beaulieu , Martha Fuller Clark , David Watters , Lee Oxenham
HB 609	title:	relative to hydraulic fracturing. <i>G-Status:</i> HOUSE

		<i>House Status:</i> INEXPEDIENT TO LEGISLATE <i>Senate Status:</i> <i>Next/Last Comm:</i> HOUSE ENVIRONMENT AND AGRICULTURE <i>Next/Last Hearing:</i> 02/17/2015 at 02:30 PM LOB 303
	Sponsors:	(Prime) Timothy Horrigan , Gladys Johnsen
HB 664	title:	Consolidating existing oil pollution funds. Prime sponsor: Chris Christensen. <i>G-Status:</i> SENATE <i>House Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Senate Status:</i> REPORT FILED <i>Next/Last Comm:</i> SENATE WAYS AND MEANS <i>Next/Last Hearing:</i> 03/31/2015 at 10:10 AM SH 103
	Sponsors:	(Prime) Chris Christensen , Adam Schroadter , Karen Ebel
HB306	title:	relative to membership of the wetlands council and the water council. <i>G-Status:</i> SIGNED BY GOVERNOR <i>House Status:</i> CONCURRED <i>Senate Status:</i> PASSED / ADOPTED WITH AMENDMENT <i>Next/Last Comm:</i> SENATE ENERGY AND NATURAL RESOURCES <i>Next/Last Hearing:</i> 04/01/2015 at 09:30 AM SH 100
	Sponsors:	(Prime) Suzanne Gottling , Judith Spang
SB 97		Authorizing municipalities to adopt ordinances to regulate stormwater to comply with federal permit requirements. Prime sponsor: Regina Birdsell. <i>G-Status:</i> HOUSE <i>House Status:</i> CONFERENCE COMMITTEE <i>Senate Status:</i> CONFERENCE COMMITTEE <i>Next/Last Comm:</i> SENATE COMMITTEE OF CONFERENCE <i>Next/Last Hearing:</i> 06/09/2015 at 11:00 AM SH 100
	Sponsor:	Regina Birdsell.

THE HISTORY OF ICE ON EARTH - 24 May 2010 by [Michael Marshall](#)

The planet seems to have three main settings: "greenhouse", when [tropical temperatures extend to the poles](#) and there are no ice sheets at all; "icehouse", when there is some permanent ice, although its extent varies greatly; and "snowball", in which the planet's entire surface is frozen over.

Why the ice periodically advances – and why it retreats again – is a mystery that glaciologists have [only just started to unravel](#). Here's our recap of all the back and forth they're trying to explain.

<http://www.newscientist.com/article/dn18949-the-history-of-ice-on-earth.html?full=true#.VXnNvNLbLRY>

and

ANOTHER 'LITTLE ICE AGE' IS ON THE WAY, SAYS SPACE SCIENTIST

January 21, 2015 - Space scientist Shrinivas Aundhkar, director of India's Mahatma Gandhi Mission at the Centre for Astronomy and Space Technology, says declining sunspot numbers in the last two solar cycles could mean a "mini ice age-like situation" is around the corner. For years now, more and more [scientists have been warning](#) that fewer observed sunspots could mean the Earth is heading for a cooling period. See more at <http://iceagenow.info/2015/01/little-ice-age-way-space-scientist/>.

BUMBLE BEE JASPER - WHAT IS IT? Compiled by Wayne Ives

Bumble bee jasper is an interesting specimen showing up at gem and mineral shows recently. It has an attractive contrasting black and yellow and orange color. I was told that it isn't a true jasper and may have stability problems as a result of its



Pictures from
<http://www.indoagate.com/bumblebee.html>.

composition. However, no one could tell me what it actually was, so I stumbled around the internet looking for an answer. I found this description and maybe it's right—it is the internet after all.

Bumblebee Agate is from Indonesia. It is sold as Bumblebee Agate or Bumblebee Jasper. It is mined from sulfur vents. Speculation on probable composition and viewing with a microscope shows the following: The material is anhydrite (gypsum), sulfur, hematite, in a matrix of volcanic tuff (welded ash). It also may have plumose calcite and ilmenite. While the miners claim they can call it agate because it could have some opaline silica, conclusions indicate the silica content is negligible so certainly does not qualify as an agate. The material is the most expensive anhydrite sulfur you can buy at a dollar a gram, it can decompose and make sulfuric acid which will rot your jewelry mounting, and is softer than even travertine making it useless for jewelry. It is all about marketing. Essentially the material is decomposed volcanic ash, which is another name for siliceous mud with sulfur, yet the material is dominated by anhydrite. If it was mostly mud, we would call it Biggs Jasper and charge even more for it. Keep in mind agate forms at a pH greater than 6.5, typically around 8.5 in alkaline conditions, and sulfur forms in extremely acidic conditions of pH 4 or less, so there is no significant silica that can be deposited in these vent conditions. In fact, it would take microscopy to find any silica. Submitted by Bob Rush Lapidary/Gemstone Community at <http://www.gemandmineral.cc/files/Rockhound0812web.pdf>.

