



Granite State Geologist

The Newsletter of the Geological Society of New Hampshire,
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MESSAGE FROM THE PRESIDENT

Hello Friends,

The Christmas and New Year’s holidays are a time when most of us look back at the past year’s events and milestones. I’ve been thinking a lot lately about an event in December 1968 that changed how we view our relationship with the earth. In 1968, American society was bitterly divided by racial, ethnic, generational, and political conflicts (not unlike 2023). Things were going bad for the war in Vietnam following the Tet Offensive and there was growing sense of urgency to address the pollution resulting from the pretty much unregulated dumping of wastes in our air, water, and on land. In the midst of all this, on December 21st, NASA launched the Apollo 8 mission to the moon; the first manned space flight to leave low earth orbit. Then, on Christmas Eve we all got to see the earth from a new perspective. There it was, the televised image of the earth as a bright blue and white marbled silhouette against the empty blackness of space, rising above the desolate and lifeless gray horizon of the moon. It was a powerful image because it forced us to recognize the fragility of our one and only home. I vividly recall going outside on Christmas Eve, and as an impressionable nerdy ten-year old, viewing the nearly full moon in the clear, cold night sky, and realizing at that very moment there were three astronauts orbiting the moon looking back at all of us on earth.

Perhaps as a result of this new perspective, within the four years that followed Americans observed the first Earth Day, the US Environmental Protection Agency was established, and the environmental protection regulations set forth by the initial Clean Air and Clean Water Acts were enacted. Some of the divisions that wracked American society in 1968 subsided, for a time. This

makes me hopeful for the peaceful resolution of our current divisions.

On Christmas Eve 1968 while orbiting the moon, Apollo 8 Mission Commander, Frank Borman, expressed his hope for mankind by reading the first ten verses from the book of Genesis over a live telecast to an estimated 1 billion viewers. Commander Borman (who passed away in November 2023) ended his message with the following: "Good night, good luck, merry Christmas, and God bless all of you – all of you on the good Earth." I wish you all the best for 2024.



Tom

Call for Articles

Have a geological story you want to share with your fellow geologists? Did you go on a field trip or just see a cool geological feature in your travels? Feel free to submit articles and/or photos to the GSNH newsletter, published quarterly. The submission deadlines are March 1, June 1, September 1, and December 1, but content can be submitted any time for inclusion in the next newsletter article. Send to jlambert@nobis-group.com. For more details, see the submission guidelines at the GSNH website: <http://www.gsnh.org/submission-guidelines.html>.

DATES TO REMEMBER

January 11, 2024 – **GSNH Board meeting** (virtual via Zoom)

January 18, 2024 – **GSNH meeting** (virtual via Zoom) – Andrea Tokranov of USGS will give a presentation on assessing PFAS occurrence and background concentrations in NH soils. See page 17 for more information, including a presentation abstract.

March 17-19, 2024 – **Geological Society of America Northeast Section Meeting**. Manchester, NH; https://www.geosociety.org/GSA/Events/Section_Meetings/GSA/Sections/ne/2024mtg/home.aspx

March 28, 2024 – **Maine Sustainability & Water Conference**. Augusta Civic Center. <https://umaine.edu/mitchellcenter/event/2024-maine-sustainability-water-conference/>

Looking for some continuing ed credits? Some webinar series are below:

- clu-in.org compiles webinars of interest to EPA and the environmental community here: <https://clu-in.org/training/#upcoming>
- The geoscience online learning initiative (GOLI) has several webinars and short courses: <https://www.americangeosciences.org/workforce/goli>

2024 Membership renewal!

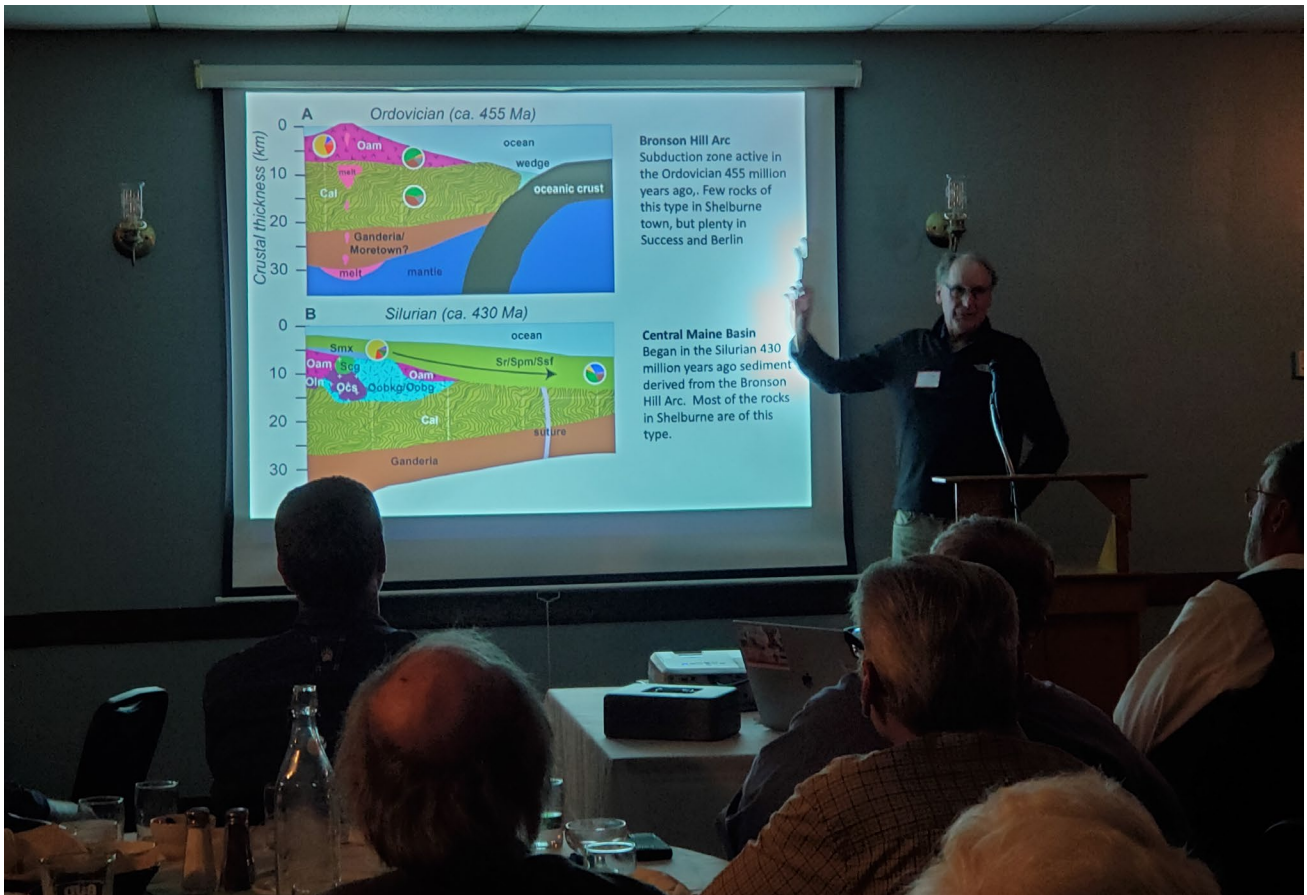
It will be 2024 before you know it! Consider renewing your GSNH membership today. With your membership, you get a discount on dinner meetings and field trips, information of upcoming events of interest to the geological community, voting privileges at Society business meetings, and automatic subscription to this newsletter! Membership dues also help to support outreach for the greater community, including teaching grants.

