# Granite State Geologist

**The Newsletter of the Geological Society of New Hampshire, Winter-Spring (March) 2011 Issue No. 72**



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## MESSAGE FROM THE PRESIDENT

Julie Spencer, AECOM, GSNH 2010-2011 President

Well, this winter will definitely be memorable! It seemed like every time we scheduled the winter meeting, there was a corresponding snow storm. Many thanks to Ernst Kastning who was able to step up and provide us with an entertaining and informative program on February 3, 2011 when our original speaker was once again the victim of a cancelled flight due to the weather. We had a great crowd of 72 members in attendance for Ernst's talk entitled "Pseudokarst & Boulder Caves in New England: What Does Talus Tell Us?" Even the most claustrophobic among us enjoyed learning about the cave formations in New England, from the well known (Lost River Gorge and Polar Caves) to the less well known (MBDATHS Caves). There was even a cave behind the Old Man's chin block before he fell!

We held a silent auction for the first time at the February dinner meeting. Vinnie DelloRusso was the winning bidder on a Frederick C. Wilda signed print entitled "January – Garnet" and a garnet specimen collected in 1993 from Greens Farm in Roxbury, CT. Both items were donated by New England EnviroStrategies. Our mineral raffle prizes for the evening were won by Lea Anne Atwell and Doug Allen. Lea Anne won a twinning cluster of calcite crystals collected in Cumberland, England which was donated by the UNH Department of Earth Sciences.

Doug won a specimen of microcline feldspar and smoky quartz crystals on a graphic granite matrix collected in Conway, New Hampshire and donated by Bob Whitmore. Thank you to everyone who donated items and purchased raffle tickets. The proceeds from silent auction and raffle are earmarked for our educational outreach funds and grants.

If you have not already renewed your membership, please check the website for a renewal form so you can keep your membership current. There are some good programs coming up this year that you won't want to miss! The notice for the April meeting is posted at the end of this newsletter and it promises to be another great evening as we are joined by John Ebel, Director of the Weston Observatory at Boston College. We are also working to re-schedule with Dr. Karen Johannesson of Tulane University for another date to give her talk about arsenic in groundwater and plans are underway for the summer field trip.

## 2011 ANNUAL NHGS MAPPING WORKSHOP

This year's annual New Hampshire Geological Survey mapping workshop will be held on Tuesday, March 15 at DES in Concord in the DES Auditorium, from 9:00 AM – 12:30 PM. Coffee and Donuts and Poster Session from 8:30 to 9:00 AM followed by a welcome speech from Rick Chormann, Interim NH State Geologist and guest speakers that include Joe Koppa, Massachusetts Geological Survey, Woody Thompson of the Maine Geological Survey and Peter Thompson of UNH. The workshop will be followed by a private working session for NHGS Mappers in DES Rm. 110C from 1:15 to 2:30. CEUs are available for eligible New Hampshire professional geologists. Please email geology@des.nh.gov if you plan to attend or need further information.

## CORPORATE SPONSORSHIPS FOR GSNH Submitted by Julie Spencer

Would you like to make your company more visible to fellow GSNH members? Don't forget that we now have a corporate sponsorship program for GSNH. The October 2011 Dinner Meeting is available for sponsorship. The deadline will be 6 weeks prior to the meeting date, so you have time to consider being a meeting sponsor! Corporate sponsorships for dinner meetings are available for $250. Meeting sponsorship includes:

- The logo of the corporate sponsor on the meeting notice
- A brief write-up about the sponsoring company on the website and in the newsletter
- A link to the sponsor's website on the meeting announcement page of the GSNH website
- Introduction during the meeting, an opportunity to speak to the attendees and to provide literature for the tables

Plans are underway for the 2011 Summer Field Trip and sponsorship is also available for this event. Details about the field trip are forthcoming. We will be seeking a single sponsor for the field trip at the level of $500. Field trip sponsorship will include:

- ✓ The logo of the corporate sponsor on the field trip handouts and the notice posted on the GSNH website
- ✓ A brief write-up about the sponsoring company on the website and in the newsletter
- ✓ A link to the sponsor's website on the field trip notice page of the GSNH website
- ✓ Introduction during the field trip and an opportunity to speak to the attendees

