EARTHQUAKE
e-Newsletter about what's movin' and shakin' at the Earth Science Museum

Earth Science Museum, 3215 W. Bethany Home Rd., Phoenix, AZ 85017
www.earthsciencemuseum.org, scote@earthsciencemuseum.org, 602-973-4291

June, 2026
Volume 15, Issue 6

AI Renews Interest in Hydrogen

By Harvey Jong

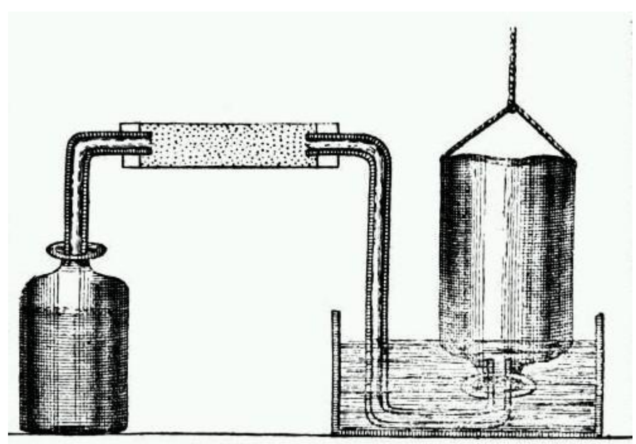
The AI frenzy involves several rather mind-boggling numbers. By 2030, capital investment is projected to reach almost $7 trillion[1], while nearly $15.7 trillion may potentially be added to global GDP[2]. This growth is driven by the breakneck pace of building new datacenters which may lead to around 15,800 facilities worldwide.[3] Overall electricity consumption of these centers has been estimated to be as high as 298 Gigawatts (GW) which represents around 27% of total U.S. annual demand[4].

The primary source to meet the huge energy requirements involves fossil fuels, but their use may emit up to 2.5 billion metric tons of carbon dioxide which represents about 40% of what the entire U.S. emits in a year[5]. Subsequently, a number of alternative energy sources, such as hydrogen, are being considered.

Brief History of Hydrogen

Initial experiments involving hydrogen date back to the Renaissance when metals were mixed with strong acids to produce a flammable gas. In 1766, Henry Cavendish (1731-1810) became the first person to recognize this gas as a discrete substance and is credited with its discovery. He continued his investigations and in 1781 noted that the gas produced water when burned. Antoine-Laurent de Lavoisier (1743-1794) repeated Cavendish's experiments and named the new element *hydrogen* in 1783.

Henry Cavendish (1731-1810)
William Alexander (1767-1816) drawing, - PD, via Wikimedia Commons



[1] "The cost of compute: $ 7 trillion race to scale data centers". *McKinsey Quarterly,* April 28, 2025.
[2] According to 2025 FICCO-BCG white paper "The Global AL Race".
[3] Based on 11,194 data centers on April 24, 2026 compiled by statisa.com and applying CAGR of 9%
[4] From McKinsey & Company 2024 article "AI power: expanding data center capacity to meet growing demand".
[5] From 2024 Morgan Stanley research report

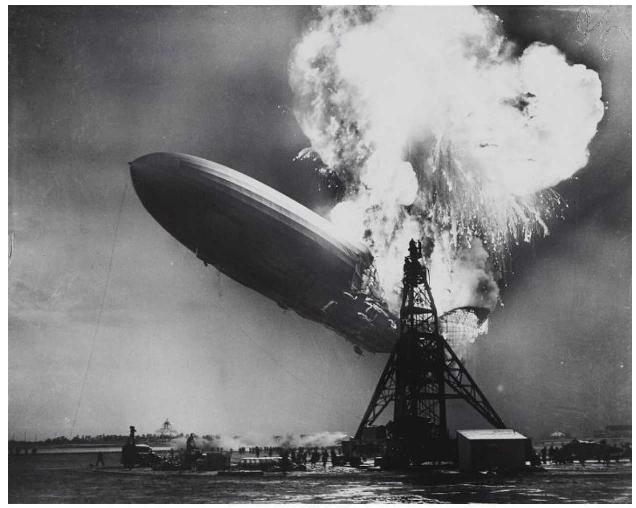
Cavendish's Apparatus for Making Hydrogen Gas
Henry Cavendish (1731-1810) drawing, - PD, via Wikimedia Commons
This apparatus was used by Cavendish to prepare and weigh hydrogen gas from the reaction of zinc or iron with hydrochloric acid or dilute sulfuric acid. He called the gas "inflammable air".

Hydrogen's lighter than air property inspired French inventor and scientist Jacques A.C. Charles (1746-1823) to develop the world's first hydrogen filled gas balloon. On December 1, 1783, Charles and his copilot Nicholas-Louis Robert (1760-1828) ascended to a height of about 550 m (1804 ft) in this balloon.

Inflating the First Hydrogen-filled Gas Balloon
Jacques Charles drawing/National Air and Space Museum, - PD, via Wikimedia Commons

The first hydrogen-filled gas balloon was inflated on August 26-27, 1783 by team led by Jacques A.C. Charles (1746-1823).

The pioneering balloon application eventually led to long distance travel by airships. Hydrogen was used as a lifting gas given its relatively low cost and availability. Public perception of the safety of hydrogen, however, changed after the 1937 Hindenburg disaster.

