



# 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](http://www.earthsciencemuseum.org), [scote@earthsciencemuseum.org](mailto:scote@earthsciencemuseum.org), 602-973-4291

January 2018  
Volume 7, Issue 1

## ESM Outreach Update:

By Mardy Zimmermann, Outreach and Education Coordinator

January was a busy month for the Outreach Program. The Flagg Show was very successful for us. The Fluorescent Tent was a big hit and saw over 2,400 visitors. Our Egg Carton Program served over 550 at a very comfortable pace that allowed us to experiment with giving ESM Teacher Kits and bags of minerals, rocks, and fossils to Earth science teachers, and home school teachers. This new approach worked well and will become part of our program for the Flagg Show. We were able to serve several home school teachers and a teacher from the San Carlos Indian Reservation. The ESM is ordering sets of rock, mineral and geology guide books, and we will be putting additional kits together. Big thanks to all who helped with the Egg Carton Program and those who donated minerals.

In addition, I attended the Science Fair at Fulton Elementary School and served 225+ students and parents with a display of Rocks, and a "hands - on" experience with pumice. Lynne & Terry Dyer were also there with their rock, mineral & fossil display. Harvey and I attended the Basis School with the Egg Carton Program with 50 students participating. This was our first experience with older students--6th to 12th grades. It became clear that the program is much more popular with younger students, but the older students did an excellent job and the pace was easy,

Our Outreach Program volunteers are also participating in work-days for the museum. Specifically, we are helping to catalog mineral supplies still in the building and also getting the amethyst from Brazil sorted at the Bone

Yard. I am taking the better pieces home and cleaning them so we can make flats of the best material. The amethyst is in barrels with sawdust and newspaper as packing and significant cleaning is needed. Work on this project will continue in February.

Mardy setting up egg cartons at Basis



Jan 18<sup>th</sup> Fulton Elementary Science Fair, Chandler; 230+ adults and students visited the Dyer's display

## Upcoming Outreach Scheduled by the Dyers

Feb 1st Learning Foundation (3rd graders)  
Mesa

Feb 20th. EDUPRIZE (1st graders)  
Gilbert

Mark your calendar for these open to the public events!

Feb 24th Gilbert Outdoors Expo  
Riparian Preserve

Mar 10th Pinal Museum "Touch Space"  
Coolidge

Mar 20th Velma Teague Library, Glendale



## AZ Mining, Mineral & Natural Resources Education Museum Update January 2018

### January Museum Workdays

Guest articles by Charlie Connell and Shirley Coté  
Photos by Charlie Connell

Three very successful work days were held in January at the Museum.

On January 10<sup>th</sup>, Catie Carter, curator, along with 9 volunteers (including three new volunteers) gathered to continue maintenance of the outside displays. It was a little damp at first, but it warmed up when everyone got moving.

Charlie called for a safety meeting and reviewed the tasks planned for the day.



Front: Catie Carter, Cindy Buckner, and Bill Yedowitz  
Back: David Tibbits, Denny Zeutenhorst, Jerry Ohlund, Richard Zimmermann and John Tibbits  
Doug Lindsay (not in the picture)

Three major jobs to complete were planned: Install new miner's moss on the stamp mill sluice table; stamp mill incline winch removal and new winch installation; bone yard trip for general cleanup and to retrieve buckets of quartz to run through the primary crusher and then through the stamp mill.



Jerry removed the sluice table riffles and gave both the sluice table and riffles a thorough cleaning in preparation for the installation of new miner's moss (green indoor/outdoor carpet). Meanwhile inside the museum, Doug, Richard and Cindy carefully measured and cut the carpet to the appropriate size.



Then Doug L., Richard, Jerry, and Catie installed the miner's moss onto the cleaned sluice table while Cindy observed. Afterwards, the riffles were replaced.





