



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

January 2022
Volume 11, Issue 1

ESM OUTREACH UPDATE

Mardy Zimmermann, Outreach Coordinator

A New Fluorescent Mineral Display for the 2022 Flagg Show

By Harvey Jong

As noted in a previous newsletter, we were concerned that our usual fluorescent display with a fully enclosed black tent could lead to potential Covid-19 virus exposure. So, the plan was to enclose just the minerals using a “black box” scheme. While an indoor demonstration seemed promising, outdoor testing of various black box setups showed that they weren't able to provide a sufficiently dark environment.

Mardy Zimmermann and I concluded that small viewing cabinets were the only viable option for a more open-air exhibit. These cabinets block out most of the ambient light by limiting the observation of minerals through a small viewport. The boxes, however, also limit the size and number of minerals. Fortunately, Mardy and I each had two cabinets which would allow us to present a reasonable assortment of specimens.

The black tent would be still used but with only two side panels installed to create a “dark corner”.

The viewing cabinets were placed about three feet apart to provide some physical distancing. In addition, visitors moved along at a reasonable pace since only a small number of minerals were displayed in each case.



Arrangement of Fluorescent Viewing Cabinets

One of the viewing cabinets was placed on a small table with its height adjusted for small children. A step stool was also added to allow the other cabinets to be more “kid-friendly”.



“Kiddie Glow” Viewing Cabinet and Step Stool



Overall View of the New Open-Air Fluorescent Mineral Display

An ample supply of disinfecting wipes was available for cleaning the cabinets after each group of visitors.

The star attraction of this year's display was Mardy's new Arizona fluorescent marble find. The marble was dubbed "mystery marble" given its unusual occurrence along with its unexpected fluorescence under shortwave ultraviolet (UV) light.



Mardy Presents Her New Arizona Fluorescent Marble Find

The display included a large polished piece of the marble, a chunk of rough marble, and a big feldspar specimen. The feldspar was also unusual for its bright fluorescence under shortwave UV.



Close-up View of the Marble

The marble polishes well and exhibits very attractive bands of orange interspersed with white and gold.

The first viewing cabinet featured some samples of the marble. Since the marble's fluorescence wasn't particularly bright, visitors had to wait for about 30 seconds for their eyes to adjust to the dark conditions. This cabinet also served as the "Good To Glow" station which allowed visitors to check if their rocks glowed.



This Viewing Cabinet Featured the Fluorescent Arizona Marble and Also Served as the "Good To Glow" Station



Fluorescent Arizona Marble Under Shortwave Ultraviolet Light

This assortment of marble pieces showed the different fluorescent colors which included purple, pink, and orange red. Patches of yellow were also present, but this may be due to some calcite.

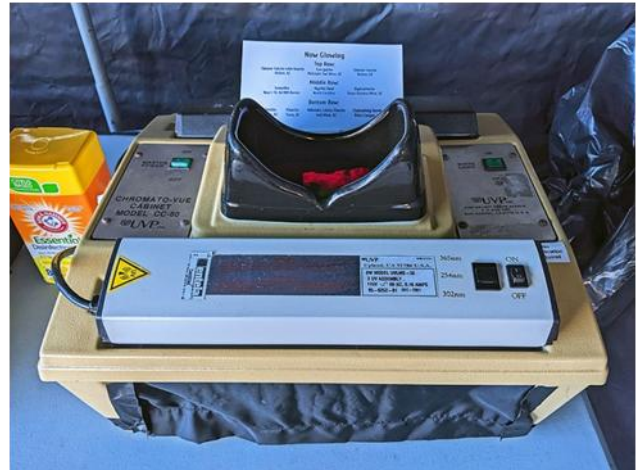
The next viewing cabinet included a few bright, common fluorescent minerals as a contrast to the marble.

Center Top: Calcite, Terlingua, Texas
 Center Bottom: Willemite Crystals in Calcite, Franklin, New Jersey
 Right: Calcite Rhombs, Mexico

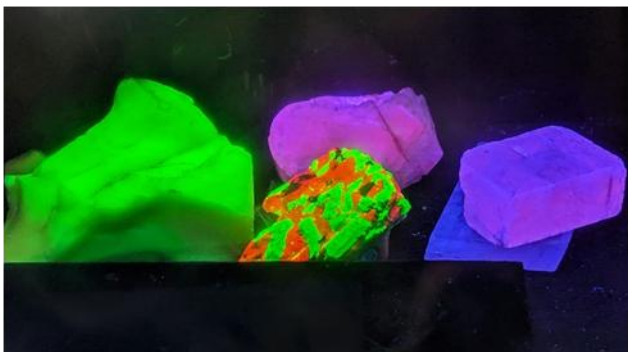
To complete the fluorescent display in a dramatic way, the largest viewing cabinet featured bigger and brighter specimens that were mostly from Arizona.