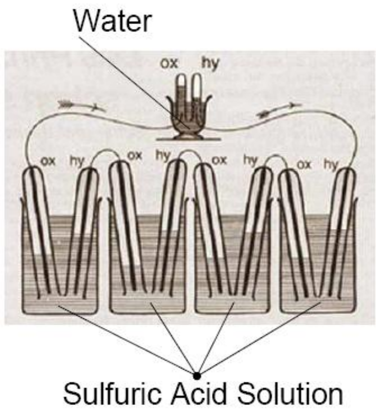


Hindenburg Explosion on May 6, 1937
Sam Shere (1905-1982) photo, - PD, via Wikimedia Commons

The Hindenburg, which was the largest airship by volume, caught fire while it was attempting to dock with a mooring mast at the Lakehurst Naval Air Station in New Jersey. Thirty-five people died which included 13 passengers, 22 crewmen, and one person on the ground.

Hydrogen as an Energy Source

Exploration of hydrogen as an energy source began in the nineteenth century. In 1839, Sir William Grove (1811-1896), a Welsh judge and physical scientist, invented the first functional hydrogen fuel cell.

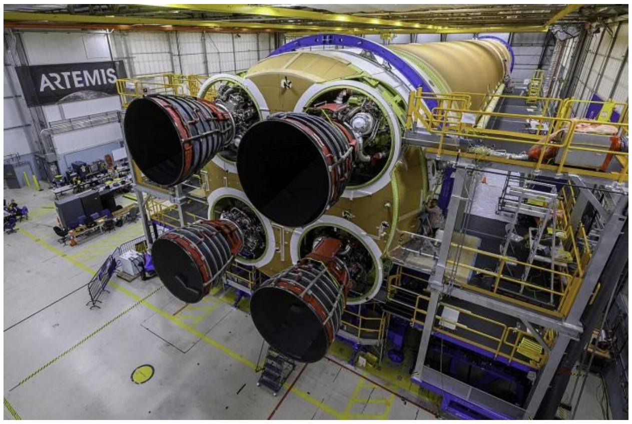


Grove's Fuel Cell
Diagram from 2004 Energy Efficiency and Renewable Energy/U.S. Department of Energy presentation by John W. Fairbanks, *Engine Maturity, Efficiency, and Potential Improvements*, - PD, via Wikimedia Commons

This diagram shows the two reservoirs of Grove's fuel cell. In the lower reservoir, sulfuric acid reacted with platinum and zinc electrodes to produce water and electricity. The upper reservoir served as a voltmeter.

Francis Thomas Bacon (1904-1992) refined Grove's design, and in 1932 developed the first practical hydrogen-oxygen fuel cell which was the basis for units used to power various spacecraft including those of the Apollo moon landing program.

The space program also led to the use of hydrogen as a rocket fuel. Launch vehicles, such as Apollo's Saturn V, the Space Shuttle, and most recently Artemis' Space Launch System, relied on engines that use hydrogen.



Core Stage of the Space Launch System
Eric Bordelon/NASA Marshall Space Flight Center/NASA photo, - PD, via Wikimedia Commons

This is the core stage of the recent Artemis II mission. The stage has a capacity for 2 million liters (537,000 gallons, 317,000 lbs) of liquid hydrogen. It has four RS-25 engines that generate approximately 7.44 Meganewtons (1,670,000 lb.) of thrust.

More down-to-Earth applications involved using hydrogen fuel cells for vehicles and backup generators.

Prototype Hydrogen Fuel Bus
Jason Lawrence photo, - CC_BY_SA-2.0, via Wikimedia Commons

This bus was developed by the Federal Transit Administration and was beta tested by the Massachusetts Bay Transportation Authority (MBTA) from 2016 to 2018. Interest in hydrogen fuel buses and cars, however, has declined given the development of plug-in electric vehicles.

Proof-of-concept Demonstration of a Hydrogen Fuel Cell Generator for Datacenters
(Click on above link to view video)

In 2022, Microsoft, working with Plug Power, demonstrated a datacenter backup power system using a hydrogen fuel cell generator. The system had a power output of 3 MW, which is equivalent to current diesel backup generators. It was made up of two 40-foot shipping containers packed with fuel cells using "blue" hydrogen. The generator was able to run a datacenter load during a simulated power outage. The cost per KWh of energy, however, is much higher than for a diesel. Future deployment of the system depends on the availability of low cost "green" hydrogen.

Colors of Hydrogen

While hydrogen occurs as a colorless gas, it is associated with different color codes based on its production method and environmental impact in terms of CO_2 emissions[6]:

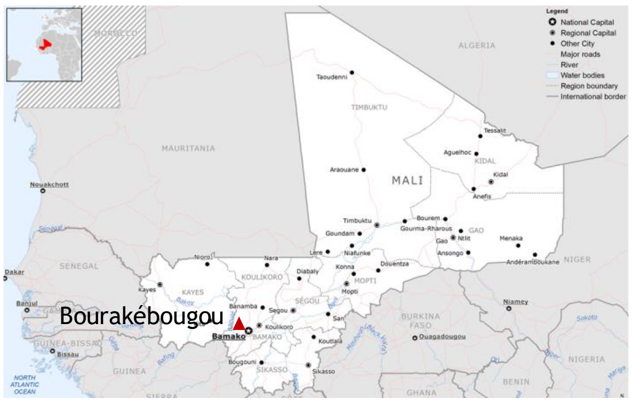
Color	Production Method	Environmental Impact
Black or brown	Coal gasification using bituminous (black) or lignite (brown) coal	Generates significant CO_2 emission (19 t CO_2/1 t H_2)
Grey	Steam gas reforming of fossil fuels, over 95% of world's hydrogen consumption involves grey hydrogen	Results in significant CO_2 emissions (10-19 t CO_2/1 t H_2)
Blue	Natural gas with steam reforming combined with carbon capture and storage	Lower CO_2 emissions (1-4 t CO_2/1 t H_2)
Green	Water electrolysis using wind or solar energy, accounts for < 0.1% of world's hydrogen production	No CO_2 emission during production
Yellow	Water electrolysis using solar energy	No CO_2 emission during production
Pink	Water electrolysis using nuclear energy	No CO_2 emission during production
Purple	Water electrolysis using nuclear energy and heat	No CO_2 emission during production
Red	High temperature catalytic splitting of water using heat and steam from nuclear plant, requires less electricity than electrolysis	No CO_2 emission during production
White	Extract naturally occurring hydrogen in Earth's crust, also known as geologic hydrogen	Unknown, very limited pilot production