In order to preserve the new miner's moss, a new plywood cover was measured, and cut. Richard had the honor of operating the saw while Jerry held up the electrical cord and Denny and David observed.



Next, David applied a coat of grey exterior paint while Catie held the paint tray. After the paint dried, Richard and Denny installed the new table cover then placed a few blocks on it to keep it in place. We will now get many more years of use out of the sluice table.



With the controller switch to the old incline winch missing, a battery was attached to operate the old winch.



Then, Bill manually operated the old winch spooling up the cable and lifting the incline cart which was then secured while the new winch was installed.





The new winch is now installed and operational.



David removed the old winch from the mill.



Stuart cleans the drive belt.

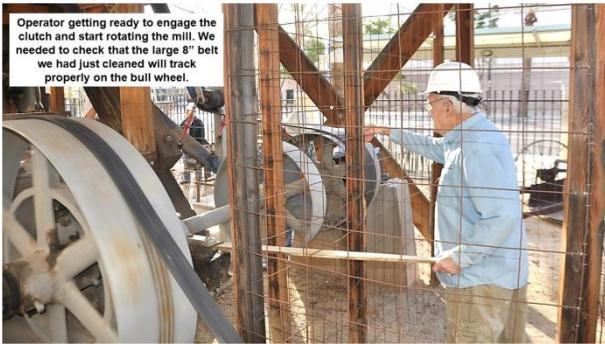


## January 15, 2018 Museum Workday

We had another good work day with Catie Carter, curator and (10) volunteers participating including Doug Lindsay, Bill Yedowitz, Alex Sandoval, Lynne Dyer, John Tibbits, David Tibbits, Cynthia Buckner, Charlie Connell, Chuck Messersmith, and Stuart Harrah.

We worked on the stamp mill preparations to run it including cleaning the stamp mill main drive belt, repairing the issue with the incline cart, cleaned the area in and around the stamp mill, tightened the bolts down on the mill and inspected the mortar box. We ran the mill at the end of the day and all 5 stamps worked fine. The mill is ready to run!





Stuart is ready to engage the clutch.



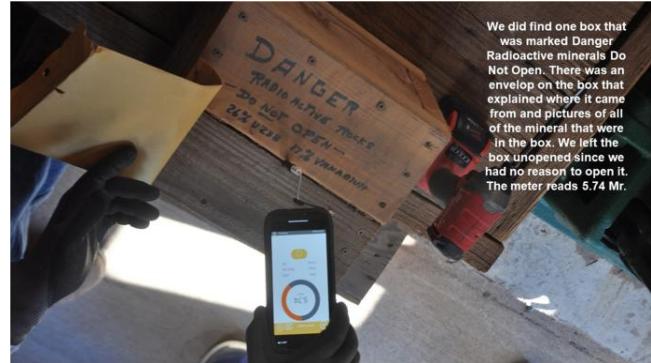
Charlie rights the incline cart.



Charlie lowers the incline cart with the new winch.



Meanwhile Lynne and Cindy inventory the radioactive minerals in the outdoor cabinet.



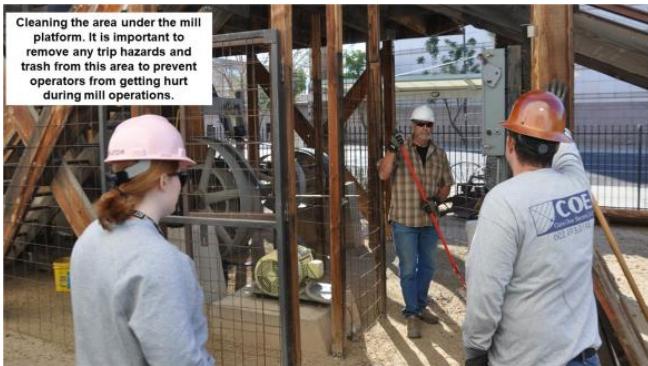
Tightening all of the nuts on the bull wheel



John cleans the mortar box.



