



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

October 2020
Volume 9, Issue 10

ESM Storage Move Out

By Shirley Coté and Harvey Jong

On October 18th, ESM members Shirley Coté, Doug Duffy, Harvey Jong, Chris Whitney-Smith, Dick and Mardy Zimmermann, continued our project to clean out the ESM storage unit, a project we started last year. This time we planned to move a myriad of boxes containing rock and mineral specimens, posters, pictures, plastic bags, teacher kits, magazines, and mineral cards.



After moving the boxed items to the trunks of four vehicles, the metal bookshelves and cinder block and wood shelving were disassembled.

Dick's truck was used to transport the various shelf parts. The blocks and plywood boards were loaded first, and then Dick used his rubber mallet to disassemble the metal bookshelves. We filled the truck's remaining space with most of the metal frames, shelves, and dividers.

Fully loaded, our move out caravan proceeded to Mardy and Dick's property in Apache Junction. The metal bookshelves that we were able to fit on this trip were

unloaded and placed in a cart behind one of Dick's storage buildings. We transferred 32 banker's boxes containing an economic geology collection along with 20 other boxes of miscellaneous items into a trailer that was purchased specifically for storing these materials. The trailer was fitted with the cinder block and wood shelving.

After unloading all the vehicles, we made plans for clearing out the remaining items in the storage unit. This included moving three display cases to the Pinal Geology and Mineral Museum in Coolidge, finish hauling the remaining metal bookshelves and a table; and sweeping up and removing the accumulated trash.

On October 24th, ESM members Shirley Coté, Doug Duffy, Bob Holmes, Harvey Jong, Dick and Mardy Zimmermann along with Steve Kaminski, assembled to complete our mission.



Hmm! Doug, Steve, Bob, Harvey, and Dick pondered how to tackle the first of the three

display cases which, when donated, was slightly damaged.



The second case was moved outside and ready to load on the truck leaving one to go.



The third case was loaded onto a second truck. Before Bob, Dick, Harvey, and Steve headed out to Coolidge with the two trucks, we stopped to get a group photo.



Doug and Shirley loaded the display case doors and inserts into their vehicle for transport to Coolidge. Then, they helped Mardy in sweeping up and loading the trash into her vehicle. While Mardy continued cleaning up the unit, Doug and Shirley headed to Coolidge.

The trucks with the display cases arrived at the Geology Museum, and the moving crew was greeted by Ray Grant. The guys proceeded to unload the cases by carefully strapping a dolly to each case and rolling them into the museum's mineral gallery.



Shortly after they finished unloading the cases, Doug and Shirley arrived with the case doors and inserts. Perfect timing!

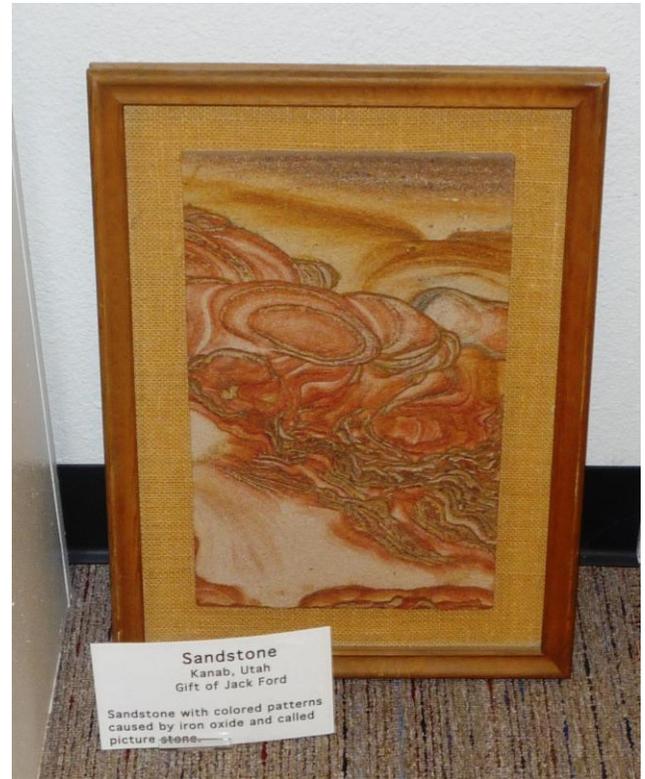




After posing for a group photo in Coolidge, Bob, Dick, Harvey and Steve headed back to the storage unit. They finished loading the remaining metal bookshelves and the table into Dick's truck. The storage unit was now clean and totally empty. Mardy said "I swept it several times before I left".