See the last page of this newsletter for a membership renewal application.

October 2023 GSNH Meeting Recap

Our fall dinner meeting was on October 9. We had a pretty full room, with 53 attendees (not including the speaker) including 46 members, 6 non-members, and one student.

Dykstra Eusden gave a presentation on “Bedrock Geology of the Shelburne, NH Region: A transition from Convergent to Collisional Tectonics of the Acadian Orogeny”.



Dykstra Eusden discusses the Ordovician and Silurian processes in the area.



Tom Fargo presents the traditional speaker's gift – a section of Redstone core.

New Hampshire Geological Survey Update

By Shane Csiki, State Geologist and Director, December 2023

As we approach December, we are all preparing for winter and the holidays. For NHGS, the holiday season means that it is STATEMAP season! We're finalizing deliverables for this year's mapping products and preparing the grant application for the next round of STATEMAP funds from USGS. This funding is crucial for supporting the continued work of geologic mapping in New Hampshire.

We are finalizing the maps from the 2022 field season as part of our collaborative peer review process, and the result will be published (not open file) versions of geologic maps. At the same time, we are working on this year's maps which include, on the surficial side, Mount Osceola (south half), Ossipee (south half) and Ossipee Lake (completion); and on the bedrock side, Greeley Brook, Metallak Mountain and Shelburne (all to completion). With publication requirements using the Geologic Map Schema (GeMS) and the need for map symbols to meet Federal Geographic Data Committee (FGDC) requirements, compiling and producing geologic maps takes a considerable amount of time and effort. Josh Keeley leads this technical effort to assemble our geologic maps into a readily usable format that also meets USGS requirements, with the assistance of everyone on NHGS' staff, in some capacity, in an all-hands-on-deck effort. There are many hundreds of hours of work that go into the production of these geologic maps by NHGS staff and our geologic mappers.

On September 26, the Geologic Resources Advisory Committee (GRAC) held its annual meeting to discuss the direction of the geologic mapping program and vote upon and approve our geologic mapping plan for the STATEMAP proposal (for field season 2025) we are currently working on. To fulfill USGS requirements, GRAC sets the overall long-term strategic direction for our mapping program. As you all know, and this is a national problem, we are facing a rapidly decreasing number of traditional geologic mappers, as those who have mapped for us for years are now entering their second retirement. GRAC members discussed and focused upon this fact at the September meeting. Their determined first element of our long-term mapping plan is the criticality of our existing geologic staff working with our remaining mappers while they are available. To this end, Josh will be mapping as a full co-author with Dyk Eusden, the bedrock of the Bethlehem East quadrangle this upcoming spring and summer. Mike Howley will be working with Charlie Kerwin in the completion of the Manchester South quadrangle. Further NHGS-mapper collaboration is planned for mapping in 2025.

GRAC has also prioritized bedrock mapping in areas of maximal societal benefit, including populated interior southern New Hampshire, and completing 1:24,000-scale mapping of the surficial geology of the state. In 2024, field collaborative peer review sessions will be held for each of our mapping quadrangles, including Mount Osceola (north half), Ossipee (north half) and Silver Lake (southern

62%) on the surficial side, and Bethlehem East, Manchester South and Second Connecticut Lake (north half) on the bedrock side. Participation is welcomed from anyone interested in participating in these reviews, including members of the licensed Professional Geologist community. Contact Shane.J.Csiki@des.nh.gov for more information.

Our annual Geologic Mapping Workshop will be held on Tuesday, April 9, 2024, starting at 8 AM at the New Hampshire Department of Transportation auditorium at 7 Hazen Drive in Concord. We will have presentations from USGS, the Massachusetts State Geologist, NHDOT and our geologic mappers. Please reach out for additional information. CEU's will be offered for PG's. NHGS hopes to see many of you there . . . so, save the date!