The tentative deadline for field trip sponsorship is July 15, 2011. All requests for sponsorship must be directed to: Julie Spencer at julie.spencer@comcast.net. Payment for sponsored activities should be sent to: Geological Society of New Hampshire, Unit #7, PMB 133, 26 South Main Street, Concord, NH 03301

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## NYSDEC GUIDANCE FOR PROFESSIONAL GEOLOGISTS Submitted by Julie Spencer

Some of you may have been following the continuing efforts of the New York geological community to enact licensing in their state. While they have not been successful yet, professional geologists are referenced in the May 2010 New York State Department of Environmental Conservation (NYSDEC) program policy DER-10 / Technical Guidance for Site Investigation and Remediation. The guidance "provides an overview of the site investigation and remediation process for the NYSDEC remedial programs administered by the Division of Environmental Remediation. These include the Inactive Hazardous Waste Disposal Site Remedial Program, known as the State Superfund Program; Brownfield Cleanup Program; Environmental Restoration Program; and Voluntary Cleanup Program; and certain petroleum releases." The guidance outlines the minimum technical activities for sites under those programs.

DER-10 includes a definition of a "Qualified Environmental Professional" and outlines the acceptable licensure criteria:
1.3 (b) 49. "Qualified environmental professional" means a person, including a firm headed by such person, who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a site or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by this guidance. Such a person must:

**i.** hold a current professional engineer's or a professional geologist's license or registration and have the equivalent of three (3) years of full-time relevant experience in site investigation and remediation of the type detailed in this guidance; **or**

**ii.** be a site remediation professional licensed or certified by the federal government, a state or a recognized accrediting agency, to perform investigation or remediation tasks identified by this guidance, and have the equivalent of three (3) years of full-time relevant experience. Examples of such license or certificate include the following titles:

(1) Licensed Site Professional, by the State of Massachusetts;

(2) Licensed Environmental Professional, by the State of Connecticut;

(3) Qualified Environmental Professional by the Institute of Professional Environmental Practice; or

(4) Certified Hazardous Materials Manager, by the Institute of Hazardous Materials Management.

The program policy can be found at the following internet link: http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf
The New York State Council of Professional Geologists continues to work toward state licensing and information about their organization can be found on their website: www.nyscpg.org .

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## PUBLICATION UPDATE

Ernst H. Kastning, Ph.D., Water Conservationist in the NHDES Drinking Water and Groundwater Bureau has written an article on Mineral Collecting (aka Rock Hounding) in the Granite State for *New Hampshire To Do* magazine. It will be published in the April 2011 issue that should hit the newsstands around March 17-24.

In case you are not familiar with the magazine, it is a very nice monthly glossy magazine that features all kinds of interesting things to do and places to go in New Hampshire. It is a bargain at $2.95 per copy. Irving gas station/convenience stores are among the first to have it on their magazine rack. It will also be available at bookstores (Barnes and Noble and Borders), supermarkets, some big-box stores, etc. This issue will be available until late April.

The article should run about four pages and have nice color photos of minerals and collecting. Lee Wilder and Tom Mortimer (a well-known NH mineral collector and expert) helped greatly with providing illustrations and information and with proof reading. The article will also have contact information for the active mineral societies in the state and includes some information on upcoming shows, i.e. the Capital Gem and Mineral Festival at the Everett Arena (Concord) in late August and the Gilsum Rock Swap (Gilsum) in June. To find out more about the magazine, check out www.nhtodo.com.

## NHGS WINTER GROUNDWATER LEVELS Submitted by NHGS

Ground-water level measurements for December 2010, January 2011 and February 2011 were collected by NHGS staff member Genevieve Al-Egaily.

December 20-23, 2010. The statewide average ground-water level showed a 0.23-foot increase from November. Increases were seen in all wells except for the Franklin, Greenfield, and Concord airport well which showed decreases of 0.27, 0.27 and 0.56 feet respectively. When compared with December 2009, the statewide average ground-water level decreased 0.55 feet. The average ground-water level in the new bedrock wells showed an increase of 1.03 feet when compared with November. Increases were seen in all wells except for the shallower East Kingston well which showed a decrease of 1.10 feet.