Water system runs prior to the dropping of the stamps.



Bill rakes up under the mill platform.



Millmen on the mill's operators station getting ready to drop the stamps. This was after all of the stamp mill bolting had been checked, the drive belt cleaned, bearings lubricated and the general area around the mill cleaned.

The stamp mill stamps worked fine and everything on the mill is in good shape and ready to run

Charlie & John prepare to run the stamp mill.



Left to right Doug Lindsay, Bill Yedowitz, Alex Sandoval, Lynne Dyer, John Tibbitts, David Tibbitts, Cynthia Buckner, Catie Carter. (not in picture Charlie Connell, Chuck Messersmith & Stuart Harrah)

Catie and some of the volunteers gather in the hoist house after the day's accomplishments.

### January 24, 2018

Hi Monday Crew, first I want to thank you all for your continued help at the museum! We have made great progress on the stamp mill and equipment as well as cleaning up and organizing the area. It was greatly needed and the work you have put in definitely shows.

I also want to update you all that yesterday the head of UA Facilities approved the pigeon abatement plan and gave University Pest Control the go-ahead to finally get rid of the pigeons. This will be a multistep process that includes regular trapping, full cleanup, installation of a new shock system along the roof, window sills, and ledges (they assessed the old one and decided to install a brand new system), and installation of mesh around the roof line and around solar panels. This is a big step for the museum and something we have been recommending for a while, so it's great news! Hopefully we'll get it started sooner than later so that we can begin stamp mill demonstrations for the public this spring.

Again, thank you!!! For all the work you guys have done for us. Charlie and I will keep you updated about future plans, and please call or email me with any questions or comments.

Regards,  
Catie Carter  
Curator  
[cscarter@email.arizona.edu](mailto:cscarter@email.arizona.edu)  
[703.577.6449](tel:703.577.6449)

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### STAY TUNED!!

Look for the January 22<sup>nd</sup> workday accomplishments at the museum in our next newsletter.



## Arizona Rocks 56

Text and photos by Ray Grant

Jerome is an old mining town that has remade itself into a tourist destination. It was a rich mining district located in 1876 (although there are reports of the Spanish and Native Americans mining in the area before that). By the 1950s it was largely mined out with just some small-scale operations after that. The production numbers for the mining district are gigantic: over 3.5 billion pounds of copper, over 57 million ounces of silver, 1.5 million ounces of gold, and almost 100 million pounds of zinc.

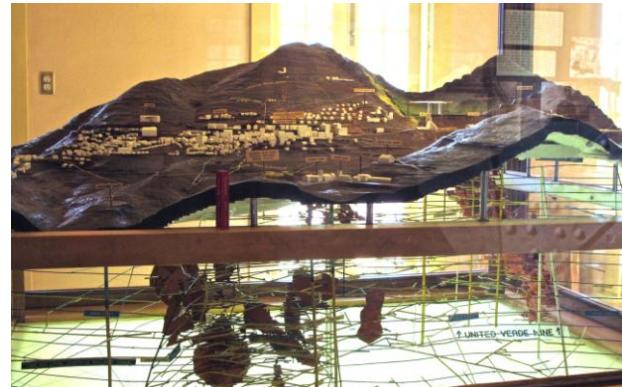
The geology of the deposits is really interesting, as it is not like all the other big copper deposits in Arizona. The metals in the mines at Jerome were deposited on the ocean floor by black smokers. Black smokers are present in the ocean today and are depositing metals in potential ore deposits on the ocean floor. These ocean floor deposits are not economical at present because of the cost of mining them under several miles of ocean.

Two billion years ago there was no Arizona only ocean existed here. Starting about 1.8 to 1.7 billion years ago Arizona was added to North America, and at Jerome the ocean floor and the metal deposits were incorporated into the continental rocks. The Jerome State Historic Park at the Douglas Mansion in Jerome has good exhibits explaining the geology of the ore deposits and I recommend it as a place to visit. Also, stop at the Audrey Head frame Park on your way to the Douglas Mansion.