A Small Viewing Cabinet with Bright Fluorescent Minerals

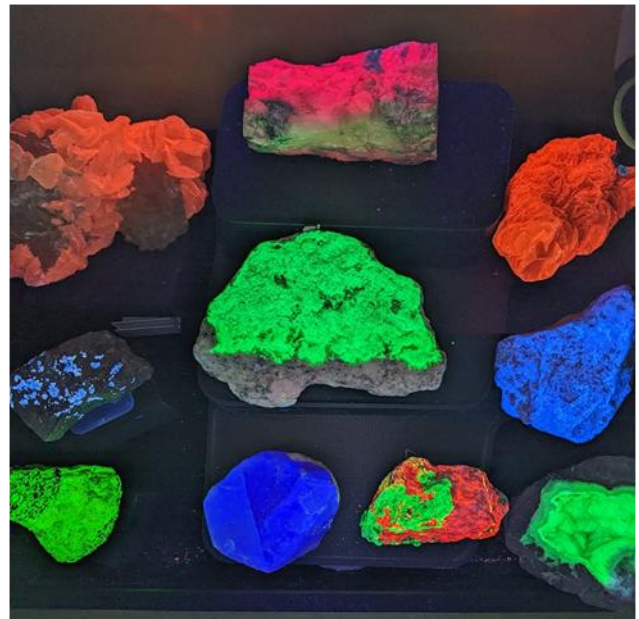


A Large Viewing Cabinet with Mostly Arizona Specimens



A Few Bright Shortwave UV Fluorescent Minerals

Left: Common Opal, Virgin Valley, Nevada



More Bright Shortwave UV Fluorescent Minerals

Top row, left: Tabular Calcite with Quartz, Bisbee, Arizona

Top row, middle: Eucryptite, Midnight Owl Mine, Arizona

Top row, right: Tabular Calcite, Bisbee, Arizona

Middle row, left: Scheelite, I-10 Freeway, near Arizona/New Mexico border

Middle row, middle: Hyalite Opal, North Carolina

Middle row, right: Hydrozincite, Texas-Arizona Mine, Arizona

Bottom row, left: Willemite, Franklin, New Jersey

Bottom row, middle left: Fluorite, Yuma, Arizona

Bottom row, middle right: Calcite, Willemite, Fluorite, Hull Mine, Arizona

Bottom row, right: Chalcedony Geode, Potts Canyon, Arizona

A total of 505 visitors viewed the fluorescent mineral display which was less than a third of the 2020 show number (1,657). This attendance probably reflected the lower overall turnout at this year's show and the different experience of the new display setup. Even so, it represents a noteworthy accomplishment that amidst all the uncertainty of the pandemic the ESM was still able to "glow with the flow"!

Many thanks to the following volunteers for their time and effort before, during, and after the Flagg Show: Shirley Coté, Doug Duffy, Debby Ellis, Bob Holmes, Tom Osborn, and Dick & Mardy Zimmermann.



Debby Ellis & Doug Duffy with Mardy, Harvey and Shirley in the background



Mardy Zimmermann & Harvey Jong ready to receive visitors

Other rock and mineral clubs were also set up at the Flagg Gem and Mineral Show.



Mineralogical Society of Arizona with their ever popular spinning wheel



Ann Baker and Loretta Meadore, members of the Maricopa Lapidary Society, chatting before starting the day; MLS spinning wheel (right)

Not pictured were the Gila County Gem and Mineral Society, the Apache Junction Rock and Gem Club, and the Flagg Mineral Foundation.

Gila County Gem and Mineral Show Text and some photos provided by Jodi Brewster

The Gila County Gem & Mineral Society just finished hosting our 64th annual show. Globe High School's JROTC opened the show with the presenting of colors; this has become a tradition at our show. Thank you to the cadets and Major Fiorella for their service to the community.



Major Fiorella's troop presenting the colors

We had 15 vendors who sell different minerals and equipment so you have more of a variety to choose from and the vendors don't have to try to compete with each other.

There were more than 35 display cases that our members use to show off the minerals they collected and jewelry that they may have made. We even have our local rock shop and museum put up display. We invite our patrons to vote for their favorite display.



This year the Bullion Plaza Museum's display was voted "Best of Show".

A beautiful drusy quartz specimen in the silent auction
S. Coté photo



Educational display with igneous, sedimentary and metamorphic rocks, plus ores of common metals
S. Coté photo

Also, there was an activity room for kids of all ages. The Globe JROTC cadets were there to help with the games and activities.

The following are some of the activities we host at our show:

Silent Auction

Rocks, rocks and even more rocks, and some equipment too! See something you like then place your bid, but don't forget to check to make sure you aren't outbid. You get 15 minutes to bid and if you are the highest bidder you win!



Wheel of fortune

You spin the wheel and whatever number the wheel stops on is the prize you get. Every spin is a win!