Lidar data shed new light on “hidden” geological hazards near the northern entrance of Yellowstone National Park

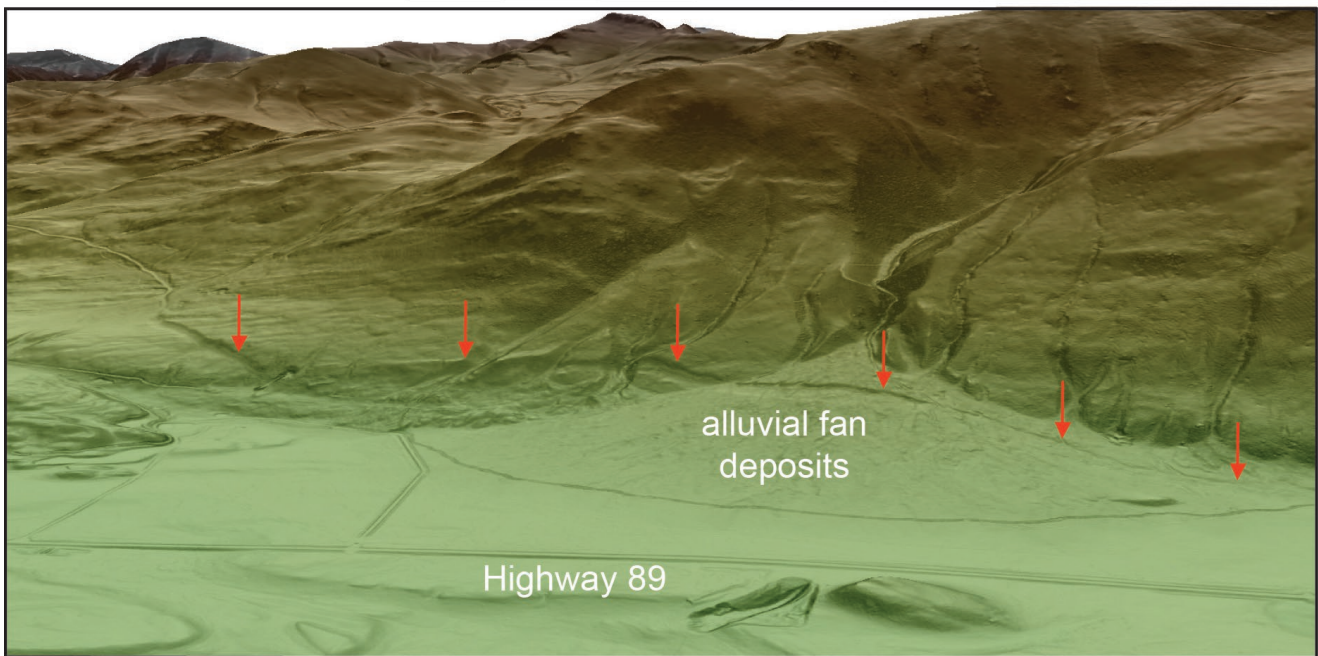
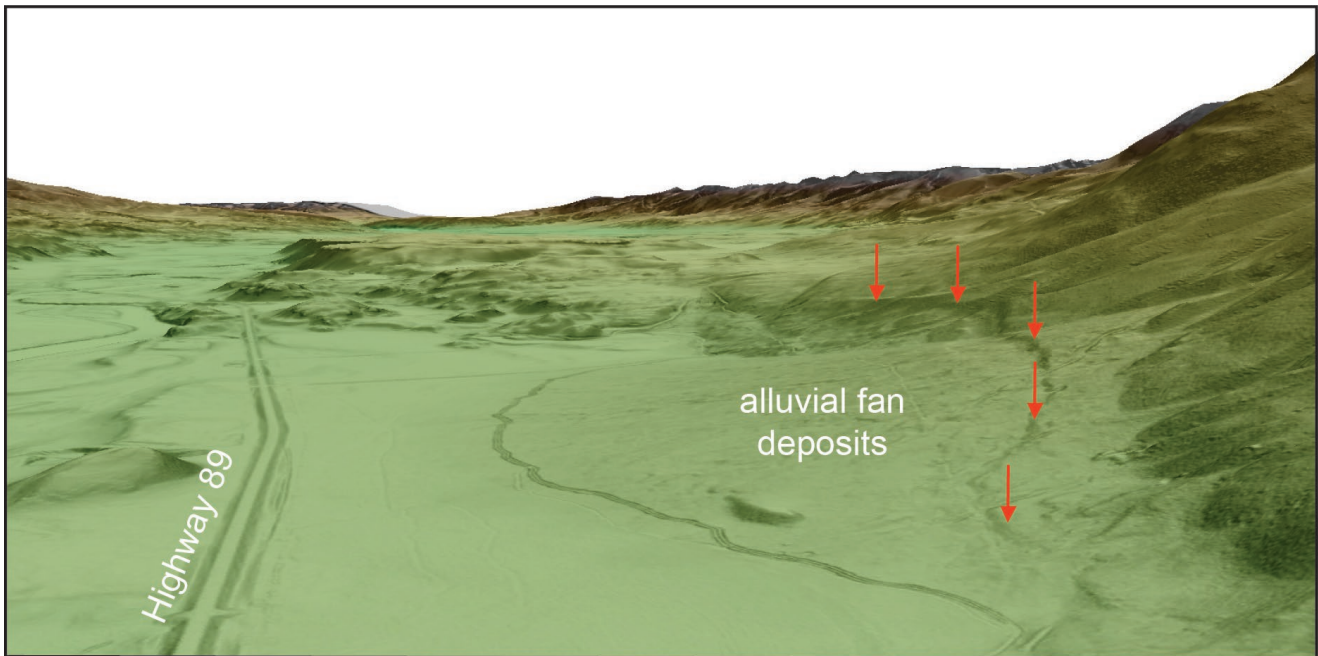
From Yellowstone Volcano Observatory, November 27, 2023:

<https://www.usgs.gov/observatories/yvo/news/lidar-data-shed-new-light-hidden-geological-hazards-near-northern-entrance>

Lidar data have just been released, for the first time, for Paradise Valley and the northern gateway corridor to Yellowstone National Park. These high-resolution topographic data are revealing new details of the landscape never seen before for this area.

Geological surface mapping has traditionally used aerial photos and direct observations through fieldwork, but the land surface is often obscured by vegetation. Recent advances in high resolution topographic datasets that use lidar have enabled geologists and earth scientists to virtually “remove” vegetation and reveal the bare earth ground surface—including, for example, [active faults on the fringes of Yellowstone National Park](#). In 2022, a new lidar dataset for Park County, Montana, [was released to the public](#).