[6] Based on handout by De Blasio, Nicola. "The Colors of Hydrogen." *Environment and Natural Resources Program, Belfer Center*, July 8, 2024

Geologic Hydrogen

Hydrogen can occur as a free gas in nature, but its mobility and reactivity led many geoscientists to conclude that the deposits of economic quantities weren't possible. Only trace concentrations of hydrogen have been detected in millions of oil and gas wells.

This view, however, has changed with the 1987 discovery of a geologic hydrogen well near the village of Bourakébougou in Mali. The site is the world's first and only economically successful natural hydrogen source with concentrations up to 98%. Since 2012, hydrogen has been produced to provide electricity for the local community.



Location of the Bourakébougou Hydrogen Field

JRC, ECHO, EC map, - CC_BY_SA-4.0 International, via Wikimedia Commons

The hydrogen well at Bourakébougou was discovered accidentally in a shallow carbonate reservoir while drilling for water. Due to the unexpected gas explosion, the well was sealed and abandoned until 2011.

The Bourakébougou discovery indicated that sizable deposits of hydrogen were possible and that prospectors weren't looking in the right areas with the right tools. This spurred on a worldwide search for exploitable geologic hydrogen reserves. The exploration activity has involved a top-down approach which examines areas around known hydrogen surface occurrences, looking for geomorphic features with potential surface signs of hydrogen, and soil sampling. Recently, a bottoms-up approach that adopts concepts and methodologies used in petroleum and natural gas exploration has been proposed (Jackson et al., 2024). Development of the *hydrogen system*, an analog of the petroleum system, represents a key element of this scheme. The hydrogen system has two sub-systems – a source generation sub-system and a migration-retention sub-system.

Geologic hydrogen can be generated by various natural processes which include:

1. Serpentinization: interaction of water with ultramafic rocks. Specifically, the olivine in these rocks reacts with water to produce magnetite, silica, and hydrogen.
2. Radiolysis: breakdown of water by natural radioactive sources.
3. Biological Activity: microorganisms can convert organic matter into hydrogen by fermentation or generate hydrogen through the direct or indirect use of photosynthesis.

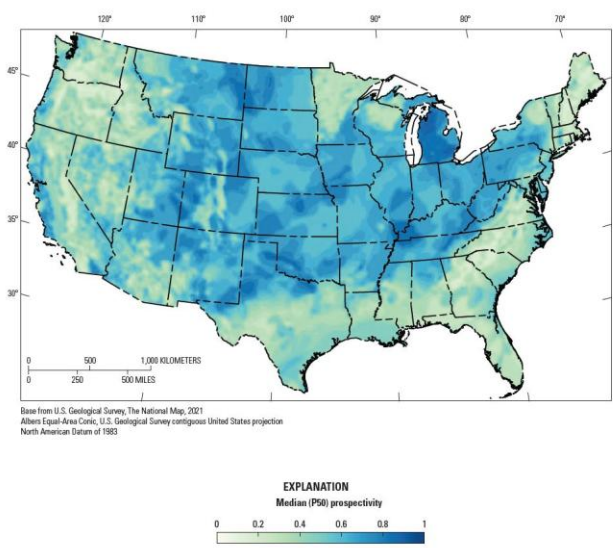
A basic analysis of these different methods indicates that serpentinization represents the most effective and important subsurface process for producing hydrogen (Jackson et al., 2024).

The second sub-system of the hydrogen system involves the migration, sealing, and entrapment of hydrogen. Mechanisms are assumed to be similar to those of hydrocarbon gases, such as methane. Hydrogen in either the gas phase or dissolved in water moves through porous rock driven by pressure, buoyancy, or diffusion. Accumulation and trapping of hydrogen occurs as it encounters impermeable rock formations. With limited loss due to diffusion, the hydrogen can be retained over geological time-scales.

The hydrogen system model can help guide the exploration for hydrogen accumulations in a wide range of geotectonic settings, such as continental cratons, ophiolites, and convergent margins.

Geologic Hydrogen Prospectivity Map

To facilitate research and exploration of geologic hydrogen sources, the United States Geological Survey (USGS) created a prospectivity map of natural hydrogen accumulations in the conterminous U.S. The methodology used in constructing the map is based on the hydrogen system and considers three primary components: source, reservoir, and seal. Prospective regions are areas where all the components necessary for hydrogen accumulation are present – a source of sufficient hydrogen, porous reservoirs for storage, and seals to prevent leakage (Gelman et al., 2025). The map displays the spatial distribution of these components along with the associated uncertainty (chance of sufficiency) that they may be present.