January 24-27, 2011: The statewide average ground-water level showed a 0.51-foot decrease from December. Decreases were seen in all wells except for the Colebrook, Lisbon, Deerfield, and Epping wells which showed increases of 0.60, 2.11, 0.04 and 0.26 feet respectively. When compared with January 2010, the statewide average ground-water level decreased 1.35 feet. Decreases were seen in all wells except for the Colebrook well which showed a 0.20-foot increase. The average ground-water level in the new bedrock wells showed a decrease of 1.12 feet when compared with December 2010. Decreases were seen in all wells except for the Deerfield and two East Kingston wells which showed increases of 0.79, 0.07, and 0.01 feet respectively. When compared with January 2010, the bedrock wells with at least one year of data showed a decrease of 0.09 feet.

February 22–26, 2011: The statewide average ground-water level showed a 0.30-foot decrease from January. Decreases were seen in all wells except for the Colebrook well which showed an increase of 0.10 feet. When compared with February 2010, the statewide average ground-water level decreased 1.04 feet. Decreases were seen in all wells except for the Colebrook and Lisbon wells which showed increases of 0.90 and 1.54 feet respectively. The average ground-water level in the new bedrock wells showed a decrease of 0.45-feet when compared with January. When compared with February 2010, the bedrock wells with at least one year of data

showed a decrease of 0.54-feet. Decreases were seen in all wells except for the deeper of the two well in Stewartstown which showed an increase of 1.20-feet.

The data are available from NHGS, and are shared and posted on the USGS website. For historical groundwater data, please go to http://nh.water.usgs.gov/WaterData.

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## MADISON BOULDER CITED AS COOPERATIVE AGREEMENT EXAMPLE Submitted by Brian Fowler

A recent NH Public Radio Program featured George Bald, Commissioner of the NH Department of Resources and Economic Development. Commissioner Bald spoke favorably of the cooperative efforts between DRED and other parties in helping to manage some of NH's park sites. He described the recently negotiated agreement re the Madison Boulder, where the Town of Madison's Conservation Commission, the GSNH and the NHGS cooperate with DRED to upgrade and manage this unique geological feature. This program is available at: http://www.nhpr.org/department-resources-and-economic-development-commissioner-george-bald

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## ROCK CRUSHER RULES Submitted by the NHGS

On October 1, 2010, NH DES adopted new rules regarding non-metallic mineral processing plants, commonly known as rock crushing plants or rock crushers. The new rules are intended to protect air quality in New Hampshire, as well as simplify the air permitting process for these source types. The rules are codified in NH Code of Administrative Rules Env-A 2800. Who is affected?

- All owners and operators of non-metallic mineral processing plants, defined as any combination of equipment used to grind or crush any non-metallic mineral, such as stone, sand, gravel, clay, rock, salt, and vermiculite.
- Municipal officials who interact with and/or are responsible for rock crushing plants in their towns.

Administrative Rules: Env-A 2800 - Sand & Gravel Sources; Non-Metallic Mineral Processing Plants; Cement & Concrete Sources - effective 10-1-2010. Details at: http://des.nh.gov/organization/commissioner/legal/rulemaking/documents/env-a2800-adpt-pst.pdf.

See Fact Sheet: Rules for Rock Crushers (Non-Metallic Mineral Processing Plants (Fact Sheet ARD-43) See: http://des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-43.pdf;

See Permits: Permit-by-Notification for Rock Crushers – Permit Description, Applicability and Requirements Details at: http://des.nh.gov/organization/divisions/air/pehb/apps/permit-air-emissions-pbn-nm.htm

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## QUAKE STIRRED MORE THAN IT SHOOK

*Excerpted from Article by Harrison Haas - The Citizen of Laconia, Tuesday, January 4, 2011*

A tremor shortly before midnight Sunday January 2, 2011 was enough to prompt scores of northern Lakes Region residents to call police and fire departments, some thinking they had heard an explosion. The magnitude 2.5 quake was centered about 7 miles east-northeast of Plymouth, according to the U.S. Geological Survey. The tremor was felt nearly 100 miles from

the epicenter. However, there was no damage reported. The USGS said there were 77 responses from several ZIP codes across the state and a section of northeastern Massachusetts. A preliminary report had the earthquake taking place at 11:46 p.m., measuring 2.6, with a revised report released later putting the magnitude at 2.5.The quake was felt as far south as Derry and Newbury, Mass., as far west as Lebanon, east to Effingham on the Maine border, and as far north as Campton. According to the USGS, there were 14 different communities reporting the earthquake. More of the reports come from Holderness with 18 reports.