Lidar stands for Light Detection and Ranging and uses a sensor commonly mounted on an airplane for large surveys. The lidar sensor rapidly emits laser pulses (>100,000 per second) that are reflected back from the ground surface or any object along their paths. The laser pulses that penetrate the vegetation have the longest travel times and thus are the last to return, and these are combined with GPS airborne and ground controls to generate a point cloud dataset that is used to build a high-resolution bare-earth digital elevation model (DEM) or digital terrain model (DTM).



Shaded relief maps based on lidar data and showing fault scarps in Paradise Valley, Montana. Lidar imagery is given as a colored, shaded slope map, with higher elevations in brown and white, and lower elevations in green. Darker shading indicates steeper slopes. Top image is a northwestward view (toward Livingston) of Paradise Valley near Carbella. The right side of the image shows an oblique perspective of the Emigrant fault scarp (shown by red arrows) that vertically offset young alluvial fan deposits. Highway 89 is visible on the left side of the image as a pair of parallel lines. Bottom image is a southeastward view showing the same fault scarp. Subtle flutes and ridges extending horizontally across the hillslopes above the scarps were carved by glacial ice flowing down the Emigrant Valley from the Yellowstone ice cap. (Lidar visualization by Yann Gavillot, MBMG, using 3-D scene in ArcGis Pro). Sources/Usage: Public Domain

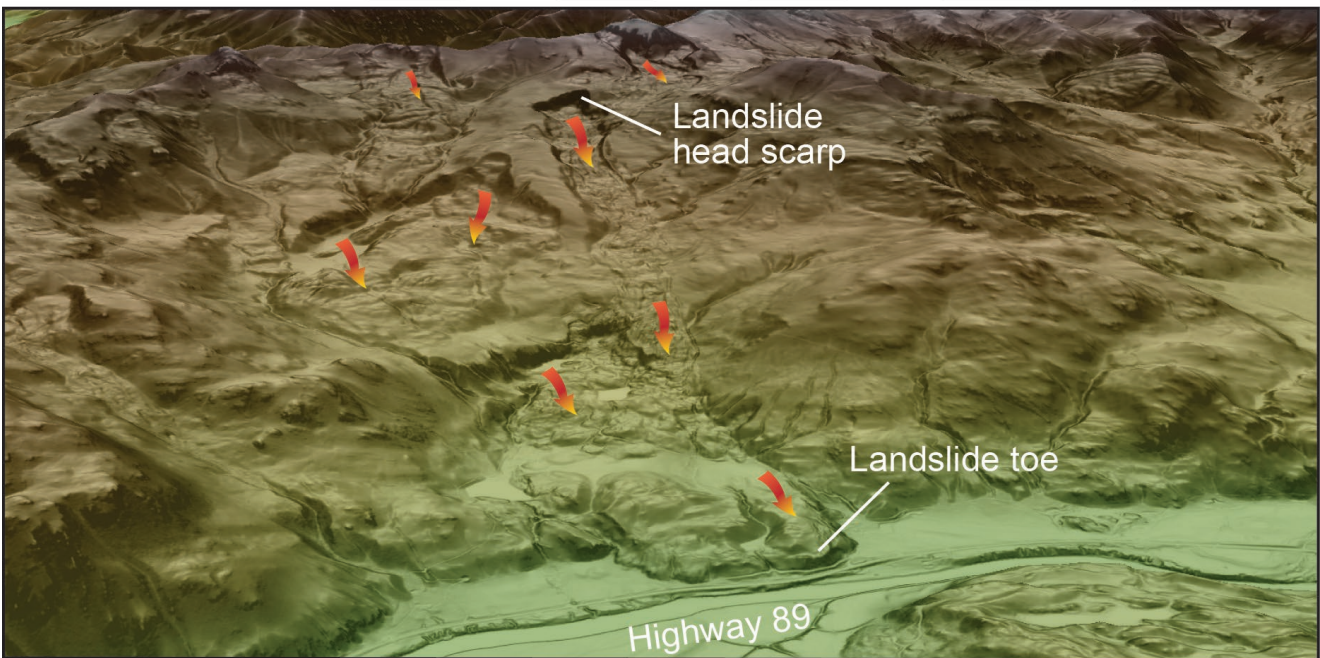
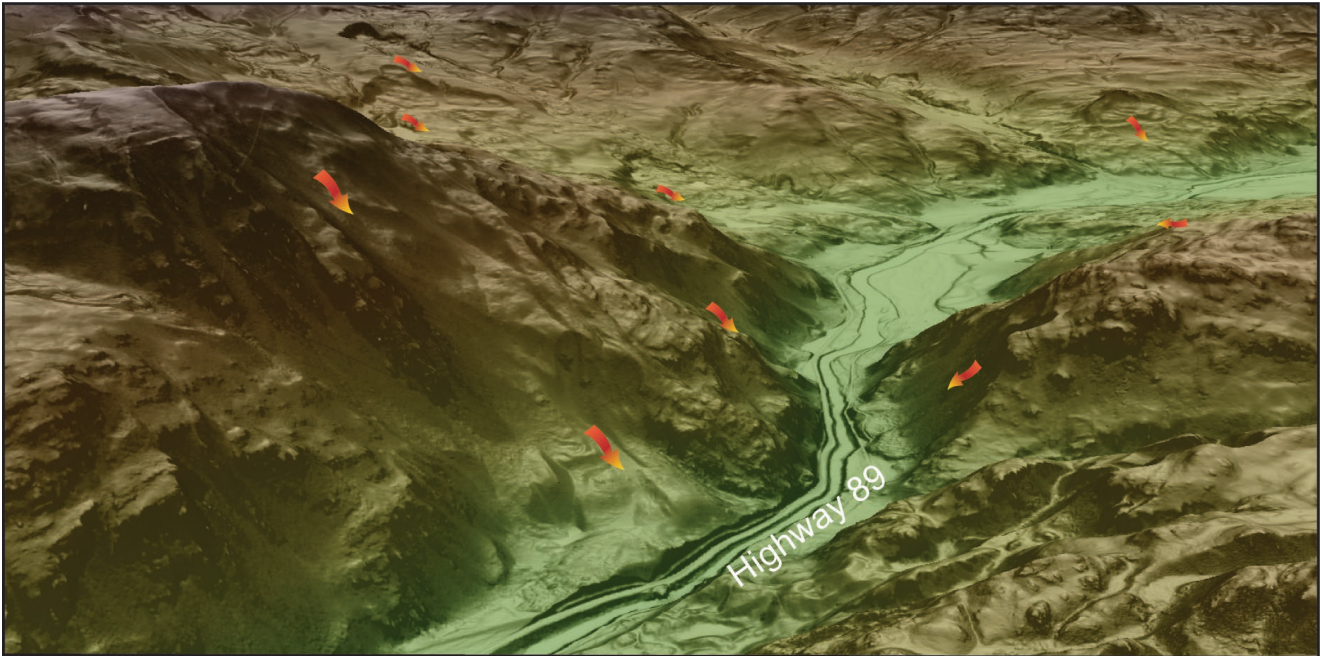
Paradise Valley and gateway communities north of Yellowstone National Park not only have experienced rapid growth in population but also in annual visitors (over 4 million visitors a year). Yet the many people that make the scenic drive to Gardiner at the northern park entrance may not realize

