

SEISMIC HAZARD ASSESSMENT IN NEW YORK STATE

Presented by

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We will convene on Thursday, October 8, at the Glen Loch Restaurant. The evening will conclude with an open question and discussion period with Mr. Cadwell. See you then (unless there is an earthquake!).

In May 1990, the New York State Disaster Preparedness Commission initiated a multi-year earthquake preparedness project for critical services and infrastructure (Lifelines). The main emphasis of the New York State Emergency Management Lifelines Program is to develop the ability to conduct earthquake loss estimates for scenario events. Specifically, they need to determine expected damages, casualties, shelter needs, and such secondary effects as fire and toxic releases, and then utilize this information for mitigation and response planning.

The New York State Geological Survey (NYSGS) has begun a systematic Seismic Hazard Assessment Program. Onondaga County was selected for study in 1997 because of the types of surficial materials deposited within the County during retreat of the Wisconsin Ice Sheet, and because of the large urban population in the greater Syracuse region. Lacustrine sands, silts, and clays were deposited in Glacial Lake Oneida at the edge of the glacier front. Glacial Lake Oneida included most of the lowland and swamp regions within 15 to 30 kilometers of the present 650 square-kilometer Oneida Lake. Major earthquake damage occurs from attenuation of shear-waves as they travel from bedrock into the surficial materials glacial sediments. As the shear-waves as they travel from bedrock into the surficial glacial sediments. As the shear-wave velocity decreases into the unconsolidated sediments (together with a shortened wavelength), there is a corresponding increase in wave amplitude. The increased amplitude produces greater ground shaking and, consequently, increased damage.

Labor Day Storm Took Wind Out of September's Dinner Meeting

In making the decision to cancel last month's opening dinner meeting due to the Labor Day storm, I resisted the temptation to say, "As geologists, we should be able and prepared to go and do what we need to in any type of weather occurrence." I had the sense of determination I feel when mastering a long hike (back down) or going the limit to obtain just the right sample. My geologist and scientist friends shared the same feeling. Luckily, most of us on the Board were smart enough to consider all of the data, including the fact that the Glen Loch, although able to feed us, were not sure the generators could power our projector. It is my understanding that Dr. Cadwell would have given the presentation around a circle of flashlights. In fact, he did give a version of the presentation to an S.U. contingency. The rest of us will not have to miss out. Dr. Cadwell has agreed to give his presentation at the CNYAPG September Dinner Meeting. Our apology to the "real" geologists who made their

way to the Glen
Loch (and I do
know there was
at least one.)

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BEYOND EARTH SCIENCE NEWS

Compiled by
Jon S. Fox &
Vita DeMarchi

Geologic News from Mars

The Global Surveyor mission was launched in November 1996, with the primary missions of mapping the topography and magnetic fields of Mars. The July 1998 Newsletter from the International Association of Geochemistry and Cosmochemistry indicates that Global Surveyor has produced preliminary evidence of localized, intense magnetic anomalies formed in Mars' crust. These data apparently suggest that Mars possessed a global magnetic field in its geologic past.

Additionally, chemical analyses of Martian igneous (volcanic) rocks near the Pathfinder landing site show significant variation in composition. There is an ongoing debate regarding whether the observed variations are representative of the actual rock chemistry or whether the results are affected by dust coatings on the rocks.

Metallic Hydrogen?

An article published in the latest version of *Chemical and Engineering News* (August 24, 1998) indicates two

independent groups of researchers have successfully converted deuterium (a heavy isotope of hydrogen) under high pressure and temperature into a metallic phase. The transition was observed based on data regarding reflectivity and compressibility. The results apparently are applicable to normal hydrogen. These data suggest many giant planets (i.e., Jupiter, Saturn) may have a core composition consisting mostly of metallic hydrogen.

For more information on Mars, look into the many Web sites, including one very informative page that includes a focus on the chemistry and geology of Mars: <http://ntserv.fys.ku.dk/mars.html>

Mystery of Jupiter's Rings Solved by Cornell Scientists

Just 20 years after the rings of Jupiter were discovered by the spacecraft Voyager, Cornell University scientists proclaim they have solved the mystery of the rings. The images taken from the spacecraft Galileo showed four rings around Jupiter. The images of the rings best be seen when sunlight falls on them and reflects off the dust particles. Galileo had to be positioned in Jupiter's shadow, looking back at the planet. The Cornell scientist say the faint rings are made of dust kicked up when cosmic debris smashed into the planet's four moons. Each of those collisions causes a little explosion resulting in a slender tube of debris formed around the moon's orbit. Evidence supporting the theory is the match between the thickness and tilt of the rings and the moon's orbit. Questions still remain about what the rings and the moon material is made of. The new images and information on the Galileo mission is available at

www.jpl.nasa.gov/galileo and at www.news.cornell.edu/releases/sept98/jupiter_rings.html.

And Now, a Little Closer to Home...