Two Globe JROTC cadets, Asher and Andrew and club member Allen - S. Coté photo; the picture on the right was taken during the 2020 show.

Fossil/Gem Pit

If your into digging and don't mind getting a little dirt on you then you can dig and sift your way to awesome minerals and fossils. When you are done, you get to keep what you dug up. If you find the hidden copper piece you even get a special prize.



Fossil/Gem Pit - S. Coté photo

Make your own gem tree:

The copper trees are already made and all you need to do is add your gems to it. There are plenty of minerals, gems and beads provided that you can choose from. The adult kids really enjoy this area.



Club member Peggy explains how to make a gem tree to a few interested patrons. - S. Coté photo

Toss for Rocks

It's just like Corn Hole. If you can get all 12 bean bags (rocks) in the center hole then you can win the grand prize. Even if you don't get the grand prize, with 4 other levels of prizes every game is a win.

Duck Pond

If you like to go fishing, then this is your game. Grab a fishing pole and try to hook a duck. Each duck has a number on the bottom and you win the prize that goes with the number. Don't worry the hooks are homemade and not sharp.



One of the ducks that didn't get away; a natural born fisher!

Demonstrators

Gila Community College shows the art of lapidary, the cutting, shaping and polishing of rocks. Many people love to come here to learn how to make a cabochon. The demonstrators, Mike Garcia and Jack Aneas are very knowledgeable and love to get everyone involved. When you are finished making your cabochon it's yours to take with you.



Photo from the 2020 show

How to clean a fossil fish

This is one of those demonstrations that takes a while to complete and was conducted this year by Steve Fowler who is also a vendor with beautiful fossils, rocks and petrified wood for sale. Here he is at his booth showing some of what he offers for sale.



Steve Fowler demonstrator and vendor

Wire wrap art

This year Haley Williams was doing the honors displaying the art of wire wrapping. She was using a torch to heat and solder the wires together making a wire horse for an

art piece. She also had plenty of jewelry to show and sell.



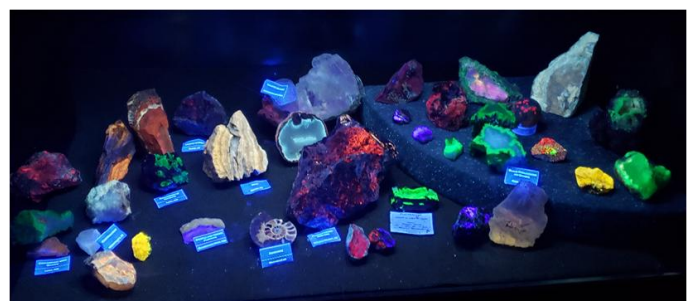
Demonstrator Haley Williams

Fluorescent Rocks

This was made possible from a grant by Freeport McMoran which allowed us to purchase the display light to show off the "hidden" beauty of rocks and minerals. These are the "before and after" pictures, it's almost impossible to believe how much of a difference there is.



Rocks and minerals in white light...



The same specimens under UV (A, B, & C wavelengths)



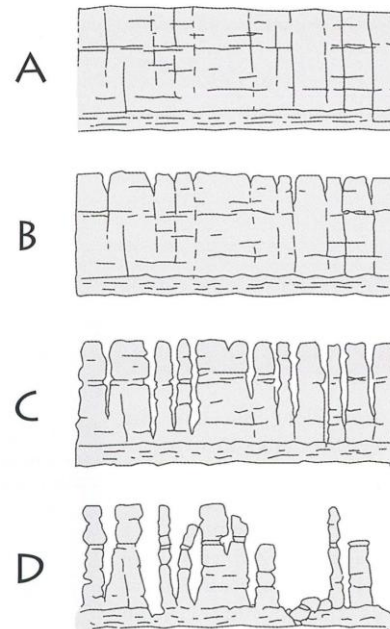
Arizona Rocks 104

Text and photos by Ray Grant

One of the must-see geological sites in Arizona that has not been the subject of Arizona Rocks is Chiricahua National Monument. It has been mentioned several times but not highlighted.

Chiricahua National Monument is famous for its pinnacles, columns, and balanced rocks formed from a rhyolite tuff. A series of large explosive volcanic eruptions 27 million years ago formed the 12-mile-wide Turkey Creek Caldera, blew out over 100 cubic miles of pumice, ash, and rock fragments, and this pyroclastic material covered over 1200 square miles of southern Arizona and New Mexico. The hot pyroclastic material when deposited will compact from the weight of the material and fuse together from the heat. This forms the tuff layers also referred to as welded tuff.