**Black Smoker from the United Verde Mine in the Museum that is similar those forming in the ocean today**



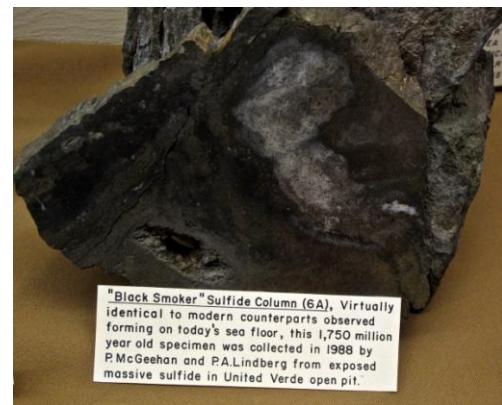
Jerome State Historic Park in the Douglas Mansion



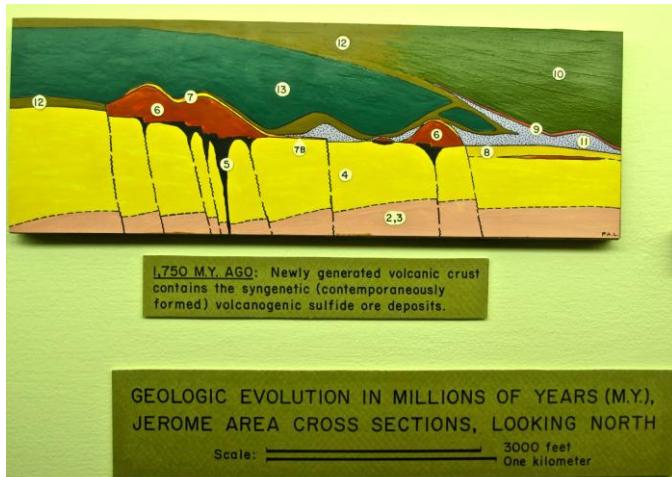
Model in the Museum showing Jerome and all the mining under ground



Minerals on exhibit in the Museum



"Black Smoker" Sulfide Column (6A), Virtually identical to modern counterparts observed forming on today's sea floor, this 1,750 million year old specimen was collected in 1988 by P.McGeehan and P.A.Lindberg from exposed massive sulfide in United Verde open pit.



Part of the exhibit on the geology of the Jerome ore deposits



This shaft in the Head frame Park is 1,900 feet deep, to get to the ore under Jerome.

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## SCAM ALERT

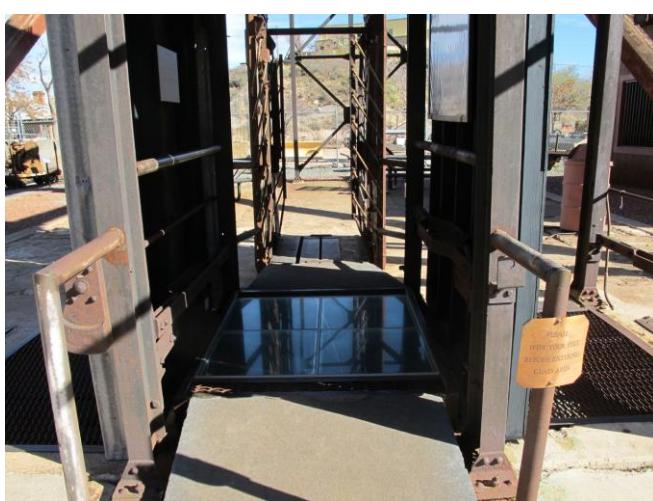
There is a SCAM targeting rock hounds out there! It's an e-mail with Subject: "2018 Gem and Mineral Show Volunteer Sign Up Invite", From:"Nancy Howerter"[info@signupgenius.com](mailto:info@signupgenius.com)

It is a SCAM and we need to let all the clubs know so they can avoid responding to it. They absolutely should NOT respond! It is coming from some outfit in Charlotte, North Carolina!