USGS Geologic Hydrogen Prospectivity Map
Figure 11 of Gelman et al., 2025), - PD, via usgs.gov

This map represents the first publicly-available map of hydrogen prospectivity for the conterminous U.S. The color shading reflects the 0 to 1 scale for the median prospectivity which multiplies the uncertainty (chance of sufficiency) values for source, reservoir, and seal components.

Using AI to Explore and Develop Geologic Hydrogen

Coming full circle in considering hydrogen as a power source for datacenters, AI is being used in a number of ways to help guide the exploration and development of geologic hydrogen. AI algorithms are being trained to analyze seismic data, geological formations, and geochemical measurements to identify potential natural hydrogen sources. In addition, AI methods are being developed to address more ambitious aspects: (Sharma et al., 2026):

- Catalyst discovery
- Hydrogen production technologies
- Hydrogen storage technologies

The first area, catalyst discovery, involves an interesting concept involving AI searches for a chemical that enhances the serpentinization of ultramafic rocks and stimulates the underground generation of hydrogen.

References

Gelman, S.E., J.S. Hearon, and G.S. Ellis (2025) Prospectivity mapping for geologic hydrogen. (ver. 1.2, January 22, 2025): U.S. Geological Survey Professional Paper 1900, 43 p. https://doi.org/10.3133/pp1900.

Jackson, O., S.R. Lawrence, I.P. Hutchinson, A.E Stocks, A.C. Barnicoat, and M. Powney (2024) Natural hydrogen: sources, systems, and exploration plays. Geoenergy 2(1), geoenergy2024-002.

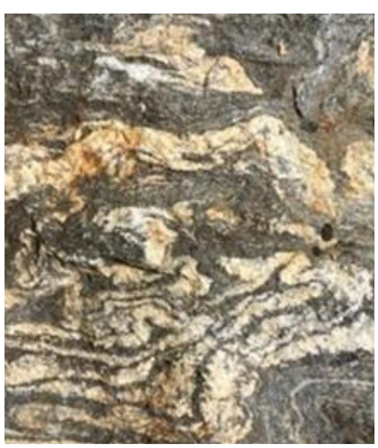
Sharma, G., N. Tyagi, V.K. Vijay, P.K. Singh, S. Upadhyayula, R. Srivastava, and R.K. Pai (2026) Artificial intelligence shaping the future of hydrogen technologies. *Cell Reports Physical Science 7*, 103201.

◊ ◊ ◊

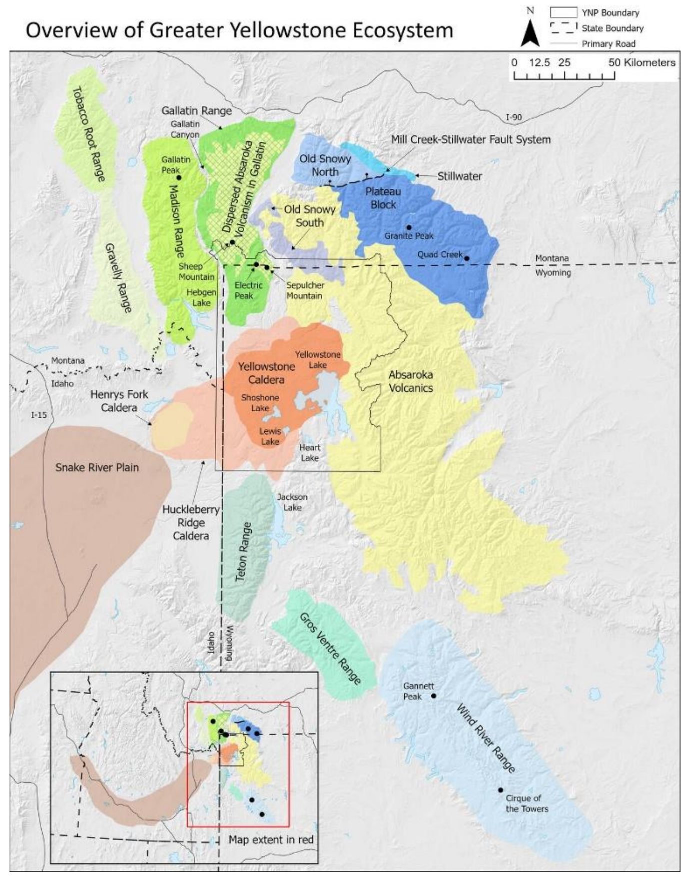
Young mountains, old rocks: A geological overview of the Teton range

Yellowstone Caldera Chronicles is a weekly column written by scientists and collaborators of the Yellowstone Volcano Observatory. This week's contribution is from Stanley Mordensky, geologist with the U.S. Geological Survey.

Similar to the nearby Wind River, Beartooth, and Gallatin mountains, the formation of the oldest rocks in the Tetons dates to more than 2.7 billion years ago. At that time, a sea occupied the area where the Teton Mountains are today. Sediment accumulated in that sea before the collision of tectonic plates pushed this material at least 5–10 miles beneath the surface. At these depths, heat (up to 1000 °F, or 540 °C) and pressure (roughly 1600 times that of the atmospheric pressure on the Earth's surface) caused the rocks to flow like soft taffy and to recrystallize, forming new minerals like garnet from the preexisting minerals. In other words, the heat and pressure metamorphosed the marine sediments into gneiss, a rock with banding of light and dark minerals and that can be found along the trail to Inspiration Point in Grand Teton National Park.