Great job everyone!
This ESM chapter is closed.



A new acquisition at the Pinal Geology Museum!

Last September, artist Laurie Manifold of the Daisy Mountain Rock and Mineral Club graciously volunteered to paint a background for the Pinal Geology & Mineral Museum's dinosaur exhibit. A very nice addition to the exhibit!



Cynthia Grant made an upgrade to the exhibit by adding a pond. The results are shown on the left. Very nice, Cynthia!



Arizona Rocks 89

Text and photos by Ray Grant

In checking some references on the Arizona Geological Survey website, I ran across a publication, CR-11-B, titled *Geologic and Geomorphic Characterization of Precariously Balanced Rocks* (2010) by David Haddad and J. Arrowsmith. It is from a Master's thesis at ASU and sounded really interesting, it is, but it is very technical, and not what I expected. The study is about balanced rocks and the seismic application of their existence to ground motion. It is mainly about the rocks at the Granite Dells near Prescott and their formation and stability over time. I was expecting something about all the places in Arizona to go see balanced rocks.

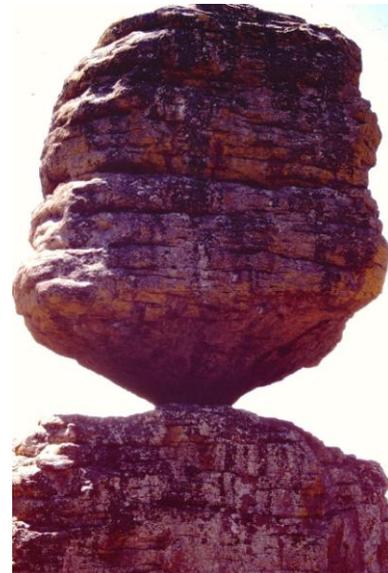
Balanced Rocks form in a number of ways that are related to weathering of the rock and erosion of the weathered material. Some have a more resistant formation over a softer one, such as sandstone over shale. Some have a less resistant portion in the formation, such as a more ash rich layer in a sequence of volcanic rocks. In the case of granite, there is initially weathering under the ground surface and then as the weathered material is removed some of the granite boulders may be left in a precarious position.

Many of the balanced rocks look like they should not exist; that they should have fallen long ago. Fortunately, big earthquakes are rare in Arizona and there is not a lot of ground motion, so there are some spectacular rocks.

A CONTEST: send in your favorite photo of a balanced rock (with location) in Arizona and we will put them in a future newsletter and have some prizes for the best photographs. Ray's email: raycyn1@mac.com



Balanced rock in Marble Canyon, near Lee's Ferry; sedimentary rocks with a more resistant rock capping a less resistant rock



Balanced rock at the Chiricahua National Monument; a sequence of volcanic eruptions with a less resistant layer



Granite balanced rock at the Boulders on the Florence-Kelvin Highway in Pinal County, as the weathered soil erodes away the boulders are left piled up, some precarious.



AZ Mining, Mineral & Natural Resources Education Museum Update October 2020

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

Catie Carter Sandoval
 cscarter@email.arizona.edu
 703.577.6449

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

On October 17th, Catie, Les Presmyk and Bill Yedowitz relocated twelve dozen drawers from storage in Tucson to the museum where they will be placed inside the six cases donated by the Flandrau back in December. Now that the cases are fully intact, we hope to create a temporary display in the Copper Gallery for future public gatherings. For now, all events and Monday Crew volunteer opportunities are still suspended due to COVID restrictions but we will keep you updated about any changes. Thank you for your continued support! Happy Halloween!



Uh-oh! Somebody spent too much time outdoors by the stamp mill this long, scorching hot summer!

ARIZONA GEM SHOWS MAY BE CANCELED DUE TO HEALTH CONCERNS!