Other high response communities included Plymouth, 11; Ashland, 9; Moultonborough, 7; and New Hampton, 6. Geologists estimated the seismic activity was six miles below the earth's surface. Geophysics Professor and Director of the Weston Observatory at Boston College Dr. John Ebel said New Hampshire is among one of the more active seismic areas in New England, with the area between Concord and Lake Winnipesaukee a very active zone. "The preliminary magnitude was 2.6, but the revised magnitude was 2.5," said Ebel. "That's a small earthquake and should not have caused any damage. It could have woken some people up" Ebel said many people close to the epicenter would have likely experienced a slight shake or rumble while others may hear sounds similar to their furnace just having exploded." There is an active seismic belt, [one of the more active ones], that stretches from Lake Winnipesaukee to south of Concord," he said. "The earthquake on Sunday was located just north of the main belt by a few miles."

The area north of Lake Winnipesaukee experiences less frequent seismic activity. Last September, the southern part of the state experienced a 3.1 magnitude earthquake which sent shock waves up to the Lakes Region. Ebel said there were three other notable earthquakes in the state's history. On Dec. 20 and 24, 1940, a pair of earthquakes centered in the Ossipee Mountain range were measured at a magnitude of 5.5 each.

"The epicenter of those were not terribly far away from the most recent earthquake," Ebel said. "Those did cause damage with chimneys falling down and tombstones rotating in the ground." Another record earthquake occurred in 1638 when an estimated 6.5 magnitude quake shook the ground in New Hampshire. Ebel said the exact location and strength of the earthquake was not certain. The 6.5 magnitude was an estimate because of the amount of damage that was reported. Reports said that people in Massachusetts had trouble standing on their own and people in Canada reported water splashing out of their containers.

"One thing that is interesting to me, is that earthquakes are actively occurring at a steady rate year in and year out," said Ebel about the seismic activity in New England. "There's just been a steady rate of occurrence of earthquakes." Sunday's quake has given geologists more information about seismic activity in New Hampshire, but there is still no way of predicting when or where earthquakes will strike." There are many fault [lines] in New England, many are hundreds of thousands of years old," he said. "Some earthquakes in New England are leftover of aftershocks from hundreds or even thousands of years ago." Geologists are always looking where modern earthquakes line up on fault lines, if such event happens, they have reason to believe that the fault is active. Ebel said some places there are fault lines and not earthquakes and other locations, such as the zone between Lake Winnipesaukee and Concord, there are earthquakes but no mapped fault lines.

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## OUR EVER-CHANGING EARTH - THE 2011 EARTH SCIENCE WEEK THEME

The American Geological Institute (AGI) is pleased to announce the theme of Earth Science Week 2011 will be "Our Ever-Changing Earth." This year's event will engage the public in actively learning about the varied and interconnected natural processes that shape our planet over time.

Earth Science Week 2011 support materials and activities will demonstrate how evidence of change can be found everywhere, from the soil beneath our feet to the oceans and the atmosphere around us. Learn how the fossil record displays the history of change in plant and animal life. The evidence of change touches our lives in many ways, as we see in headlines about topics such as resource availability, evolution, and climate.

"Planetary change raises important questions among young people, educators, and the public," says Ann E. Benbow, Ph.D., AGI's Director of Education and Outreach. "Earth Science Week 2011 will highlight the important roles that paleontologists, geologists, and other earth scientists play in building understanding of the complex interactions among the earth systems - atmosphere, hydrosphere, geosphere, and biosphere - over time."

AGI leads Earth Science Week annually in cooperation with its sponsors and the geosciences community as a service to the public. Each year, community groups, educators, and interested citizens organize celebratory events. Earth Science Week offers the public opportunities to discover the earth sciences and engage in responsible stewardship of the Earth. Earth Science Week is supported by the U.S. Geological Survey, the AAPG Foundation, the U.S. Department of Energy, NASA, the National Park Service, ExxonMobil, and ESRI.