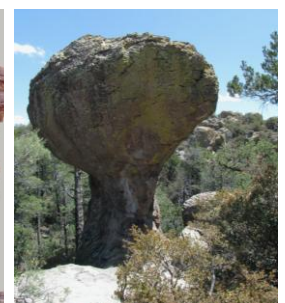
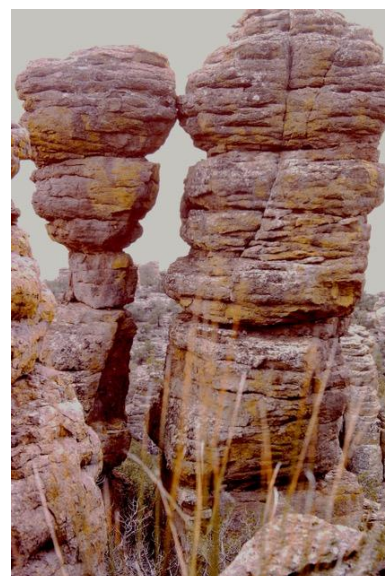
On cooling the rocks contract and vertical joints (cracks) are formed. Water gets into these fractures and starts to weather the rock. During the ice age it was cooler and wetter in Arizona and water freezing in the joints helped enlarge them. This weathering and the removal of the weathered material formed the columns and pinnacles. Some horizontal fractures and less welded ash layers were also present, and these weaker horizontal layers are responsible for the balance rocks. There are two good references explaining the geologic features and geologic history of the monument. This one from the National Park Service: <https://irma.nps.gov/DataStore/DownloadFile/426475> and this one Arizona Geological Survey, Down-to-Earth 11 by John Bezy <http://repository.azgs.gov/sites/default/files/dlio/files/nid1731/dte-11chirichua-fortbowie.pdf>.



How columns and Pinnacles formed at Chiricahua National Monument over time from Bezy, 2001



Welded Tuff at Chiricahua national Monument with flattened pumice fragments



Some columns at the Chiricahua National Monument



AZ Mining, Mineral & Natural Resources Education Museum Update January 2022

<https://ammnre.arizona.edu/>

Catie Carter Sandoval

cscarter@email.arizona.edu

703.577.6449

Help support the museum at:

<http://tinyurl.com/SupportMM-NREMuseum>

Happy 2022 to our friends and supporters! This month we have been assisting the Arizona Geological Survey and Arizona Historical Society staffs begin their move of the AZGS/ADMMR mine files from the museum building to the Arizona History Museum's Library & Archives department in Tucson. The files have been stored in the museum since the closure of AZGS's central Phoenix office in 2016. They were moved to the gallery floor in 2019. The first part of the project involved sorting through and packing up the files with help from retired AZGS geologist Nyal Niemuth and Monday Crew volunteers Shirley Cote, Doug Duffy, Mike Webb, Bill Yedowitz, Denny Zeutenhorst, and Dick and Mardy Zimmermann. While staff and volunteers packed files, Nyal and Bill organized the workroom, moving files to the main floor and identifying office supplies and other material. Catie also took an inventory of copper plates, generously donated by AZGS, which are currently stored in the lapidary room. Some of those plates will go on display at the University of Arizona in Tucson later this year. AZGS and AHS will be sharing more news as the mine file project progresses.

Next month we will be attending the Tucson Gem and Mineral Show at the Convention Center and exhibiting a special 'Dick Graeme Tribute Case' on the main floor. Our display will be one of several others paying tribute

to Dick with exceptional Bisbee mineral specimens and mining artifacts. We look forward to seeing everyone there for the first time since the 2020 show.



Mine files packed in boxes to be moved to AHS in Tucson



Denny Z just added another box to the pile while Dick and Mardy Z work on another file cabinet.



Nyal and Bill organizing the workroom



Pinal Geology & Mineral Museum

Pinal Museum and Society News

351 N. Arizona Blvd., Coolidge, AZ

Pinal Geology and Mineral Society meeting

February 16, 2022

www.pinalgeologymuseum.org

Ray Grant raycyn@cox.net.

The Museum will be open four days a week starting on January 6. It will open from Wednesday - Saturdays from 10 am to 3 pm. So more opportunities for people to visit! This will be the plan until we close for the summer.

Masks are required for all visitors and volunteers over five years old. We have taken this step to protect our volunteers so they can safely open the Museum for you. Please provide your own masks. We will have some on hand at the Museum, but cannot guarantee to provide them. If wearing a mask is a problem, please plan your visit for later.



New banner on Arizona Blvd. for The Pinal Geology Museum now that we are open Wednesday to Saturday from 10 to 3.

Mine car donated by Florence Copper filled with chrysocolla from Walker Butte Granite Quarry.

**Pinal Gem and Mineral Show, with Meteorites and Dinosaurs,
Saturday, March 12, 2022, from 10 AM to 3 PM**
(More information on page 17)

MARK YOUR CALENDAR!

Arizona Geological Survey

AZGS Blog: [Directory of Arizona's Active Mines – FY2021](#)

The Directory of Arizona's Active Mines of 2021 is now available – see the cover graphic below. More than 400 mines, including nearly 300 aggregate facilities and 27 metallic mines/development projects were active in 2021. Other industrial mines (e.g. gypsum, cinders) make up the remainder. Importantly, this work is a collaborative effort between the Arizona Mine Inspector's Office and the Arizona Geological Survey.