Verde River Rockhounds
 Rocks in the Park Annual Show
 November 7, 2020
 Sat. 9-5



Free Admission
 Windmill Park
 9950 E. Cornville Rd
 Cornville, AZ



Lake Havasu Gem & Mineral Society
 Lake Havasu Gem & Mineral Show
 November 14-15, 2020



Sat. 9-5, Sun. 9-4
 Aquatic Center
 100 Park Ave.
 Lake Havasu City, AZ



**Wickenburg Gem & Mineral Society
 Wickenburg Gem & Mineral Show**
 November 28-29, 2020
 251 S. Tegner St.
 Wickenburg, AZ

49th FLAGG GEM AND MINERAL SHOW



**FREE PARKING
 FREE ADMISSION
 FRIDAY, SATURDAY, SUNDAY
 JANUARY 8, 9, and 10, 2021
 9AM TO 5PM EACH DAY**
 Mesa Community College
 West parking lot on Dobson Road
 Mesa, AZ





The Mineral District Block Party is happening in Tucson Nov 5-8, 2020!

If you were planning on visiting the Costa Mesa Show and are disappointed by the cancellation, join us in Tucson instead!

Many of your favorite mineral dealers will have their doors open and ready to wow you with their goods.

Here is a current list of vendors.

Ausrox Naomi 1835 North 11th Ave # 9

GMI 3340 East Michigan

Harex International 4460 West Crestview Road

Jewell Tunnel 1735 North Oracle (appointment only)

JK Stone 1500 East Apache Park Place

Midwest Minerals 635 West Lester

Minport 516 West Lester Street Unit A13

Norcross Madagascar 201 West Lester

Rick's Gems & Minerals 1893 North 11th Ave.

Rocko Minerals 1835 North 11th Ave # 2

Sonora River Minerals 1893 North 11th Ave.

The Rock Warehouse 1500 East Apache Park Place

The Rock Yard 615 West Lester

The Showroom @ Mineral City with Rocky Houndenstein 1891 North Oracle

Top-Gem Minerals, Inc 1893 North 11th Ave.

Vicjon Victor 1500 East Apache Park Place

Wholesale Crystal Warehouse 703 North Main Ave (appointment only)

Parent/Teacher Resource Page 1



National Science Foundation
WHERE DISCOVERIES BEGIN

<https://www.nsf.gov/news/classroom/>

Classroom Resources

Welcome to Classroom Resources—a diverse collection of lessons and web resources for classroom teachers, their students and students' families. Materials are arranged by subject area to help you quickly find resources in your interest area, and then use them to create lesson plans or at-home activities.

Classroom Resources by research area:

[Arctic & Antarctic](#)

[Astronomy & Astrophysics](#)

[Biology](#)

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[Computing](#)

[Earth & Environment](#)

[Education](#)

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[Nanoscience](#)

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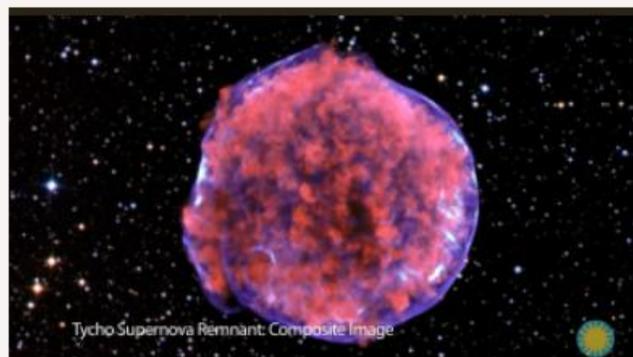
[Physics](#)



Smithsonian
Science Education Center

<https://ssec.si.edu/>

https://ssec.si.edu/explore-our-curriculum-resources?f%5B0%5D=field_is_free%3A1&f%5B1%5D=field_topic%3A79



VIDEO

Explore Smithsonian: How Do Astronomers See the Invisible Parts of the Universe?

This is a free resource

Filed Under: Grade 3, Grade 4, Grade 5, Grade 6, Grade 7, Grade 8, Earth & Space Science

Parent/Teacher Resource Page 2

https://undsci.berkeley.edu/search/imagetdetail.php?id=110&topic_id=&keywords=



Understanding Science

how science *really* works

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SUPPORT THIS PROJECT

Explore an interactive representation of the process of science.