Banded and contorted layers within the metamorphic rock gneiss at Grand Teton National Park.



Map of the geologic domains of the Greater Yellowstone Ecosystem (GYE). Boundaries are approximate.

About 2.5 billion years ago, while the metamorphosed rocks remained deep below the Earth's surface, magma worked its way through cracks and cooled, forming granite that would eventually define several of the Tetons' high peaks (Grand Teton, Middle Teton, Mount Owen, Teewinot Mountain, and Mount Moran). Later, sometime between 1.3 billion years and 775 million years ago, additional magma intruded during a period of crustal extension. The newer magma was mafic (like basalt in terms of its composition) and formed the dark diabase dikes seen cutting through present-day Mount Moran, Middle Teton, and Grand Teton.

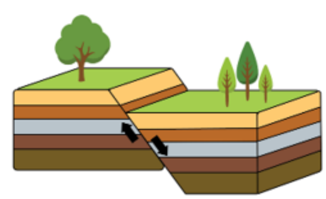
Just like with other mountain ranges in the Yellowstone region, the area that is now the Tetons cycled between shallow inland seas and tropical floodplains from approximately

540 to 65 million years ago. These environments left behind white beach sands (now sandstone), limestone, and mudstone rich with fossils (for example, trilobites, corals, and shells). Most of these layers have since been eroded from the high terrain of the Teton mountains, but small remnants can still be found at high elevation—for example, a small sandstone outcrop near the summit of Mount Moran.

During this time, tectonic activity was reshaping the Earth's surface. The Farallon Plate began subducting beneath the North American Plate roughly 160 million years ago and drove the Laramide Orogeny, which is a period of mountain building in western North America that started around 80 to 70 million years ago and lasted until about 55 to 35 million years ago and uplifted many of the mountain ranges around the Greater Yellowstone Ecosystem, predominantly through reverse faulting. The block of crust that would eventually form the Tetons also experienced some Laramide uplift. Although this uplift contributed to much of why the center of the Teton Range stands as slightly higher than its northern and southern extents today, the Laramide uplift is not responsible for the majority of the vertical offset we see between the modern Tetons and Jackson Hole, WY.

Starting around 10 million years ago, the Tetons entered a new stage of mountain building. This time, the tectonic forces were extensional rather than compressional and were related to a large geologic province in western North America called the Basin and Range, which has been undergoing tectonic extension for roughly the last 20 million years. At the Earth's surface, this extension is expressed as normal faulting, in which two crustal blocks move away from each other and one block drops downward while the other rebounds upward. Since it began extending in an east-west direction (forming faults and mountain ranges that run north-south), the Basin and Range has approximately doubled in size.

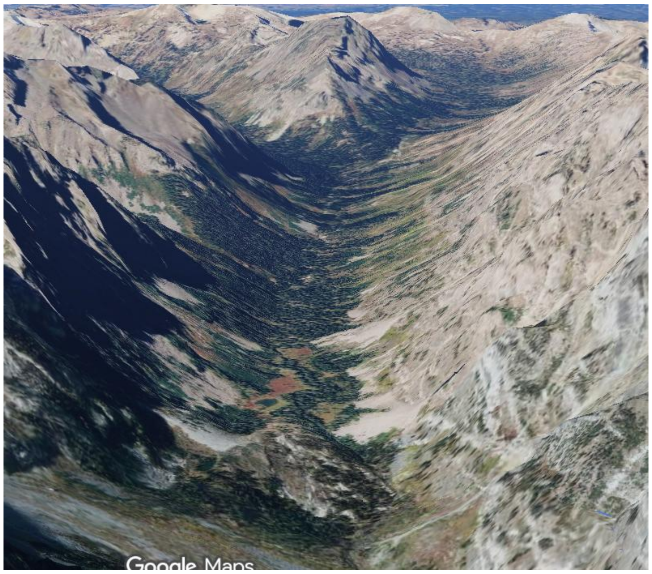
The most obvious expression of the normal faulting in the Teton Range is the Teton Fault, visible as the eastern face of the Teton Range. The fault runs about 44 miles (70 kilometers) north-south along the eastern base of the range. Each time the fault moves, the Teton Range is lifted upward and the valley of Jackson Hole drops downward. Since its initiation, the Teton Fault has produced more than 30,000 feet (about 5.5 miles, or 9 kilometers) of cumulative vertical offset. The long-term average slip rate of the Teton Fault is approximately 2 mm/year, but movement occurs during discrete earthquakes rather than as continuous motion. Some past earthquakes reached magnitudes of M7.5, generating up to 10 feet)3 meters) of displacement. The most recent major earthquake on the Teton Fault occurred between about 8,000 and 4,800 years ago. **Other smaller normal faults capable of generating strong earthquakes are present throughout the region.**



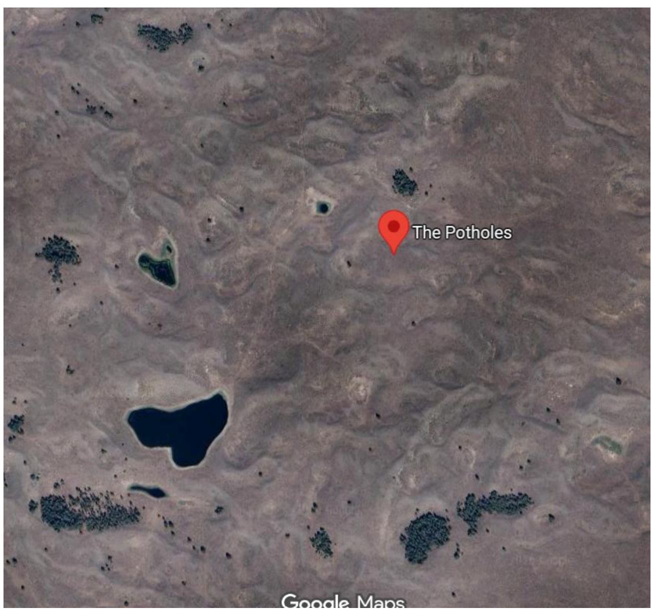
Block diagram of a normal fault, where the footwall drops below the level of the headwall.