For details - and links to the report - see today's [Arizona Geology blog](#) by AZGS' Victor Garcia. The directory of active mines includes an [interactive active mine map viewer](#).

The report, oversized plates, and a link to the viewer are accessible at the AZGS Document Repository: http://repository.azgs.az.gov/uri_qin/azgs/dlio/2008

Best wishes for a healthy and productive 2022
Staff of the AZGS

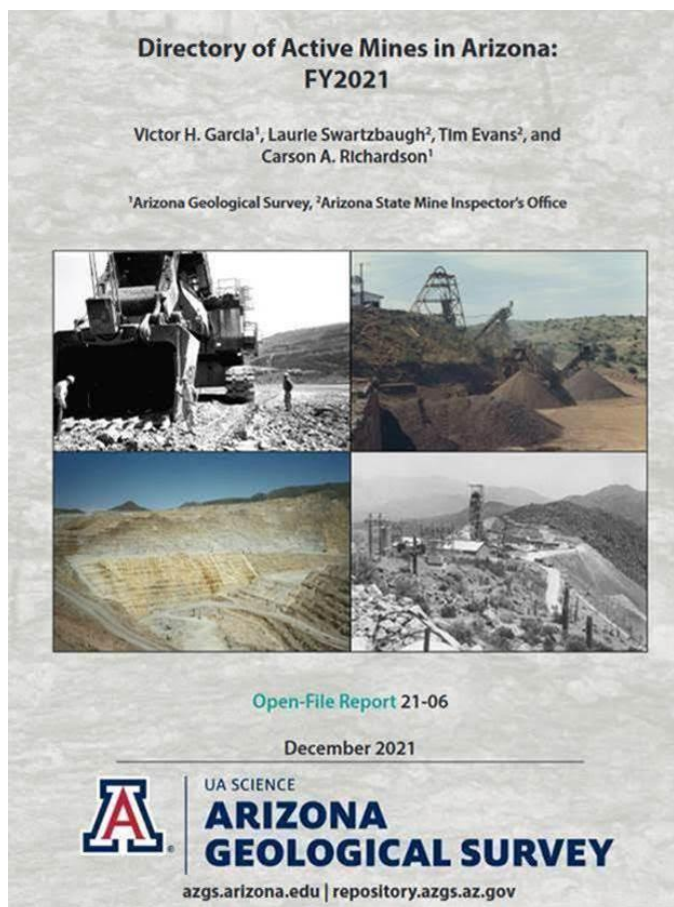
F. Michael Conway
Sr. Research Scientist
Arizona Geological Survey
The University of Arizona
1955 E 6th Street, PO Box 210184
Tucson, AZ 85721
fmconway@arizona.edu cell: 520.971.3688

AZGS Websites

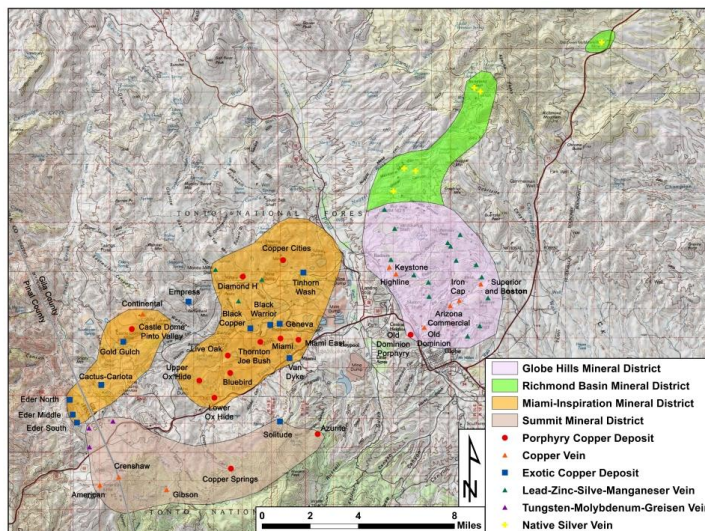
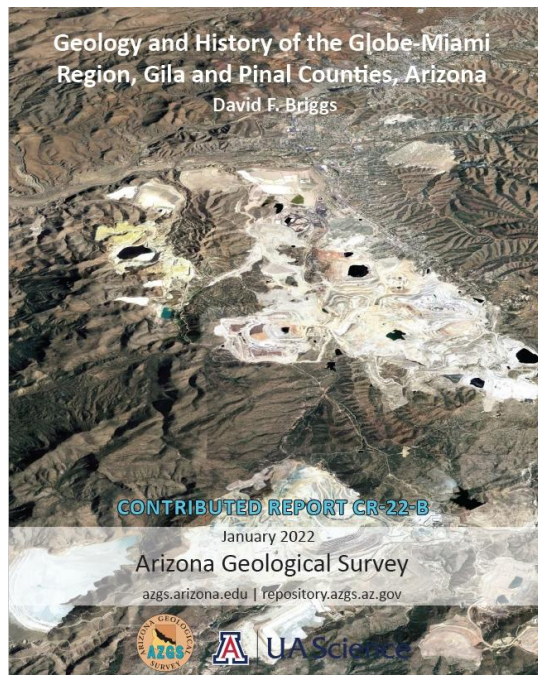
[AZGS Portal](#)
[AZGS Mining Data](#)
[AZGS Document Repository](#)