UNDERSTANDING SCIENCE 101

FOR TEACHERS

RESOURCE LIBRARY

[Resource library](#) : [Image library](#):



To save: right-click (Windows) or control-click (Mac) on the image and select "Save image."

Chicxulub crater

Image caption:
The map shows the location of the Chicxulub impact crater, the site of a massive asteroid impact.

See the Understanding Science page where this image appears.

[<< Back to search results](#)

<https://earthsky.org/>



EarthSky *Updates on your cosmos and world*

[TONIGHT](#) | [SPACE](#) | [EARTH](#) | [HUMAN WORLD](#) | [STARGAZE](#) | [COMMUNITY PHOTOS](#) |

A close look at the Rosette Nebula

Posted by Claudia Crowley in TODAY'S IMAGE | 2 days ago

The Rosette Nebula glows in this telescopic photo by EarthSky Community member William Shaheen.





<https://earthsky.org/earth/dinosaur-killing-asteroid-caused-indias-deccan-traps>

Dinosaur-killing asteroid caused India's Deccan Traps?

Posted by Deborah Byrd in EARTH | SCIENCE WIRE | May 4, 2015

The asteroid that killed the dinosaurs 66 million years ago might have mobilized an existing volcanic system, causing vast lava flows.



An area in the Deccan Traps, via [Gerta Keller](#)

The Deccan Traps in India – between 17°–24° North and 73°–74° East – are a place where you can find layer upon layer of solidified rock. This region is thought to have been the site of extremely powerful volcanic activity in the past, so powerful that it caused mile-deep lava over an area as large as the state of California. Last week (April 30, 2015) geophysicists at UC Berkeley announced their evidence that this vast region is related to the asteroid thought to have slammed into the ocean half a world away. The impact near Chicxulub, Mexico – 66 million years ago – is believed by many researchers to have killed the dinosaurs and ushered in the age of mammals. The Berkeley researchers say the impact probably “rang the Earth like a bell,” triggering powerful earthquakes and volcanoes around the globe, including those that created the Deccan Traps.

The Berkeley researchers – who published their work online April 30 in *The Geological Society of America Bulletin* – cited the “uncomfortably close” coincidence between the Deccan Traps eruptions and the asteroid impact 66 million years ago. Team leader Mark Richards of UC Berkeley said in a [statement](#):

If you try to explain why the largest impact we know of in the last billion years happened within 100,000 years of these massive lava flows at Deccan ... the chances of that occurring at random are minuscule.