the surrounding landscape has a rich record of prehistoric earthquakes that ruptured the ground surface, and numerous landslides of “gigantic” proportions. Although Yellowstone is more well known for its past volcanic eruptions and active hydrothermal systems, large damaging earthquakes and landslides have occurred in the region. [The 1959 M 7.3 Hegben Lake event](#) was the largest historical earthquake in the Intermountain West region, and it caused one of the largest seismically triggered landslides at [Earthquake Lake](#), created [extensive fault scarps](#), and altered geyser and hot spring activity through the park.

These “cascading” natural disasters, like that of 1959, which caused nearly 30 fatalities and temporarily trapped about 250 people from blocked roads, provides an example of what could happen if a large earthquake were to occur in Paradise Valley. Geologists have recognized that the southwest limit of Paradise Valley had topographic steps, or scarps, which offset deposits that were less than 2.6 million years old. These are collectively referred to as the Emigrant fault and provide evidence that past earthquakes have happened in the area.

The recent lidar data have, for first time, revealed in greater detail an extensive and complex distribution of fault scarps of the Emigrant fault that extends nearly continuously for more than 33 miles (54 km) between Tom Miner Creek Road and Livingston, Montana. Fault scarps like these typically form when the ground ruptures during large earthquakes of magnitude ~6.5 or greater. Lidar data have also revealed numerous fault scarps close to Gardiner in Montana that are likely associated with the East Gallatin-Reese Creek fault system that extends into Yellowstone National Park. Many large landslides also scar the landscape, and these are shown with exceptional clarity in the high-resolution lidar data. Some of these prehistoric landslides were so large that their run out extended for miles downslope and even blocked the Yellowstone River at Yankee Jim Canyon along highway 89, forming a temporary lake.

This new lidar dataset offers an opportunity for geologists and hazards specialists to significantly improve hazards maps by allowing better characterization of the location, geometry, and activity of known faults and landslides. The Montana Bureau of Mines and Geology is currently involved in developing and upgrading a statewide Quaternary fault and landslide database, utilizing newly released high-resolution topographic datasets such as the Park County lidar to generate county-wide hazard maps. These new datasets provide the information needed to improve assessments of potentially hazardous faults and landslides for future updates in county- and state-wide mitigation efforts for Paradise Valley and northern Yellowstone National Park, and contributing to the [U.S. Geological Survey National Seismic Hazard Maps](#).



Shaded relief maps based on lidar data and showing landslides in the area of Yankee Jim Canyon, Montana. Lidar imagery is given as a colored, shaded slope map, with higher elevations in brown and white, and lower elevations in green. Darker shading indicates steeper slopes. Top lidar image is looking east at Yankee Jim Canyon along highway 89 showing numerous large prehistoric landslides (shown by colored arrows). With lidar data, one can identify, in great detail, the type of gravity-driven landslide and its transport direction, extent, and relative age. In the foreground, Highway 89 crosses the toe of a landslide that once blocked the Yellowstone River but has subsequently been incised by the river. Bottom lidar image is northward view upstream of Yankee Jim Canyon, where one can see several landslides with long run outs between their head scarps (where they initiated) and toes (where they reached their downslope ends) that almost reach Highway 89. (Lidar visualization by Yann Gavillot, MBMG, using 3-D scene in ArcGisPro). Sources/Usage: Public Domain.

NH Board of Professional Geologists Update

From Erin Kirby, Chair, NH Board of Professional Geologists

Meetings of NH Board of Professional Geologists are open to the public. All meetings are located at 7 Eagle Square in Concord, NH and start at 9AM. Upcoming meetings are scheduled for the following dates:

- January 11, 2024
- February 14, 2024
- March 21, 2024

Using Petroleum Reservoirs to Store Carbon

By USGS. September 27, 2023.