Specific locations were identified in west Java at several active volcanic areas in the Bandung and Garut regencies at a caldera with active fumaroles. One location was a very young, breached caldera near the town of Garut called Mount Papandayan. The peak is around 8,700ft high which is one of the tallest volcanoes in Indonesia. Within the arc shaped crater there are 4 main vent areas. We saw boiling volcanic mud pools and vents spewing smelly H₂S gasses. From <http://www.indoagate.com/bumblebee.html>

DATES TO REMEMBER

June 27-28, 2015 – Gilsum Rock Swap – <http://www.gilsum.org/rockswap>.

June 28–July, 01 2015 - 49th US Rock Mechanics/Geomechanics Symposium - San Francisco, CA The American Rock Mechanics Association's annual conference on rock mechanics and geomechanics will be held at the Westin St. Francis, Union Square, San Francisco. For information on the symposium, accommodations and sponsorship, visit www.armasymposium.org.

July 11, 2015 – GSNH Summer Field Trip - FLUVIAL GEOMORPHOLOGY: MERRIMACK VILLAGE DAM REMOVAL AND SUNCOOK RIVER AVULSION

Saturday July 11th 2015, 8 am - 4:30 pm,

Trip leaders: Matt Collins - NOAA and Noah Snyder - Boston College at Merrimack Village Dam; and Shane Csiki - NHGS; Jim Degnan & Thor Smith – USGS; and Meghan Arpino - UNH at the Suncook River; We will meet at the NHDES Parking Lot, 29 Hazen Drive, Concord, NH Bring your own lunch and water - There is no rain date; CEH certificates will be available at the end of the program for 6.0 hours.

Travel by Coach Bus to Trip Stops - \$20 per person

DEADLINE FOR SIGN UP/PAYMENT IS JUNE 26, 2015

And don't forget that tee-shirts will be available for sale at the field trip!

July 18, 2015 – First Annual Massachusetts Geological Society Field Trip – “Geology on Foot: Rocks and Landforms of the Lynn Woods and Breakheart Reservations” - Dr. Lindley Hanson and Dr. Rory McFadden - Salem State University - 8:30 AM to 3:30 PM.

Details and registration at <http://massgeosociety.org/events.html> or contact MaGS at info@massgeosociety.org. See article in this edition.

July 25-26, 2015 – Geological Society of Maine field trip - The 2015 GSM field trip will be held at Isle au Haut, a town of about 40 year-round people, with a summer population of about 200. The field trip will be held in the middle of the high season on Isle au Haut and will require advanced planning for lodging and transportation. The trip leaders will be Dr. Marshall Chapman of Morehead State University, Morehead, Kentucky, and Bob Gerber, CG, engineering and geologic consultant and summer resident of Isle au Haut. Marshall wrote his Ph.D. thesis on the bedrock geology of Isle au Haut and Marshall also is a summer resident of the island and owns the only Bed & Breakfast on the island: The Keeper's House Inn. Please read this pdf document so you know what the options are for accommodations and can take action soon: [2015 Field Trip info 12 15 2014 edits](#). People with questions that are not answered by this attachment can contact Bob Gerber via email at Aframe73@gmail.com.

July 26-August 1, 2015 - “Iapetan Crossing: A Travelling Geology Course from Maine to Quebec.” http://www.eaglehill.us/programs/nhs/seminar-flyer-pdfs/2015iapetan_Reusch.pdf
See article in this edition.

August 8-9, 2015 - Glacial & Post-Glacial Geology on & near Mt. Washington
A Workshop & Field Trips led by Brian Fowler- See article in this issue.

August 29-30, 2015 – Capital Mineral Club – 52nd Annual Gem, Mineral & Jewelry Show, Everett Arena, 15 Loudon Road, Concord, NH.
http://www.capitalmineralclub.org/52nd_annual.php See poster in this issue.

September 14-17, 2015 - 66th Highway Geology Symposium

Host: Massachusetts Dept of Transportation and the UMASS Amherst

Location: Sturbridge Host Hotel and Conference Center, Sturbridge, MA

Details: Monday afternoon (9/14), there will be a half day TRB session titled "Geotechnical Risk Assessment and Performance Management". On Tuesday morning (9/15), technical sessions of the Symposium will start.