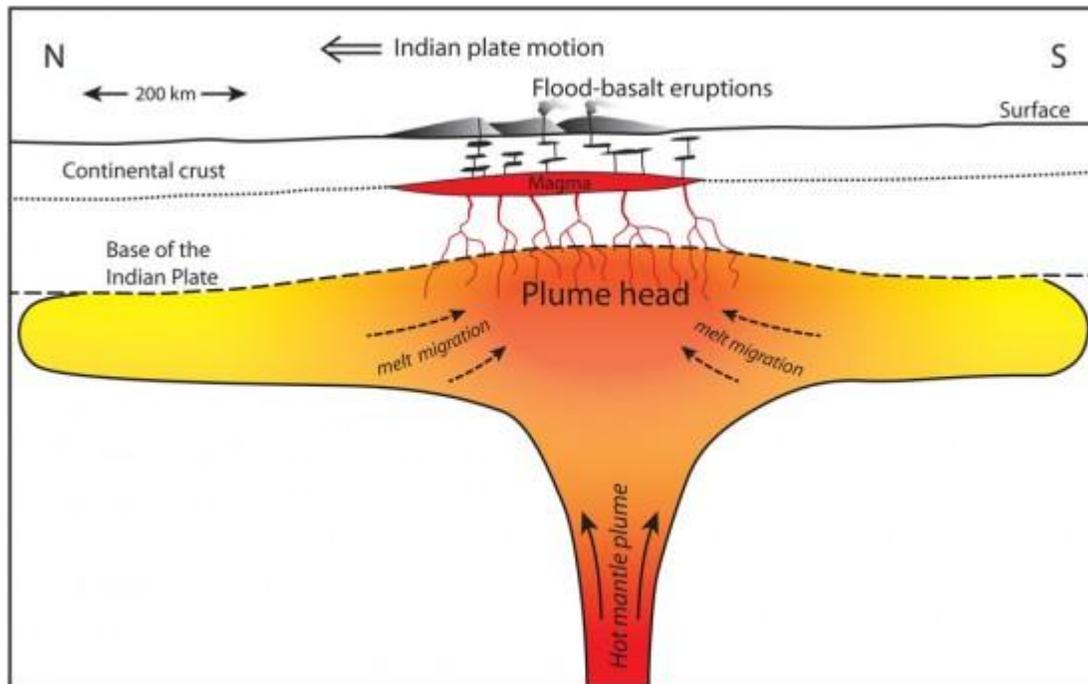


Illustration of a hot mantle plume “head” pancaked beneath the Indian Plate. The theory by Richards and his colleagues suggests that existing magma within this plume head was mobilized by strong seismic shaking from the Chicxulub asteroid impact, resulting in the largest of the Deccan Traps flood basalt eruptions. Image via [UC Berkeley](#)

Richards had proposed in 1989 that plumes of hot rock, called “plume heads,” rise through Earth’s mantle every 20-30 million years and generate huge lava flows, called *flood basalts*, like the Deccan Traps. It struck him as more than coincidence that the last four of the six known mass extinctions of life occurred at the same time as one of these massive eruptions.

Richards teamed up with other experts at UC Berkeley to try to discover faults with his radical idea that the impact triggered the Deccan eruptions. Instead, the team came up with supporting evidence.

Paul Renne of the Berkeley Geochronology Center re-dated the asteroid impact and mass extinction two years ago and found them essentially simultaneous, but also within approximately 100,000 years of the largest Deccan eruptions.

A third co-author on the study, UC Cal Berkeley's Michael Manga, demonstrated that seismic events like large earthquakes could trigger volcanic eruptions. By Richards' estimate, the asteroid impact must have generated the equivalent of a magnitude 9 or larger earthquake everywhere on Earth, sufficient to ignite the Deccan flood basalts as well as other places around the globe, including at mid-ocean ridges. Manga said:

It's inconceivable that the impact could have melted a whole lot of rock away from the impact site itself, but if you had a system that already had magma and you gave it a little extra kick, it could produce a big eruption.

Richards and his team visited India in April 2014 to obtain lava samples for dating, and noticed pronounced *weathering surfaces*, or terraces, in one area. Geological evidence suggests that these terraces may signal a period of quiescence in Deccan volcanism prior to the Chicxulub impact. Richards concluded:

This was an existing massive volcanic system that had been there probably several million years, and the impact gave this thing a shake and it mobilized a huge amount of magma over a short amount of time.

[Read more from UC Berkeley](#)

Bottom line: Vast lava flows in India – known as the Deccan Traps – might have been mobilized into activity by the asteroid impact that killed the dinosaurs 66 million years ago.

Timeline of Cretaceous–Paleogene extinction event research

From Wikipedia, the free encyclopedia

Relevant citations from the timeline:

1980 Alvarez and others reported spikes in the level of platinum group metals like iridium at the Cretaceous–Tertiary boundary in Italy, Denmark, and New Zealand. They interpreted this sudden introduction of rare-earth metals as evidence for an asteroid impact, to which they attributed the mass extinction at the end of the Cretaceous Period.

Smit and Hertogen independently reported the presence of an iridium spike at the Cretaceous–Tertiary boundary in Spain, which they also attributed to the impact of an extra terrestrial body and credited with the Cretaceous–Tertiary extinctions.