Thanks,  
Jim McGarvey  
Webmaster, [RMFMS.ORG](http://RMFMS.ORG)  
Treasurer, RMGSI



Audrey Head frame Park in Jerome



At the Head frame Park walk out on the glass plate and look down.

# AZ Rock & Gem Shows

## Quartzsite Gem Shows

Desert Gardens - Gem & Mineral  
**January 01 - February 28, 2018**

For more information:

<https://www.desertusa.com/cities/az/quartzsite.html#ixzz4zkxIvsjg>

## Tucson Rock, Gem & Fossil Shows

**January 19 through  
 February 11, 2018**

<http://www.tucsongemshows.net/coming.html>

### Tucson Gem & Mineral Society Tucson Gem & Mineral Show®

**February 8-11, 2018**

Thursday - Saturday 10-6  
 Sunday 10-5

SMG Tucson Convention Center  
 260 S. Church Ave, Tucson



### Apache Jct. Rock & Gem Club Annual Show

**February 17, 18, 2018**

Sat. 9-5; Sun. 10-4

Adults \$3; Students \$1

Children 12 and under FREE

Skyline High School

845 S. Crismon Rd.

Mesa, AZ



### Pinal Gem & Mineral Society

**March 10, 2018**

**3<sup>rd</sup> Annual Touch Outer Space and Pinal  
 Mineral Show at the Museum  
 (See page 12 for more information)**



### Daisy Mountain Rock & Mineral Club 2018 Anthem Gem & Mineral Show

**March 24, 25, 2018**

Sat. 9-5; Sun. 10-4

Adults \$3; Students & Seniors \$2

Children 12 and under FREE

Boulder Creek High School

40404 N. Gavilan Peak Pkwy.  
 Anthem, AZ



### Mohave County Gemstoners

Annual Show

**May 5-6, 2018**

Sat. 9-5; Sun. 9-4

Free Admission

Kingman Academy of Learning  
 High school gym; 3420 N. Burbank  
 Kingman, AZ



### Coconino Lapidary Club

Annual Show

**June 1-3, 2018**

Free Admission

Fri. & Sat. 9-5; Sun. 9-4

Silver Saddle Outdoor Market

9001 US-89 N, Hwy. 89 N and Silver  
 Saddle Road  
 Flagstaff, AZ

# Rock & Gem Clubs



## Apache Junction Rock & Gem Club

Meetings are on the 2<sup>nd</sup> Thursday

Next Meeting: February 8, 2018, 6:30 pm

[www.ajrockclub.com](http://www.ajrockclub.com)

@ Club Lapidary Shop

2151 W. Superstition Blvd., Apache Jct.



## Daisy Mountain Rock & Mineral Club

Meetings are on the 1<sup>st</sup> Tuesday

Next Meeting: February 6, 2018, 6:30 p.m.

[www.dmrmc.com](http://www.dmrmc.com)

@ Anthem Civic Building

3701 W. Anthem Way, Anthem



## Maricopa Lapidary Society, Inc

Meetings are on the 1<sup>st</sup> Monday  
(unless a Holiday then 2<sup>nd</sup> Monday)

Next Meeting: February 5, 2018, 7:00 pm

[www.maricopalapidarysociety.com](http://www.maricopalapidarysociety.com)

@ North Mountain Visitor Center

12950 N. 7<sup>th</sup> St., Phoenix



## Mineralogical Society of Arizona

Meetings are on the 2<sup>nd</sup> Thursday

Next Meeting: February 8, 2018, 7:00 pm

[www.msaaz.org](http://www.msaaz.org)