No story of mountain building in the Greater Yellowstone Ecosystem would be complete without mention of glacial sculpting. Although young compared to nearby mountain ranges, the Tetons were also subject to glaciation during **the Bull Lake (about 150,000 to 130,000 years ago) and Pinedale (22,000-14,000 years ago)** glacial periods, when thick accumulations of ice carved the iconic U-shaped valleys of the

Tetons and created kettle lakes throughout the region.



U-shaped valley near Mt. Moran



Kettle lakes (or "potholes") in Grand Teton National Park are bowl-shaped depressions created during the last Ice Age when sediment-buried blocks of glacial ice melted into the landscape.

Falling Ice Glacier on Mt. Moran, Wyoming
The glacier is located in a high-altitude cirque an amphitheater-like valley formed by glacial erosion. On either side of this glacier are narrow ridges of rock called an arête.

The Tetons continue to grow. The tectonic forces that built the range are still active, and stress continues to build even if the Teton Fault has not experienced major movement in recorded history. Evidence of ongoing stress appears east of the Teton Range, where the Snake River does not flow down the center of its riverbed. Instead, the river flows preferentially along the western side of its banks as the extensional stress builds and the eastern block of the fault (the block underlying Jackson Hole) tilts more westward. Eventually, this stress will release, and the Tetons will move again. Seismic hazards are ever present in western North America, including in western Wyoming, so preparation for future earthquakes is key.

More information on earthquake preparedness can be found at https://www.usgs.gov/programs/earthquake-hazards/prepare.

◊ ◊ ◊

Arizona Rocks 157

Text & photos by Ray Grant

This is an update on Meteor Crater. They have done a great job with their museum on the rim and I recommend it as one of the great places to visit in Arizona. They have now added a tour into the bottom of the crater. It is only on Saturday and the cost is $125 which includes the $29 admission fee. Here is a description of the tour from their website. The registration information is also on the website.

"Descend 550 feet into the heart of Meteor Crater on this ultra-exclusive hike-previously reserved for NASA and scientific teams. Led by an expert guide, advanced hikers explore one of Earth's best-preserved impact sites from within, discovering mining remnants, historic artifacts, and astronaut training sites while learning the crater's geology and exploration legacy:"

Meteor Crater is privately owned. It was filed as a mining claim by Daniel Barringer to mine the meteorite he thought would be buried in the bottom of the crater. A shaft was dug in the bottom of the crater and a tunnel in the side, but no meteorite was found. It was determined that the meteorite exploded on impact and it is scattered over many miles around the crater. The white sand at the mine shaft is the type locality for two minerals coesite and stishovite. They are high pressure forms of SiO_2 caused by the shock to the quartz sandstone when the meteorite hit and exploded. I took the photograph of the mining equipment when I went to the bottom of the crater in 1972.

Meteor Crater, photo from Museum

Story of Daniel Barringer at the Museum

View into the bottom of Meteor Crater

Mining equipment in the bottom of Meteor Crater in 1972

Pinal Museum and Society News

351 N. Arizona Blvd., Coolidge, AZ

Pinal Geology and Mineral Society next meeting

September 16, 2026

Meetings are the third Wednesday at 7pm, doors open at 6:00 so stop in early to have a look around and see what is new--we have added new displays and will have new loaned specimens on display! www.pinalgeologymuseum.org

Ray Grant ray@pinalgeologymuseum.org

Pinal Geology and Mineral Museum Summer Hours
museum open Fridays & Saturdays from 10 - 4
admission is free.
Groups can arrange special visits, please call
520-723-3009.

New geyserite display

Case donated by the Vacek's that I've used as a sales case.

Dana Slaughter photos

Huge emerald carving donated by Bob Jones—a good reason to see something unique.

AZ Mining, Mineral & Natural Resources Education Museum Update June 2026

https://ammnre.arizona.edu/

Catie Carter Sandoval
cscarter@email.arizona.edu
703.577.6449

Help support the museum at:
http://tinyurl.com/SupportMM-NREMuseum

Last month we shared a few photos from the 1990-1991 renovation of our historic building at 1502 W. Washington St., which transformed it from the former El Zaribah Shrine into the Arizona Mining & Mineral Museum. As we move closer towards our own renovations this fall for the AMMNRE Museum, we wanted to share more pictures from that time about 35 years ago. We are currently still in the pre-construction planning process, but will keep you updated about plans and timeline as we progress.

A pre-renovation photo of the south side of the 'El Zaribah Temple' facing Washington St.

This photo shows the building's earlier pink and coral accent colors before they were repainted light blue. Per historic preservation recommendations, we hope to restore the exterior appearance to these original colors, or similar.

The main gallery during renovations, facing west towards the original stage. Note the palm tree murals on the walls and evidence of the balconies that once lined the north and south sides of the building.