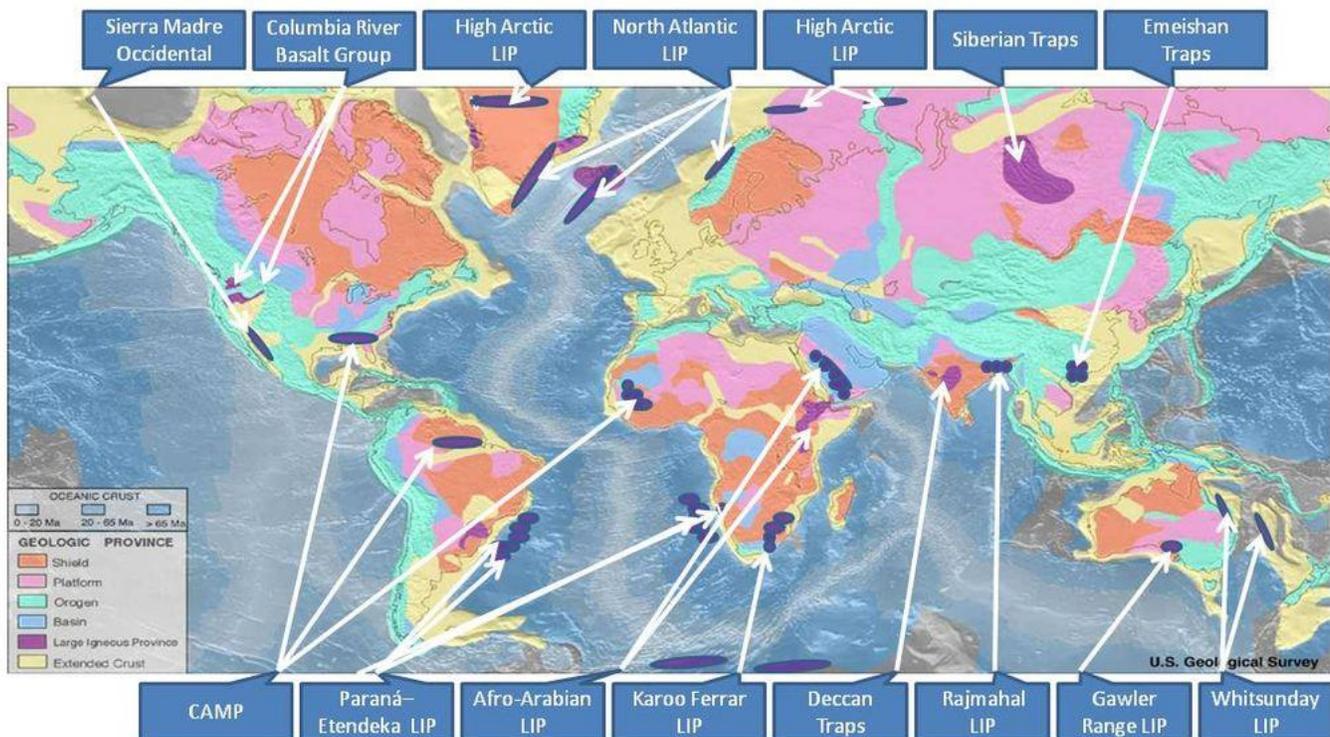
May: Smit and Hertogen published the results of their research on the K–T boundary at Caravaca and proposed that an asteroid impact at the end of the Cretaceous triggered the coeval mass extinction.

June 6th: Alvarez and others published their hypothesis that an impact event caused the extinction of the dinosaurs.

Penfield wrote to Walter Alvarez, suggesting the Yucatan structure as the possible crater of the end-Cretaceous impactor, but received no response.

1981 Penfield and Camargo reported the existence a crater dating to the K–T boundary in the Yucatan Peninsula during a presentation to the Society of Exploration Geophysicists. They proposed that this crater may have been caused by the same impact event to which Alvarez had recently attributed the mass extinction at the end of the period.

1995 N. Bhandari and others reported the discovery of the Cretaceous–Tertiary boundary in the Deccan Traps. The Deccan Traps are a series of basalt layers released by intermittent volcanic activity across the Cretaceous–Tertiary boundary. During the periods between eruptions, normal sediments accumulated in deposits called intertrappeans. The basalt deposits can be dated with paleomagnetism and radiometric dating, so the intertrappeans can be dated fairly precisely. Bhandari and the other researchers found the third intertrappean to have been laid down at the K–T Boundary. This intertrappean proved highly significant because this layer alone among the traps contained elevated iridium levels, so the volcanic activity itself could not be the source of the iridium. Further, Intertrappean III preserves dinosaur eggshells, proving that they survived up to the very end of the Cretaceous.