<https://www.usgs.gov/news/featured-story/using-petroleum-reservoirs-store-carbon>

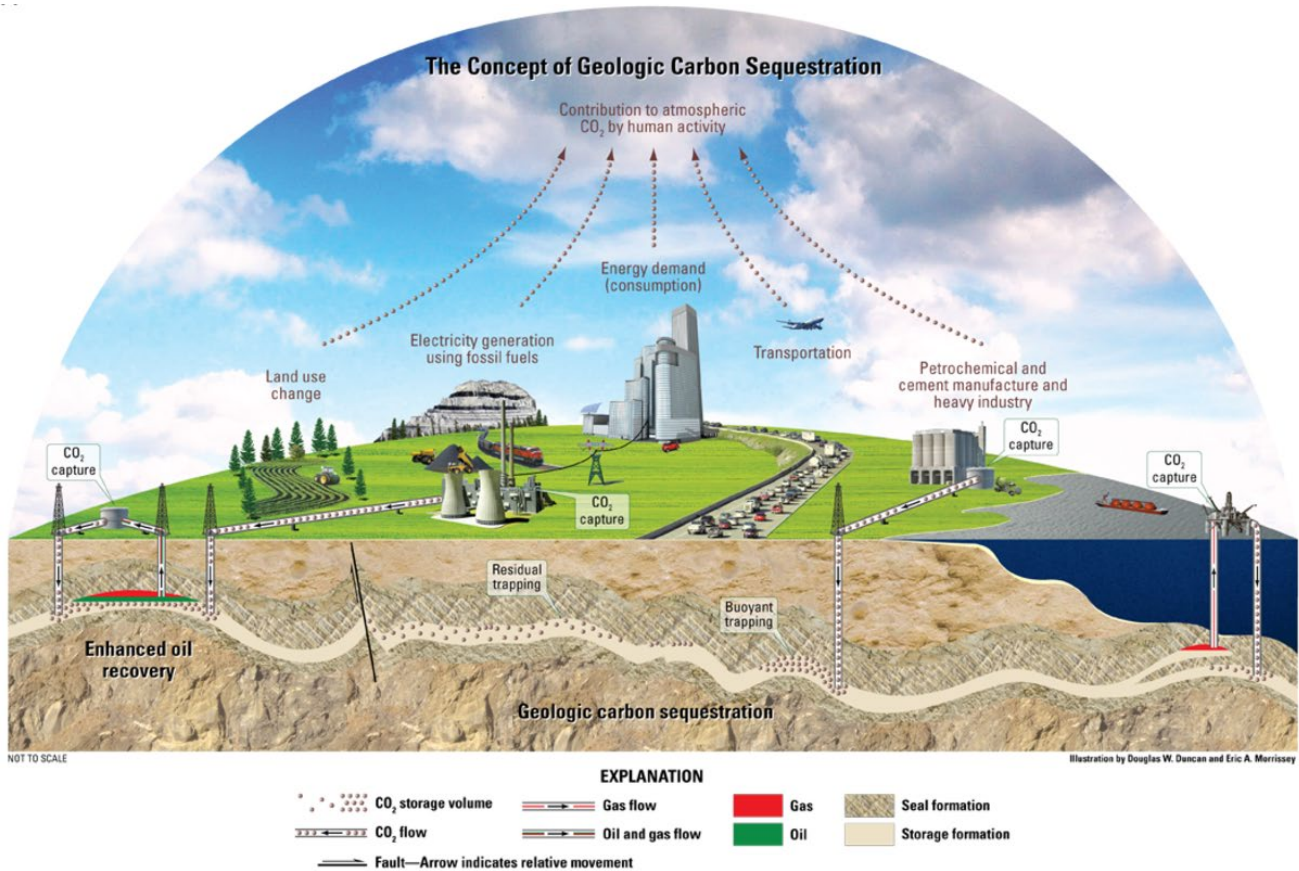
Oil and gas produced from reservoirs are traditionally thought of as sources of carbon dioxide and other greenhouse gases. The petroleum that is pumped up from the depths is one of the largest contributors to climate change, after all. Therefore, in recent years, scientists in government and industry have been looking more at oil and gas reservoirs as places to store the very carbon that was previously taken out of the reservoirs.

One reason the process of storing carbon in underground rock layers, known as geologic carbon storage, holds appeal is due to the potential for such large amounts to be stored. In 2013, the USGS published a mean estimate of [3,000 metric gigatons](#) of carbon storage potential in geologic basins throughout the country.

For comparison, in 2021 the world emitted about [36.3 gigatons of carbon dioxide equivalent](#) according to the International Energy Agency, and the United States emitted a net of about 5.6 gigatons according to the [U.S. Environmental Protection Agency](#). So the USGS estimate indicates that just under 83 years at 2021 levels of world emissions, or 536 years of U.S. emissions, could be stored geologically using currently available technologies.

Geologic carbon storage is often described as a transition technology to decarbonize the oil and gas industry because it can be used alongside the existing production of oil and gas through a process called enhanced oil recovery. Producers inject carbon dioxide into oil reservoirs to increase oil production in areas that have already produced a lot of oil.

The process works by pressurizing the carbon dioxide into a liquid, then pumping it into the rock layers to mix with the remaining oil left after initial oil and gas production. The resulting carbon dioxide and oil mixture can then flow to the well to be produced. Once the carbon dioxide is injected into the rock formations, some of it will remain trapped either by the rock itself or by dissolving into groundwater and any remaining oil in the reservoir.



The use of carbon dioxide (CO₂) injection for enhanced oil recovery (EOR) can prolong the productivity of many oil reservoirs and increase the U.S. hydrocarbon recoverable resource volume. Sources/Usage: Public Domain

To explore the potential for pairing enhanced oil recovery with geologic carbon storage, the USGS has completed a national assessment of the technically recoverable oil resources and potential carbon storage if carbon dioxide-enhanced oil recovery technologies were used wherever feasible. Doing so could lead to an increase of about 29 billion barrels of technically recoverable oil resources, while storing about 8.4 metric gigatons of carbon, according to new USGS publications.

For comparison, in 2021, the United States produced about [4.1 billion barrels of oil](#) and emitted [5.6 metric gigatons](#) of carbon dioxide, according to the U.S. Energy Information Administration.

“There is a lot of interest in carbon dioxide-enhanced oil recovery as an approach to reduce greenhouse gas emissions associated with ongoing oil and gas operations,” said Sarah Ryker, USGS associate director for energy and mineral resources. “In addition, this approach could demonstrate the potential for providing long-term carbon dioxide storage for other industries in the future as well. This USGS research helps quantify that potential.”