ESW 2011 will be celebrated October 9-15. To learn more about this week and ways to get involved - including newsletters, local events, and classroom activities - please go to the Earth Science Week website at: http://www.earthsciweek.org/

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## US SENATE PASSES RESOLUTION COMMEMORATING THE 100TH ANNIVERSARY OF THE WEEKS ACT

A resolution authored by US Senators Judd Gregg and Jeanne Shaheen was recently passed by the Senate to recognize John Weeks, a Massachusetts Congressman born in Lancaster, New Hampshire, whose efforts led to the passage of the Weeks Act. The resolution also recognizes that the acquisition of the first 7,000 acres of White Mountain National Forest made possible by the Weeks Act.

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## ADAMS 4 RENAMED MOUNT ABIGAIL ADAMS

Edith Tucker's article in the *Coös County Democrat.* It's official. The Board of Geographic Names has changed the name of Adams 4 on the Presidential Range to Mount Abigail Adams. The board responded favorably to a petition drive initiated by Bethany Taylor, a New Hampshire native who formerly was a journalist at the *Berlin Reporter* and is now working as a cook for the Appalachian Mountain Club. See: http://hikethewhites.com/adams.html

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## NEW HAMPSHIRE GEOLOGICAL SURVEY'S 10TH ANNIVERSARY Submitted by Rick Chormann, Interim State Geologist

2011 is the 10th Anniversary of the establishment of the New Hampshire Geological Survey. Now called the NHGS, the office has existed under various names ever since the first NH State Geologist Dr. Charles T. Jackson, was appointed on September 10, 1839. Before being called the NHGS, the survey was called the Geological Survey of NH (GSNH). The establishment of the NH Geological Society (NHGS) was going to lead to confusion. Since most states call their surveys, the (state name) Geological Survey, NHGS (Society) could be construed as the NH Geological Survey and GSNH (Survey) could be the Geological Society of NH. To clear up any confusion and to have the names match the format of other geological societies and state surveys, efforts began to change the names of the Society and the Survey.

The establishment of the survey by *HB 24, which was enacted on August 18, 2001*, gave it the name NH Geological Survey. The Society changed its name to the Geological Society of NH, with work on its constitution, which was adopted by vote of the membership on October 17, 2002. Housed in the NH Department of Environmental Services, the NH Geological Survey, under RSA 21-O:12, II, relative to the State Geologist, now reads: *Geology should be under the direction of the State Geologist, who shall be the director of the New Hampshire Geological Survey.* Mission Statement: *The New Hampshire Geological Survey shall collect data and perform research on the land, mineral, and water resources of the state, and disseminate the findings of such research to the public through maps, reports, and other publications. HB 245 enacted August 18, 2001.*

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## UPCOMING EVENTS

**MARCH 15, 2011** – NHGS Annual Mappers Workshop, NHDES, Concord, NH

**MARCH 20 - 22, 2011** - Northeast and North Central Joint GSA Meeting, Pittsburgh, Pennsylvania

**APRIL 2, 2011** – AEG Spring Symposium, 9:00 AM to 3:00 PM, Boston College, Devlin Hall

**APRIL 7, 2011** – GSNH 2011 Spring Dinner Meeting at Red Blazer Restaurant

**MAY 10, 2011 –** Annual Drinking Water Source Protection Workshop

**MAY 25 – 27, 2011 -** Geological Association of Canada, Ottawa, Ontario

**JUNE 3 - 5, 2011** – Friends of the Pleistocene, Wellsboro, PA

**JUNE 25 - 26, 2011** – 47th Annual Gilsum Rock Swap, Gilsum, NH

**AUGUST 27 - 28, 2011** – 48th Annual Gem, Mineral and Jewelry Festival Capital Mineral Club, Concord, NH

**SEP 30 – OCT 2, 2011**- New England Intercollegiate Geological Conference Middlebury College, VT

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## DISCOVER WILD NEW HAMPSHIRE DAY SATURDAY, APRIL 30, 2011 Submitted by Lee Wilder, NHGS Public Outreach Coordinator

Bring the family to Discover WILD New Hampshire Day on Saturday, April 30, 2011, from 10 a.m. to 3 p.m. on the grounds of the New Hampshire Fish and Game Department at 11 Hazen Drive in Concord, N.H. Admission is free. See live animals, big fish up close, retriever dogs and trained falcons. Enjoy exhibits by dozens of environmental, conservation and outdoor organizations from around the state.