This map shows the locations of the large igneous provinces of the world. The Deccan Traps are represented by the purple region in India.

Williamborg Own work - based on markup of USGS map

Source: <https://earthquake.usgs.gov/research/structure/crust/maps.php> ; original upload english wikipedia 22 April 2005 by SEWilco.



Pinal Museum and Club News

351 N. Arizona Blvd., Coolidge, AZ

Pinal Gem and Mineral Club meeting

November 18, 2020, live on Facebook Event Page

www.pinalgeologymuseum.org

Ray Grant raycyn@cox.net.

Pinal Geology and Mineral Museum will be closed until further notice due to the health emergency.

Please enjoy our expanding website until we reopen.

www.pinalgeologymuseum.org

New content is being added weekly!



November Meeting
Presentation

Happens on YouTube
No sign in needed

7pm Mountain/Arizona Time
November 18, 2020

Visit www.pinalgeologymuseum.org for link to our channel

Tishia Stewart
Aquifers,
with special notes on the Ogallala Aquifer



PINAL
GEOLOGY & MINERAL
MUSEUM
351 Arizona Blvd., Coolidge AZ.

Pinal Geology & Mineral Museum

October 22 at 3:00 PM · 🌐

November Presentation! 11/18/2020. National Geographic Environmental Educator Tishia Stewart will speak on "Aquifers, with Special Notes on the Ogallala Aquifer." 7pm AZ/MOUNTAIN Time. Facebook Event Page: <https://fb.me/e/1Ndffulti>

A letter from the Tucson Gem and Mineral Society

October 26, 2020 Dear TGMS Members; In 1955, the Tucson Gem and Mineral Society (TGMS) put on the first Tucson Gem and Mineral Show® in a grade-school cafeteria. From such humble beginnings sprang what is now collectively called the Tucson Gem, Mineral & Fossil Showcase, which occupies over 50 venues around town from mid-January through mid-February. [In case you've missed it in all the hoopla surrounding the commercial shows, our Show, the Main Show, takes place in the Tucson Convention Center.] The Tucson Showcase is by far the world's largest gathering of gem, mineral, fossil, meteorite and related earth science collectors, dealers and museum scientists. The Arizona Department of Tourism estimates it annually brings about \$130 million dollars to the Tucson economy making it our biggest tourism-related event. TGMS takes parental pride in the economic/commercial juggernaut the Showcase has become, but we remain a local, volunteer-based, non-profit, Earth-Science education-focused group open to all comers. [Please visit www.tgms.org for more info.] Our Show is TGMS's annual gift to Tucson...it is the only show by and for Tucsonans and we are extremely grateful for the support we have always received from our community. We hoped and planned for the best during these difficult days of COVID-19 but find events have conspired to force us to the painful decision to take 2021 off and focus on bringing things back at a higher level in 2022! As members of the Tucson community, we feel we should explain the reasoning behind this decision while emphasizing our full support for the remainder of the 2021 Tucson Showcase in whatever form it takes.

Most importantly, TGMS does not want to be responsible for a single COVID-19 fatality or serious illness. Our Show is run by volunteers and many of us are in high-risk demographics...as are many of our participants and attendees. Consulting closely with the Pima County Health Department, the Mayor and City Manager's offices and the good folks who run the TCC, it is clear that applying the mandated COVID-19 protocols to reduce risk would mean drastically restricted attendance and curtailment of many of our programs. Second, our Show is much different from the rest of the Showcase. We are the public show with a unique combination of exhibits, school children visits, educational programs, scientific networking and family outreach. We annually create a world-class museum that magically disappears forever after just four days. Our equally enthralling "gift shop" includes a cadre of superb retail gem, mineral, fossil, meteorite, book and jewelry dealers, who complement the exhibits. This unique combination sets the TGMS Show apart from all the other shows in town.