For more information: see the [Better Highways through Applied Geology website](#)

September 19-26, 2015 - Association of Environmental & Engineering Geologists will be holding their 2015 Annual Meeting September 19-26, 2015 at the Wyndham Grand, in downtown Pittsburgh, PA. Abstracts deadline is May 1, 2015. For complete details visit, <http://www.aegannualmeeting.org>.

September 28-29, 2015 - NGWA Conference on Groundwater in Fractured Rock and Sediments (#5017) Burlington, Vermont. The use of innovative techniques, cutting-edge research, and lessons learned from practical experience regarding characterizing and remediating groundwater in fractured rock environments <http://www.ngwa.org/Events-Education/conferences/Pages/5017sep15.aspx>. **September 30, 2015, 9 a.m.-4 p.m.** Optional field trip - Integrating Ductile and Brittle Surface Structures and Borehole Geophysics to Understand the Hydrogeology of Bedrock Wells. The Champlain Valley geologic province consists of slices of weakly metamorphosed carbonate and clastic sedimentary rocks that are bounded by major thrust faults, including the Champlain Thrust to the west and the Hinesburg Thrust to the east. Following thrusting in the Ordovician and folding in the Devonian, these slices were fractured pervasively during the Cretaceous. The purpose of this trip is to zoom in from the large scale to a detailed field area to demonstrate the synergy between surface and logging studies.

November 1-4, 2015 - GSA Annual 50th Annual Meeting & Exposition: Baltimore, Maryland.

For more information: see the [GSA website at http://community.geosociety.org/gsa2015/home](http://community.geosociety.org/gsa2015/home).

March 21-23, 2016 - GSA Northeastern Section 51st Annual Meeting

CALL FOR PROPOSALS Empire State Plaza Convention Center, Albany, NY

<http://www.geosociety.org/Sections/ne/2016mtg/>

2015 NORTHEAST SECTION MEETING OF THE GSA submitted by Lee Wilder

The 50th Annual NE Section of the GSA met March 23-25 at the Mount Washington Hotel in Bretton Woods NH. The new meeting format was met with success by the 1,226 attendees. Theme Sessions, Symposia, Workshops, Short Courses, and Field Trips were designed with the intent of reaching out to future earth scientists. More than half of the 2015 attendees were students. On Tuesday evening, the 50th Anniversary Celebration culminated with a spectacular fireworks display on the slopes of the Bretton Woods Ski Area.

The 2016 NE-GSA Section Meeting will be held in Albany, NY on March 21-23 March 2016. Information at: <http://www.geosociety.org/Sections/ne/2016mtg/>



Presents the 52nd Annual
Gem, Mineral & Jewelry Show

Saturday, August 29, 2015 9:00AM to 5:00PM

Sunday, August 30, 2015 10:00AM to 4:00PM

Everett Arena, 15 Loudon Rd

Concord, NH

Admission: adults \$5.00

children under 12 free with adult



**Gems-Jewelry-Minerals-Fossils-Carvings-Displays-
Demonstrations and much more!**

The Capital Mineral Club is a 501 (c) (3) organization that supports education in geology, mineralogy and related subjects.



MEMBERSHIP & RENEWAL APPLICATION

Geological Society of New Hampshire

PO Box 401, Concord, NH 03302

Name: _____ (Please print clearly)

E-mail: _____

Renewing Members: Only update this section if you have changes to your contact information (including email) or educational history.
New applicants: please complete this section.
Preferred address/email to receive GSNH Communication: ___ Home or ___ Business
Home Address: _____ Business Address: _____
Home Telephone: _____ Office Telephone: _____
New Hampshire PG # (if applicable) _____
Education: Degrees received or in progress:
Year Degree Major College or University
I volunteer to help with one of the following committees or tasks:
___ Membership Committee ___ Regulations Committee ___ Communications Committee (Newsletter or Website, circle preference)
___ Legislative Committee ___ Education Committee
___ Giving a talk at a meeting ___ Events Committee ___ Other:

Membership Category:
___ Regular Member (Annual Dues \$20.00)
___ Student Member (Annual Dues \$10.00)...Please complete Education section above.

Make checks payable to "Geological Society of New Hampshire." Note that GSNH dues are not deductible as a charitable contribution, but may be deductible as a business expense. Please return this completed application form with any necessary corrections and a check for the appropriate dues to the GSNH at the address above. The Society's membership year runs from January 1 to December 31.

Signature: _____ Date: _____