Photo facing northeast showing the newly-constructed east staircase and mezzanine level. This is a great view of the original maple floor.

Sun City Rockhound Mineral Museum
Sundial Recreation Center
14801 N. 103rd Ave.
Sun City, AZ 85351

Summer Hours
May-September 10am-1pm
Saturdays only
Winter Hours
October – April
10 am to 1 pm
Closed Thurs., & Sunday

The museum offers private party tours for schools, clubs and individuals. We'd love to show off our museum to your club or private group. If you are interested, please contact the museum at scrockmuseum@gmail.com.

Please take a minute to check out our new website at scrockmuseum.com.

By Zev Black
INDEPENDENT NEWSMEDIA
June 3, 2026

Sun City resident, Dave Balzer, has been a member of the Rockhound Club for over 15 years. As the son of a high school science teacher, he was excited about the prospect of a geology club.

"When I first moved to Sun City and I heard there was a rockhound club, I thought 'woah! How can I be so lucky?" he said. "That's one of the first things I did, to join the Rockhound Club. I've really enjoyed it ever since then."

His attachment to rocks started well before his move to the area. In college, Balzer took a geology class, which he said was "probably the most fun class I had in college."

He added that he fell in love with a girl from New Jersey, the fluorescent mineral capital of the United States. This only added to his passion.

Now, he is the chair of the education committee within the club.

Because of this he was recently awarded the club's 2026 Legacy Award for his "dedication and significant contributions to the club," according to Carol Ann Hewett of the Rockhounds.

When Balzer first learned about this, he was shocked.

"Aren't there people who are much more deserving than I am?" he said. "That's honestly what I thought. I was very surprised. I am honored that they wanted to award this to me, but I couldn't imagine why at the beginning at all."

One of his key contributions to the education committee has been helping expand outreach through local school events, where he shares rock and mineral displays and gives children a hands-on learning experience.

He's also in charge of the fluorescent room in the Rockhound Club's museum. He said when he first got to the club, there was no real organization in the room.

"Somebody would find a fluorescent rock, they would take it in the room and set it on the shelf," he said. "I've been working over the years to get that organized and labeled so people can see what they're looking at."

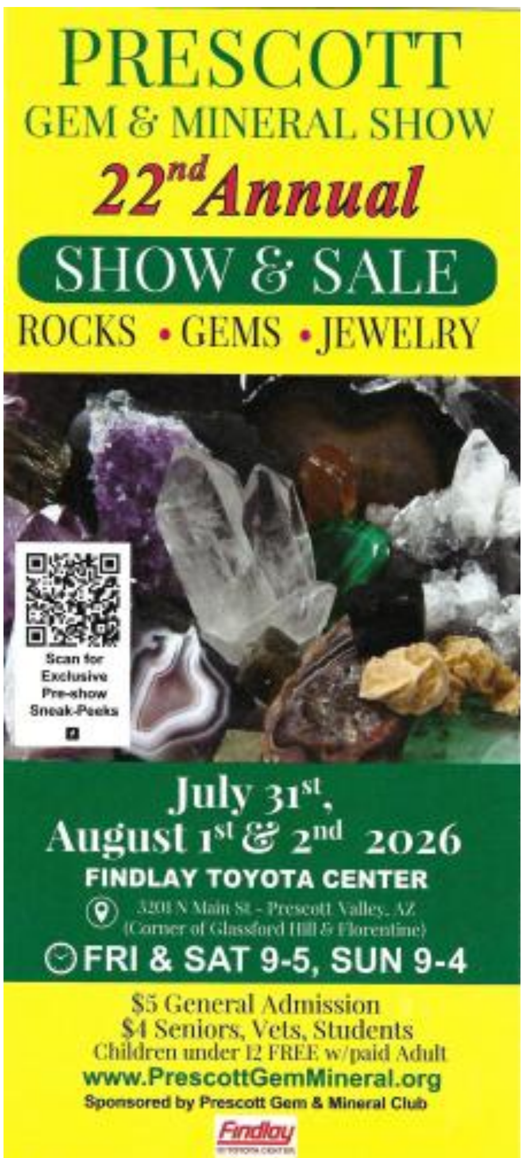
Now, each rock has a label saying what it is and where it was found. Balzer said this, along with his work with the local schools, are a big reason why he got the 2026 Legacy Award.

Dave Balzer holds the Sun City Rockhounds 2026 Legacy Award. (Submitted Photo/ Carol Ann Hewett)

https://www.yourvalley.net/sun-city-independent/stories/for-dave-balzer-a-love-of-rocks-became-a-legacy-in-sun-city,693245?

Arizona Rock and Gem Shows

Annual Show
White Mountain Gem and Mineral Club
July 10-12, 2026
Fri. 9-5, Sat. 9-5, Sun. 10-4
Adults $5, Kids 17 and under free
Elks Lodge
805 E. Whipple
Show Low, AZ
whitemountain-azrockclub.org



The 2026 Sedona Gem and Mineral show will be held on October 3rd & 4th - start planning ahead. (We are breaking tradition from our normal 3rd week show!)