AZGS Social Media

Blog [Arizona Geology Blog](#)
Facebook [AZ_Geological.Survey](#)
Twitter [AZGeology](#)
Instagram [azgeology](#)



Arizona Geology Blog: Mining History of Globe-Miami area, Arizona



David Briggs latest, 243-page Contributed Report, *Geology and History of the Globe-Miami Mining Region, Gila and Pinal Counties, Arizona* examines, in fine detail, the economic geology, ore production, and mining history of the Globe-Miami area. <https://blog.azgs.arizona.edu/blog/2022-01/mining-history-globe-miami-area-arizona>

Key features of the report:

113 Figures/illustrations. Includes geologic maps and geologic cross sections, as well as historical images courtesy of the U.S. Geological Survey, Mining Foundation of the Southwest, University of Arizona Special Collections, Arizona Geological Survey, Arizona State University Library, Library of Congress, Gila County Historical Museum, and Sharlot Hall Museum, among others.

- **23 Tables** showcasing historic copper production data from individual mines in the Globe-Miami area.
- **Time Line.** A comprehensive, 16-page Globe-Miami historical time line beginning in 1225 CE and ending in July 2020.

Download the report directly from AZGS Document

Repository: http://repository.azgs.az.gov/uri_gin/azgs/dlio/2010

Mike Conway
Arizona Geological Survey
fmconway@arizona.edu



Parent/Teacher Resource Page 1

[HTTPS://WWW.EARTHSCIWEEK.ORG/NEWSLETTER](https://www.earthsciweek.org/newsletter)

EARTH SCIENCE WEEK UPDATE

January 2022

DELVE INTO EARTH SCIENCE EDUCATION WITH USGS

The U.S. Geological Survey (USGS), a longtime Earth Science Week partner, offers a wealth of information on virtually every Earth science topic, from geology to oceans and coasts.

The [USGS Educational Resources](#) website includes lesson plans and other resources for K-12 students, educators, and others. Perfect for the Earth Science Week 2022 theme of "Earth Science for a Sustainable World," for example, resources target issues around sustainability including ecosystems, water resources, and global change.

USGS has thousands of free images and over 69,000 searchable publications such as books, maps, and charts online. There's also the rich archives of the [USGS Multimedia Gallery](#), including a podcast series on topics such as climate change, satellite monitoring, human health, and wildlife disease.

WILDLIFE AND WOODLANDS TOOLKIT FROM GLOBAL CHANGE

One way to explore the Earth Science Week 2022 (October 9-15) theme "Earth Science for a Sustainable World" is to dive into the U.S. Global Change Research Program's "Climate Change, Wildlife and Wildlands Toolkit for Formal and Informal Educators," which updates and expands the program's award-winning and popular kit, first published nearly 20 years ago.

The U.S. Environmental Protection Agency, in partnership with six other federal agencies — National Park Service, U.S. Fish and Wildlife Service, NOAA, NASA, U.S. Forest Service, and Bureau of Land Management — developed the kit to aid educators in teaching how climate change affects the nation's wildlife and public lands, and how all Americans can become climate stewards.

Designed for classroom teachers as well as informal educators in settings such as parks, refuges, forest lands, nature centers, zoos, aquariums, and science centers, the kit targets the middle school grade level. To get started, view a video, browse kit materials, and explore eco-regions nationwide [online](#).

NASA SITES ILLUMINATE TIMELY TOPICS IN SCIENCE

A major Earth Science Week partner, NASA offers a dazzling array of learning resources for students and teachers interested in the geosciences, including a couple of resources focusing respectively on DEI (diversity, equity, and inclusion) and STEM (science, technology, engineering, and mathematics).

NASA's D&I Leadership Video Series looks at topics in STEM, especially in education. Videos showcase members from various NASA grantee institutions speaking on ideas and best practices for developing the next generation of STEM graduates in relation to historically underrepresented groups. Find out more about [NASA's DEI Leadership Series](#).