New this year, the "Wonders of Watersheds" exhibit from the Silvio Conte National Wildlife Refuge will be on display. Perennial favorites are hands-on activities for all ages, from wildlife crafts to archery and casting, plus a chance to get a close-up look at hybrid vehicles and discover other energy-saving, environmentally friendly ideas. Co-sponsored by the New

Hampshire Fish and Game Department and the New Hampshire Department of Environmental Services, with support from the Wildlife Heritage Foundation of New Hampshire

http://www.wildnh.com./Newsroom/News_2011/News_2011_Q1/DWNH_Day_Advance_012811.html

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## SPRING 2011 COLLOQUIA AT WESTON OBSERVATORY Submitted by Lee Wilder

All colloquia are open to the public free-of-charge. Reservations REQUIRED due to limited seating. Ample parking is available and light refreshments are provided. Located at 381 Concord Road, Weston, MA 02493. The reservation number is (617) 552-8300. See the full schedule at: http://www.bc.edu/research/westonobservatory/meta-elements/pdf/SpringWOcolloquium_2010-2011.pdf

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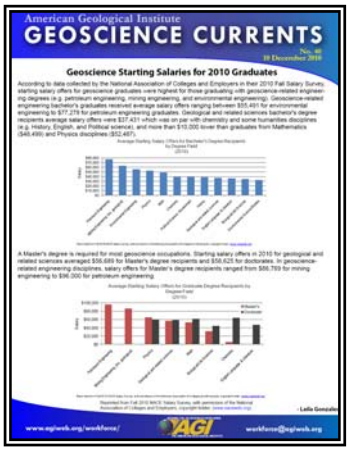
## STARTING SALARY OFFERS OF GEOSCIENCE GRADUATES Submitted by Lee Wilder

Geoscience Currents #40 examines the starting salary offers of geoscience graduates at all degree levels in comparison to other science and arts graduates from the National Association of Colleges and Employers 2010 Fall Salary Survey. At the bachelor's level, geoscience graduates received average salary offers ranging between $37,431 for geological and related sciences majors to $77,278 for petroleum engineering majors. A Master's degree is required for most geoscience occupations. Starting salary offers in 2010 for geological and related sciences averaged $56,689 for Master's degree recipients and $58,625 for doctorates. In geoscience-related engineering disciplines, salary offers for Master's degree recipients ranged from $86,769 for mining engineering to $96,000 for petroleum engineering. Read more in Geoscience Currents #40 at: http://www.agiweb.org/workforce/currents.html.

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## GENERAL INFORMATION

Quaternary Geologist's may like to check out New York Glaciogram http://www.newpaltz.edu/glaciogram.

**Don't forget to check the website for up-to-date information about our meetings and field trips. Announcements regarding changes or cancellations will be posted on the home page. www.gsnhonline.org**

# Geological Society of New Hampshire

## GSNH 2011 Spring Dinner Meeting

***Topic:***
***"The Past, Present and Future of Earthquakes in New England"***

*Speaker:*
*Professor John Ebel, PhD*
*Department of Earth and Environmental Sciences*
*Director of Weston Observatory*
*Boston College, Chestnut Hill, Mass.*

**Thursday, April 7, 2011**

## Red Blazer Restaurant
**72 Manchester Street, Concord, NH**

6:00 pm Social Hour, 7:00 pm Buffet Dinner, 7:45 pm Speaker

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**GSNH 2011 Spring Dinner Meeting, Thursday, April 7, 2011 (RSVP By Monday, April 4, 2011)**

Advance Reservations: _____Member (Dues Paid) @ $22.00.

- Member at the Door or Non-Member with Reservation ($24.00)
- Non-Member without Reservation ($26.00)
- Students $10.00 with valid student ID card (Reservation Requested)

GSNH will also accept dinner reservations by e-mail, which will then allow you to pay at the door. Please note that e-mail reservations constitute an agreement with the Society for which you will be responsible to pay, whether you are able to attend or not, unless you cancel your reservation by noon the day before the Dinner. **Reply via e-mail to: Wayne.Ives@des.nh.gov.**
**Mail to: Wayne Ives, GSNH 2011 Spring Dinner Meeting, 78 Clark Street, Franklin, NH 03235**

Name(s) _____

Address: _____

Your phone or e-mail: _____ Checks payable to: GSNH.
Half the cost of the dinner may be tax-deductible as a business expense. **The lecture part of the program counts as 1.5 hours of CEU contact hour credit.**