Annual Show
Sedona Gem and Mineral Club
October 3-4, 2016
Sat. 10-5, Sun. 10-4
Adults $5 Cash Only
Children 12 and under Free
Free Parking
Sedona Red Rock HS
995 Upper Red Rock Loop Rd


18th Annual
GILBERT FINE MINERAL
GEM & FOSSIL SHOW
NATIVE GOLD
AUGUST 8, 2026
HD SOUTH – Severson Center
10 S. Gilbert Road, Gilbert, AZ 85296
9:00 AM – 5:00 PM
TWO FREE PRESENTATIONS
10:30 AM & 1:00 PM
FREE ADMISSION
FREE PARKING
GPS:
(33.3495390, -111.7911693)
Show Produced by De Natura / Les Presmyk | Poster by Chris Whitney-Smith

Arizona Rock and Gem Clubs

Apache Junction Rock & Gem Club
Meetings are on the 2nd Thursday
Next Meeting: July 9, 2026, 6:30 pm
www.ajrockclub.com
@ Club Lapidary Shop
2151 W. Superstition Blvd., Apache Jct.

Daisy Mountain Rock & Mineral Club
Meetings are on the 1st Tuesday
(unless a Holiday then 2nd Tuesday)
Next Meeting: September 7, 2026, 6:30 p.m.
www.dmrmc.com
@ Anthem Civic Building
3701 W. Anthem Way, Anthem, AZ

Maricopa Lapidary Society, Inc
Meetings are on the 3rd Tuesday
Next Meeting: August 18, 2026, 7:00 pm
www.maricopalapidarysociety.com
@ North Mountain Visitor Center
12950 N. 7th St., Phoenix, AZ

Mineralogical Society of Arizona
Meetings are usually on the 3rd Thursday
(Except June & December)
Next Meeting: September 17, 2026
Meeting Location: Franciscan Renewal Center, Piper Hall
5802 E. Lincoln Drive, Scottsdale,
Go to our website for more info.
www.msaaz.org

Pinal Geology & Mineral Society
Meetings are on the 3rd Wednesday
Next Meeting: September 16, 2026, 7:00 pm
www.pinalgeologymuseum.org
351 N. Arizona Blvd., Coolidge

West Valley Rock & Mineral Club
Meetings are on the 2nd Tuesday
Next Meeting: July 14, 2026, 6:30 pm
www.westvalleyrockandmineralclub.com
Buckeye Community Veterans Service Center
402 E. Narramore Avenue, Buckeye, AZ

Gila County Gem & Mineral Society
Meetings are on the 1st Thursday
(unless a Holiday then the next Thursday)
Next Meeting: July 2, 2026, 6:30 pm
www.gilagem.org
Club Building
413 Live Oak St, Miami, AZ

Wickenburg Gem & Mineral Society
Meetings are on the 2nd Friday
(February & December on the 1st Friday)
Next Meeting: September 11, 2026, 7:00 pm
www.wickenburggms.org
@ Coffinger Park Banquet Room
175 E. Swilling St., Wickenburg, AZ

ESM’s Meeting Notice

ESM’s next meeting will be at North Mountain Visitor Center, 12950 N. 7th St., Phoenix, on Tuesday, TBA 2026, at 6:30 p.m.

BECOME A MEMBER!

Join the Earth Science Museum’s

IS IT TIME TO RENEW YOUR MEMBERSHIP?
Please renew today! ☺☺☺

MANY THANKS TO OUR MAJOR DONORS!

AZ Leaverite Rock & Gem Society

Flagg Mineral Foundation
www.flaggmineralfoundation.org

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society
http://maricopalapidarysociety.com/

Mineralogical Society of AZ
www.msaaz.org

Payson Rimstones Rock Club
https://www.rimstonesrockclub.org/

Sossaman Middle School

White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org

Sun City Rockhound Club & Mineral Museum
https://suncityaz.org/recreation/clubs/rockhound-club-mineral-museums/

Wickenburg Gem & Mineral Society
http://www.wickenburggms.org
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438

West Valley Rock and Mineral Club
http://www.westvalleyrockandmineralclub.com/

Staples Foundation
www.staplesfoundation.org

Anita Aiston	Will & Carol McDonald
Peter & Judy Ambelang	Debbie Michalowski
Stan & Susan Celestian	Janet Stoeppelmann
Russ Hart	Dennis & Georgia Zeutenhorst

_ _ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _ _

ESM Earth Science Investigation Team Membership Form

_____ New Member _____ Renewal

Membership levels:

_____ ESI Family $20

_____ ESI Individual $10

Membership benefits:

- Monthly e-newsletter *Earthquake*
- Official team membership card
- Knowledge that your contribution is making a difference in earth science education.

_ _ _ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _ _

Name:
____

Address:
____

City, State, Zip:
____

Email:
____

Phone Number:
____

Mail form & payment to: Earth Science Museum
3215 W. Bethany Home Rd., Phoenix, AZ 85017

For Office Use Only

Card given/mailed: ______________________

Database updated: ☐ Distribution Lists updated: ☐

Card ID # __________ Expires: ______________

Earth Science Museum
3215 W. Bethany Home Rd.
Phoenix, AZ 85017

Phone:
602-973-4291

Editor E-Mail:
scote@earthsciencemuseum.org

We're on the Web!

Visit us at:

www.earthsciencemuseum.org

Mission
Our Mission is to excite and inspire all generations about earth sciences through educational outreach.
Vision
We envision a community where students and the general public have curiosity about, passion for, and understanding of the underlying principles of earth sciences.

For more information about the ESM, how to become a member or how to arrange for a school visit or Community function, go to: www.earthsciencemuseum.org.

NOTICE:
ESM's next meeting will be at North Mountain Visitor Center, 12950 N 7th St, Phoenix, on Tuesday, TBA 2026, at 6:30 p.m.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

Earth Science Museum
3215 W. Bethany Home Rd.
Phoenix, AZ 85017