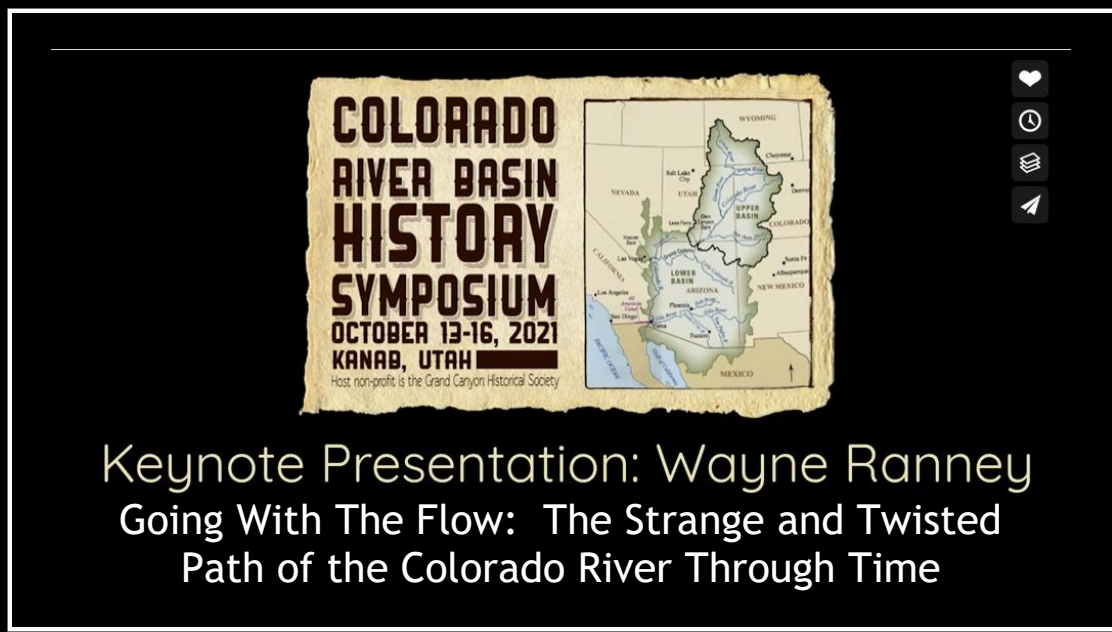
NASA also features hundreds of resources to help you explore the wonders of STEM and space. Activities, contests, and downloadable materials are at your fingertips. Users can also search by grade level (K-12 and higher education), as well as informal education resources and other opportunities like contests and challenges. Visit [NASA STEM Engagement](#).

EXPLORE SUSTAINABILITY WITH CLASSROOM ACTIVITIES

How can you and your students explore the Earth Science Week theme of "Earth Science for a Sustainable World" in 2022? You can start with the many learning activities dealing with topics relevant to sustainability — such as oceans, soil, climate, materials, minerals, natural resources, and energy — on the program's [Classroom Activities](#) site.

Simply visit online and narrow your search by selecting the tag of a keyword or looking for activities that contain that keyword. If you like, you can even search by grade level or Next Generation Science Standards in Earth and Space Sciences.

Many activities are ideal for conducting safely in the classroom, at home, or online. Start today with Earth Science Week's [Classroom Activities](#).



COLORADO RIVER BASIN HISTORY SYMPOSIUM
OCTOBER 13-16, 2021
KANAB, UTAH
Host, non-profit is the Grand Canyon Historical Society

Keynote Presentation: Wayne Ranney
Going With The Flow: The Strange and Twisted Path of the Colorado River Through Time

Wayne Ranney gave a thought-provoking presentation at the Colorado River Basin History Symposium last October. The topic involves the evolution of the Colorado River through time. Link to the Vimeo of the lecture: <https://vimeo.com/655750506>. The length of the Vimeo is 39 minutes. Enjoy!

The Tucson Gem and Mineral Society Proudly Presents:


THE 67th ANNUAL
Tucson Gem & Mineral Show®
 February 10 - 13
The Show That Glows
 2022
 featuring:
THE APATITE SUPERGROUP
 and the *Fluorescent Mineral Pavilion*
 with over 80 Spectacular Displays by
The Fluorescent Mineral Society






TUCSON CONVENTION CENTER
 For more information, visit: www.tgms.org

Mingus Gem & Mineral Club
 Annual show
February 25-27, 2022
 Fri. 9-5, Sat. 9-5, Sun. 10-4
 Free
 19 N. Ninth Street Clarkdale AZ


 **DESERT GARDENS ROCK GEM & MINERAL SHOW**



**DESERT GARDENS ANNUAL
 INTERNATIONAL
 ROCK, GEM AND MINERAL
 SHOW**

January 1 – February 28
 9:00 am – 5:00 pm
 (Seven Days Weekly)

1055 Kuehn Street
 Quartzsite, AZ 85346



Gem & Mineral Show
 March 5, 2022
 9am-5pm
 March 6, 2022
 10am-4pm

Skyline High School
 845 S. Crismon Rd
 Mesa, AZ 85208
 North of Southern Ave on
 Crismon

Admission: Adults \$3.00
 Students with ID \$1.00
 Children under 12 free

This show benefits our
 Scholarship Fund for local
 students.