USGS researchers drill a research well located on the south side of U.S. 90, 7.1 miles east of Brackettville, Texas. This core was drilled by USGS during field work for an oil and gas assessment for the Eagle Ford of the Gulf Coast Basins, one of the regions with the highest potential for both geologic carbon storage and enhanced oil production. Sources/Usage: Public Domain

The West Texas and Eastern New Mexico region and the Gulf Coast region together have 60% of the mean assessed carbon dioxide enhanced oil recovery oil potential and 61% of the mean assessed carbon dioxide storage potential. Other regions with significant oil resource and carbon dioxide storage potential include the Midcontinent region and Rocky Mountains and Northern Great Plains region. These regions have excellent geological conditions and oil reservoirs that are suitable for carbon dioxide enhanced oil recovery.

“The [National Petroleum Council](#) federal advisory committee proposed a roadmap to help the United States store about 0.5 gigatons of human-produced carbon dioxide in geologic formations annually, and this work shows the potential to store a total of 14-19 times that through enhanced oil recovery alone, using today’s technologies,” said Ryker. “Of course, as this estimate is just for enhanced oil recovery and only using today’s technology, future technologies and industrial applications may create even greater potential for geologic carbon storage as a method for long-term emissions abatement.”

This research is part of a broader USGS effort looking into how geology can aid in storing greenhouse gases. In addition to geologic carbon storage, the USGS has published studies on [carbon mineralization](#) and [carbon emission and storage potential](#) on Federal lands.

Technically recoverable resources are those that are estimated to exist based on geologic, geophysical and geochemical information for the assessed rock layers, and that can be produced using today's standard industry practices and technology. These are different from economic reserves, which are those quantities of oil and gas that can be produced profitably.

These assessments were conducted based on a peer-reviewed, publicly available [methodology](#) for assessing technically recoverable resources and can be found [here](#). To find out more about USGS energy assessments and other energy research, please visit the [USGS Energy Resources Program website](#) and follow us on [Twitter](#).

Last call for GSNH T-shirts!

After this summer's field trip and the October dinner meeting, we have just a few small and medium t-shirts left – send in your order before they're gone! T-shirts will be shipped to you. See order form on second to last page of this newsletter.

Other Geology News:

See below for a roundup of recent geology articles that caught the interest of GSNH members:

Future Supercontinent Will Be Inhospitable for Mammals

By Rebecca Owen, Eos, November 8, 2023.

<https://eos.org/articles/future-supercontinent-will-be-inhospitable-for-mammals#:~:text=A%20new%20study%20published%20in,in%20landlocked%20areas%2C%20will%20skyrocket>

A new study published in *Nature Geoscience* suggests that in around 250 million years, the continents will regroup into a single supercontinent, Pangea Ultima. Computer modeling such as PALEOMAP predict that Africa would rotate into the coast of North America and Eurasia would rotate clockwise and converge. By then, the sun will be hotter (emitting 2.5% more energy) and the absence of ocean coastline and increased volcanic carbon dioxide emissions mean that temperatures will skyrocket, particularly in landlocked areas. This suggests a major extinction event, particularly for mammals.

Jupiter's Great Red Spot Just Keeps Getting Smaller

By Bob King, Sky & Telescope, November 15, 2023.

<https://skyandtelescope.org/astronomy-news/jupiters-great-red-spot-just-keeps-getting-smaller/>

The Great Red Spot is a persistent high-pressure storm in Jupiter's southern hemisphere caught between two opposing jet streams.. Observers have been tracking Jupiter's Great Red Spot for more than 150 years, and potentially more than 350 years, but it has been shrinking for decades and in 2012, the rate of shrinkage abruptly accelerated. On November 6, 2023, it was measured to be smaller than Earth and the smallest size in observational history.

Iceland volcano could burst like a 'fizzy drink' with lava reaching Blue Lagoon resort in days

By Hannah Osborne, LiveScience, November 17, 2023.

<https://www.livescience.com/planet-earth/volcanos/iceland-volcano-could-burst-like-a-fizzy-drink-with-lava-reaching-blue-lagoon-resort-in-days>

A 9.3 mile long magma dike that formed close to the town of Grindavík and Blue Lagoon, a major Iceland tourist destination, is estimated to be 2,600 to 1,640 feet below ground surface. The dike appears to be relatively stable at the time, but if a fissure does open up, it may allow magma to move upward and break through to the surface. The dike is currently growing, causing ground deformation at the surface. Barriers are being erected to protect infrastructure and Iceland's largest bulldozer has been deployed to the area to construct trenches to divert lava flows.

Massive 2022 eruption reduced ozone levels

By Leah Burrows, Harvard John A. Paulson School of Engineering and Applied Science, November 20, 2023.

<https://seas.harvard.edu/news/2023/11/massive-2022-eruption-reduced-ozone-levels>

When the Hunga Tonga-Hunga Ha'apai volcano erupted in January 2022, it was the largest explosion ever recorded in the atmosphere, sending material as far as the lower mesosphere, more than 30 miles above the Earth's surface. The massive amount of water injected into the stratosphere also changed its chemistry and dynamics, causing up to 7% loss of the ozone layer over large areas of the southern hemisphere. Researchers are planning on following the impact of the eruption into the future as the water vapor moves to the south pole area, where it may amplify Antarctic ozone losses.

The Top Ten Dinosaur Discoveries of 2023

By Riley Black, Smithsonian Magazine, December 11, 2023.

<https://www.smithsonianmag.com/science-nature/the-top-ten-dinosaur-discoveries-of-2023-180983403/>

Smithsonian Magazine has a list of ten of 2023's biggest dinosaur-related stories, involving new research into dinosaur evolution, eggs, living with mammals, and some skullduggery regarding dinosaur models.