Third, we expect that our Show dazzles everyone with displays of exquisite minerals, gems, jewelry and fossils brought by the worldwide Mineral and Gem Community. Restrictive COVID-19 travel policies mean many of our major domestic, and most of our international museum exhibitors and friends either won't or can't travel here. This effectively eliminates both our exhibits and educational programs. COVID-19 related risks clearly make it impossible for TGMS to put on anything more than a shadow of our accustomed vibrant event. So, we've decided that it makes more sense to conserve our resources and apply them towards a Blockbuster 2022 Tucson Gem and Mineral Show®. We promise to pull out all the stops to bring you an unparalleled group of eye-popping fluorescent mineral exhibits, colorful minerals and gems from around the world, and some special surprises to shake everyone out of their post-Covid lethargy!!! See you in 2022!

Les Presmyk: TGMS President

Peter Megaw: TGMS Show Co-Chair

Richard Gottfried: TGMS Show Co-Chair

Patricia McClain: Executive Manager

ARIZONA CLUB MEETINGS ARE LIKELY CANCELLED DUE TO HEALTH CONCERNS!

CANCELLED



Apache Junction Rock & Gem Club

Meetings are on the 2nd Thursday
Next Meeting: 2020, 6:30 pm

www.ajrockclub.com

@ Club Lapidary Shop

2151 W. Superstition Blvd., Apache Jct.



Pinal Gem & Mineral Society

Meetings are on the 3rd Wednesday
Next Meeting: October 21, 2020, 7:00 pm on

YouTube go to their website for more info

www.pinalgemandmineralsociety.org

@ Artisan Village

351 N. Arizona Blvd., Coolidge



Daisy Mountain Rock & Mineral Club

Meetings are on the 1st Tuesday
(unless a Holiday then 2nd Tuesday)

Next Meeting: November 12, 2020, 6:30 p.m.

www.dmrnc.com

Please Sign Up:

<https://signup.com/go/UhSogGa>.

We're using this to track the # of attendees we have.

@ Anthem Civic Building

3701 W. Anthem Way, Anthem, AZ



West Valley Rock & Mineral Club

Meetings are on the 2nd Tuesday
Next Meeting: November 10, 2020, 6:00 pm

www.westvalleyrockandmineralclub.com

ZOOM Meeting – Register on website

2400 S. 247th Ave., Buckeye, AZ



White Mountain Gem & Mineral Club

Meetings are on the 1st Sunday
(unless a Holiday then 2nd Sunday)

Next Meeting: 2020, 1:00 pm

www.whitemountain-azrockclub.org

@ VFW Hall

381 N. Central, Show Low



Maricopa Lapidary Society, Inc

Meetings are on the 1st Monday
(unless a Holiday then 2nd Monday)

Next Meeting: 2020, 7:00 pm

www.maricopalapidarysociety.com

@ North Mountain Visitor Center

12950 N. 7th St., Phoenix



Mineralogical Society of Arizona

Meetings are on the 2nd Thursday

(February & September meeting on the 3rd Thursday)

Next Meeting: November 12, 2020, 7:30 pm

www.msaaaz.org

Zoom Meeting - Register on MSA website



Wickenburg Gem & Mineral Society

Meetings are on the 2nd Friday
(February & December on the 1st Friday)

Next Meeting: 2020, 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 2020, 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

____ 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.

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.msaz.org
- Payson Rimstones Rock Club
- Sossaman Middle School
- White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org
- Wickenburg Gem & Mineral Society
<http://www.wickenburggms.org>
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438
- Staples Foundation
www.staplesfoundation.org
- Anita Aiston
- Peter & Judy Ambelang
- Stan & Susan Celestian
- Russ Hart
- Will & Carol McDonald
- Debbie Michalowski
- Janet Stoeppelmann
- Dennis & Georgia Zeutenhorst

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

Phone:
602-973-4291

Editor E-Mail:
scote@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.

We're on the Web!

Visit us on  and at:
www.earthsciencemuseum.org

NOTICE:

ESM's next meeting will be at North Mountain Visitor Center, 12950 N 7th St, Phoenix, on Tuesday, TBA 2020, at 6:30 p.m.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

**EARTH SCIENCE MUSEUM
NON-PROFIT BOARD OF DIRECTORS**

Harvey Jong	President
Mardy Zimmermann	VP Outreach
Shirley Coté	Secretary/ Treasurer

Cindy Buckner, Doug Duffy, Ray Grant,
Bob Holmes, Chris Whitney-Smith

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