Moon Water (or Is It "moon-water")

Lunar Prospector spacecraft identified the presence of up to 10 billion tons of frozen water near both lunar poles. Alan Binder, chief scientist of the Lunar Research Institute in California adds his vision for use of lunar water, indicating that there is enough water to build a moon colony and operate a rocket service station for journey's into deep space. The frozen water is considered a "enabling resource". In addition to sustaining life, water can be used for rocket fuel by breaking it into hydrogen and oxygen. Where there are resources to enable, there will eventually be residuals to manage. Hydrogeologist will prepare for exciting new challenges, and no doubt high-end modeling.

Meanwhile, Back on Earth

Central Asia's dying Aral Sea may disappear by 2015. The roots of the region's worst ecological disaster lies in the 1960s when the Soviet leadership decided to boost cotton output by drawing vast amounts of water from the mighty Syr Darya and Amu Darya rivers to irrigate crops, which feed the Aral.

Forty years ago, about 60 cubic km of water flowed into the sea every year. Now, only 1 to 5 cubic km trickles through annually, depending on rainfall.

Ship hulls and piles of anchor

chains lie rusting in a sea of sand shifting in the wind in what used to be busy fishing towns in Uzbekistan. Cotton accounts for more than a third of export revenues. Uzbek officials are reluctant to let more water flow into the dying sea and locals view the problem as “ ‘White gold’ has drunk the sea.”

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October 2-4, 1998

NYS Geological Association Annual Meeting, SUNY at Binghamton, NY. Contact H.R. Nasland at (607) 777-4313, or visit the Web site: <http://www.Geol.Binghamton.edu/NYSGA.html>.

October 5-6, 1998

Annual Fall Recycling and Vendor Exhibition, held by the *Federation of New York Solid Waste Associations*, at the Four Points Hotel in Liverpool, New York. For information, contact Eric Swenson at (516) 677-5790, or fax (516) 677-5875.

October 11-17, 1998
Earth Science Week

Western New York Earth Science Week Celebration, professional geological organizations, educational institutions, and related businesses will be celebrating Earth Science Week at the Penn Dixie Paleontological and Outdoor Education Center in Hamburg, NY. Groups will be available to discuss earth science careers, explain geologic activities, two local dinosaur hunters will show bones they have recently collected, a display of geological equipment used during field investigations, and more. This event is combined with the Hamburg Natural History Society's October Public Day program to collect fossils at the Penn Dixie site. The only charge is for non-HNHS members who want to collect fossils: \$3 for adults, \$2 for children. All other on-site activities are free. 9 AM to 3 PM; for further information, contact Rick Watt or Jerry Bastedo at (716) 684-8060 or the HNHS at (716) 627-4560.

October 16, 1998

Deadline: The Abacus and Rose Poetry Contest, sponsored by the Museum of Science & Technology. Open to adults, teens, and children. Submit two typed or legibly printed copies of poems (keep your original) about science, nature, and/or ecology with your name, address, phone number, and age category on the **back** of your poetry entry. Winners will read at the annual *Abacus & Rose Poetry Reading* on November 15th. Mail entries to: THE MOST, Franklin at W. Jefferson St., Syracuse, NY 13202.

October 21, 1998

HMPGA Dinner Meeting, 6 PM at the Best Western, 200 Wolf Road, Albany, NY. Guest speaker: Dennis Suszowski, Hudson Research Group, "Dredging in New York Harbor."

October 8, 1998

CNYAPG @ Glen Loch Restaurant . Donald H. Cadwell of the New York State Geological Survey will be our guest speaker. A cash bar will open at 5:30 p.m. followed by dinner at 6:30. The presentation will begin at 7:30. Dinner is \$13 (if reserved 24 hours in advance) or \$15 at the door. Make your reservations today by calling O'Brien & Gere Engineers at (315) 437-6100 ext. 2656. See you there!

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The Board Members would like to thank all of the corporate and individual supporters of CNYAPG throughout the past year. We would like to encourage you to continue your pledge of support throughout the upcoming year. Contact Steve Crook at (315) 437-1429 or (518) 827-5720 details.

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CNYAPG

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CNYAPG e-mail directory needs updating. Our e-mail directory fell short in reaching many members regarding the September cancellation (assuming you had phone service). We sent an e-mail message to CNYAPG members announcing the cancellation and received many undeliverable messages due to outdated addresses. The CNYAPG e-mail list allows us to provide last minute notices about meetings and advanced notice of special events, speakers, and news. If you would like to be included on the CNYAPG e-mail list, please send an e-mail message to CNYAPG secretary, Gerry Gould, at ggould@dreamscape.com or visit our web site at www.dreamscape.com/cnyapg and leave a message. The storm provided us both destruction and opportunity.

Keep the newsletter input coming. Send ideas, articles of interest, requests, and questions for the newsletter to Vita DeMarchi at vdemarch@secor.com.

SEPTEMBER 1998