Legislative Committee Update – December 2023

By Tom Fargo

The table below lists the 2024 NH House and Senate Bills and Legislative Service Requests (LSRs or draft bills) submitted as of December 3, 2023, that are potentially relevant to members of the Geological Society of New Hampshire. Bills are identified by either an HB- (House Bill) or SB- (Senate Bill) prefix. LSRs are identified by number only, and only the title of the proposed bill is available at this time. This table lists Bills and LSRs identified by keyword searches as noted below.

LSR Number	Title	Bill Description
Key Word "Environ"		
HB-1114	AN ACT extending the commission to investigate and analyze the environmental and public health impacts relating to releases of perfluorinated chemicals in the air, soil, and groundwater in Merrimack, Bedford, Londonderry, and Litchfield.	This bill would extend the work of the PFAS Legislative Commission established by previous statute until November 2029.
HB-1171	AN ACT extending the commission to study environmentally-triggered chronic illness.	This bill would extend the work of the Legislative Commission to Study Environmentally-Triggered Chronic Illness established by previous statute until November 2029
HB-1170 -FN	AN ACT requiring public benefit and community impact assessments from the department of environmental services.	This bill would require the commissioner of the Department of Environmental Services to direct the Department to conduct public benefit and community impact assessments when considering any permit or project administered by the department under provisions of Title X and Title L of the RSA to ensure that human values, safety, and concerns receive proper consideration during planning and project development. Before granting a permit or going forth with a project, the department shall demonstrate that there is positive community impact and a positive public benefit. Note: The FN designation indicates the bill contains a fiscal note describing the impact of the bill on the State budget. In this case the cost was described and an indeterminable increase in expenses to the Department.
HOUSE RESOLUTION 27 <i>(a non-binding policy statement)</i>	A RESOLUTION calling for policymakers locally and nationally to fully consider all relevant information and factors pertaining to climate change before pursuing courses of action that could adversely affect any economy or environment.	The proposed resolution states: Whereas, climate change is occurring and has occurred throughout all of time; and Whereas, it is crucial that policy decisions and lawmaking relating to climate reflect all relevant research; and Whereas, there is a documented pattern of suppression of some climate perspectives and data; and

		Whereas, fraudulent research and media reporting threaten the development of practical and well-founded climate policies; and Whereas, the many historically wrong climate predictions by so many climate activists should require caution by contemporary policymakers in developing long-term climate policies; and Whereas, there is a long history of climate alarmism and intimidation by special interests that have had chilling effects on the proper discourse and dialogue necessary to effectuate the best public policies; and Whereas, there is a wide spectrum of opinion regarding the true impact of human behavior on climate change; now, therefore, be it Resolved by the House of Representatives: that the New Hampshire house of representatives supports the proper consideration of all relevant data and perspectives as climate policy is developed on every level throughout the United States of America.
2024-2171	Title: relative to prohibiting the state of New Hampshire from enforcing the regulations of the Environmental Protection Agency.	
2024-2420	Title: relative to judicial review of department of environmental services decisions.	
2024-3077	Title: relative to establishing the state environmental adaptation, resilience, and innovation council.	
Key Word "Water"		
2024-2051	Title: relative to prohibiting the issuance of large groundwater withdrawal permits for the commercial sale of bottled or bulk water.	
2024-2433	Title: relative to notification processes for large groundwater withdrawal applications.	
Key Word "Waste"		
HB-1221	AN ACT relative to including solid waste landfills in the definition of development of regional impact.	This bill, would Amend RSA 33:56 by inserting after paragraph II the following new paragraph: III. All proposed solid waste landfills shall be projects of regional impact and notice shall be made to all communities that are: (a) Located within any watershed where such landfill may be proposed; and (b) Located within 20 miles of such proposed landfill location. Note: This would potentially make it possible for communities within such boundaries of a proposed facility to have legal standing in a dispute over NHDES permit issuance.
2024-2494	Title: relative to prohibiting the disposal of lithium-ion batteries in solid waste landfill facilities, composting facilities, or incinerators.	

2024-2702	Title: relative to the solid waste management act.	
Key Word "Professional" as potentially related to Geologists		
2024-2577	Title: relative to administrative rulemaking and license renewals by the office of professional licensure and certification.	
2024-2690	Title: relative to certain professional licenses.	
Key Word "Soil"		
2024-2417	Title: establishing a trust fund for money from soil and water environmental contamination court settlements.	

Key word searches with no returns: **geology, mineral, rock**

January Meeting Announcement

TOPIC: Assessing PFAS Occurrence and Background Concentrations in New Hampshire Soils

SPEAKER: Andrea Tokranov, Research Hydrologist in the New England Water Science Center and a Researchers in the Environmental Health Program of the Ecosystems Mission Area, USGS. She studies the fate, transport, and ecosystem exposure and effects of per- and polyfluoroalkyl substances (PFAS) and manages the PFAS laboratory for biological matrices.

DATE/TIME: 7 PM, January 18, 2024

ABSTRACT: As health advisories and regulatory standards for PFAS concentration limits continue to decrease, the large knowledge gap in our understanding of anthropogenic background concentrations has become increasingly apparent. Anthropogenic background for PFAS is the concentration present in the environment resulting from human activities and can vary by location for complex reasons. This talk will delve into the sampling design and results of a shallow soil study in New Hampshire where we aimed to better understand statewide PFAS concentrations in areas without known point sources. Sites were randomly selected through an equal-area grid approach targeting undisturbed areas, and was limited to lands classified as forested, shrubland, scrubland, grassland, herbaceous, wetlands, or barren land. A variety of analyses were conducted at each site and included 36 PFAS compounds, 36 PFAS compounds post-total oxidizable precursor assay (TOPA), total organic carbon (TOC), moisture content, pH, and autoclaved-citrate extractable protein. Results and implications of the study will be discussed, along with an overview of how the state of New Hampshire is utilizing these results to pursue rulemaking for soil remediation standards. The talk will wrap up with a note about other national studies the USGS is currently undertaking to better understand anthropogenic background in groundwater and surface waters.

Please send Sharon Lewandowski an email to request a Zoom invite for the January meeting:

sharon.lewandowski@des.nh.gov

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