We have rocks, gems,
 jewelry, fossils, minerals,
 rare and unusual crystals
 from vendors all over the
 state.

We have food service,
 raffles, and the best silent
 auction in the state plus lots
 of activities for all ages.

Fun for the whole family!

The Tucson mineral, fossil, and gem shows are starting. There are over 40 shows and this website has the dates, hours, and locations for the shows:

<https://tucsongemshow101.com/schedule-2022>

Pinal Gem and Mineral Show



with Meteorites and Dinosaurs

Saturday, March 12, 2022
from 10 AM to 3 PM

You will be able to touch meteorites and dinosaur fossils. There will be dealers set up selling minerals, meteorites, fossils, and lapidary material. Admission to the Event and Museum is free.

A lot of great activities for kids, a fossil dig where every kid can find and take home a small fossil collection, every kid will get a small dinosaur to take home, and many other activities.

The Pinal Geology and Mineral Museum
351 N. Arizona Boulevard
Coolidge, Arizona
next to the Coolidge
Chamber of Commerce



For information check our website
www.pinalgeologymuseum.org

Dealers contact Ray Grant for a space
at raycyn@cox.net

2022 Anthem
GEM & MINERAL Show

Saturday, March 19th 9am-5pm Sunday, March 20th 10am-4pm

ANTHEM SCHOOL
41020 N. Freedom Way, Anthem, Arizona

BRING THE KIDS!
Kid's Corner Events & Games, Dozens of Vendors Selling Jewelry, Gems, Minerals, Fossils, Beads, & Geodes.
There will also be Raffles, Fluorescent Display, Faceting & Experts to Identify your Favorite Rocks

Adults \$3, Seniors & Students \$2, Kids 12 & under Free

Sponsored by DAISY MOUNTAIN ROCK AND MINERAL CLUB
For more information contact Ed Winbourne (978) 460-1528
email edwinbourne@gmail.com

Mohave County Gemstoners Annual Gem and Mineral Show

May 7-8, 2022

Sat. 9-5, Sun. 9-4

Kingman Academy of Learning

3420 N. Burbank St. 86409

Kingman, AZ

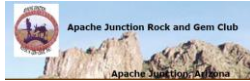
Free Admission

Plenty of Parking



Pinal Geology and Mineral Museum
Laurie Manifold has painted a new beautiful and exciting mural by the entrance to the Museum.

**ALL ARIZONA CLUB MEETINGS MAY BE CANCELED
DUE TO HEALTH CONCERNS!**



Apache Junction Rock & Gem Club
Meetings are on the 2nd Thursday
Next Meeting: February 10, 2022, 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: February 1, 2022, 6:30 p.m.
Please go to their website for more info
www.dmrmc.com
@ Anthem Civic Building
3701 W. Anthem Way, Anthem, AZ



Maricopa Lapidary Society, Inc
Meetings are on the 1st Monday
(unless a Holiday then 2nd Monday)
Next Meeting: February 7, 2022, 7:00 pm
www.maricopalapidarysociety.com
@ North Mountain Visitor Center
12950 N. 7th St., Phoenix



Mineralogical Society of Arizona
Meetings are on the 3rd Thursday
Next Meeting: February 17, 2022, 7:30 pm
Please go to their website for more info
www.msaaaz.org
@ Franciscan Renewal Center
Room: Padre Serra
5802 E. Lincoln Dr., Scottsdale



Pinal Geology & Mineral Society
Meetings are on the 3rd Wednesday
Next Meeting: February 17, 2022, 7:00 pm
On YouTube until further notice
www.pinalgeologymuseum.org
@ Artisan Village
351 N. Arizona Blvd., Coolidge



West Valley Rock & Mineral Club
Meetings are on the 2nd Tuesday
Next Meeting: February 8, 2022, 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: February 3, 2022, 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: February 4, 2022, 7:00 pm
www.wickenburggms.org
@ Coffinger Park Banquet Room
175 E. Swilling St., Wickenburg

ESM's Meeting Notice

ESM's next meeting will be at North Mountain Visitor Center, 12950 N. 7th St., Phoenix, on Tuesday, TBA 2022, at 6:30 p.m.

BECOME A MEMBER!
Join the Earth Science Museum's



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

----- cut here -----

**ESM Earth Science Investigation
Team Membership Form**

_____ **New Member** _____ **Renewal**

Membership levels:

_____ **ESI Family \$20**

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- ◆ Monthly e-newsletter *Earthquake*
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- ◆ Knowledge that your contribution is making a difference in earth science education.

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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.

We're on the Web!

Visit us at:

www.earthsciencemuseum.org

NOTICE:
 ESM's next meeting will be at North Mountain Visitor Center, 12950 N 7th St, Phoenix, on Tuesday, TBA 2022, at 6:30 p.m.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

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