@ Franciscan Renewal Center,

5802 E. Lincoln Dr., Scottsdale

# Next Meeting



## Pinal Gem & Mineral Society

Meetings are on the 3<sup>rd</sup> Wednesday

Next Meeting: February 21, 2018, 7:00 pm

[www.pinalgemandmineralsociety.org](http://www.pinalgemandmineralsociety.org)

@ Artisan Village

351 N. Arizona Blvd., Coolidge



## West Valley Rock & Mineral Club

Meetings are on the 2<sup>nd</sup> Tuesday

Next Meeting: February 13, 2018, 6:30 pm

[www.westvalleyrockandmineralclub.com](http://www.westvalleyrockandmineralclub.com)

@ American Legion Post #53

402 E. Narramore Ave., Buckeye



## White Mountain Gem & Mineral Club

Meetings are on the 1<sup>st</sup> Sunday

(unless a Holiday then 2<sup>nd</sup> Sunday)

Next Meeting: February 4, 2018, 1:00 pm

[www.whitemountain-azrockclub.org](http://www.whitemountain-azrockclub.org)

@VFW Hall

381 N. Central, Show Low



## Wickenburg Gem & Mineral Society

Meetings are on the 2<sup>nd</sup> Friday

Next Meeting: February 9, 2018, 7:00 pm

[www.wickenburggms.org](http://www.wickenburggms.org)

@ Coffinger Park Banquet Room

175 E. Swilling St., Wickenburg



### Pinal Geology & Mineral Museum

## Pinal Museum and Club News

**Next Pinal Gem and Mineral Club meeting**

**Wednesday, February 21, 2018**

Program by Stan Celestian

[www.pinalgemandmineralsociety.org](http://www.pinalgemandmineralsociety.org)

Last September, we added a rock dig for kids next to the building. Here kids are able to collect some specimens to take home.



## Request for Mining Memorabilia

We have desert landscaping around the dig area and would like to add some mining memorabilia. If you have or know someone who has ore carts, ore buckets or other appropriate items that they are willing to donate (tax deductible) please contact Ray Grant at ([raycyn@cox.net](mailto:raycyn@cox.net)).

Here is information about our upcoming mineral identification and geology classes.



### Artisan Village of Coolidge presents

#### INTRODUCTION TO GEOLOGY – MINERAL IDENTIFICATION



**DATE:** SATURDAY, FEBRUARY 17, 2018

**TIME:** 9:00AM-NOON

**COST:** \$20.00 (STUDENTS FREE WITH PAYING ADULT)

**LOCATION:** PINAL GEOLOGY AND MINERAL MUSEUM, ROOM 2

ARTISAN VILLAGE OF COOLIDGE,  
351 N. ARIZONA BLVD., COOLIDGE, AZ

**INSTRUCTOR:** RAY GRANT

**CONTACT:** [RAYCYN1@MAC.COM](mailto:RAYCYN1@MAC.COM)

The class will include lecture material and hands on work with specimens. It will cover properties of the most common minerals and how to identify them.

**PLEASE, PRE-REGISTER NOW AT: [WWW.ARTISANVILLAGEOFCOOLIDGE.ORG](http://WWW.ARTISANVILLAGEOFCOOLIDGE.ORG)**



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### Artisan Village of Coolidge presents

#### INTRODUCTION TO GEOLOGY – GEOLOGY OF PINAL COUNTY



**DATE:** SATURDAY, MARCH 17, 2018

**TIME:** 10:00AM-NOON

**COST:** \$10.00(FREE TO STUDENTS WITH PAYING PARENT)

**LOCATION:** PINAL GEOLOGY AND MINERAL MUSEUM, ROOM 2

ARTISAN VILLAGE OF COOLIDGE,  
351 N. ARIZONA BLVD., COOLIDGE, AZ

**INSTRUCTOR:** RAY GRANT

**CONTACT:** [RAYCYN1@MAC.COM](mailto:RAYCYN1@MAC.COM)

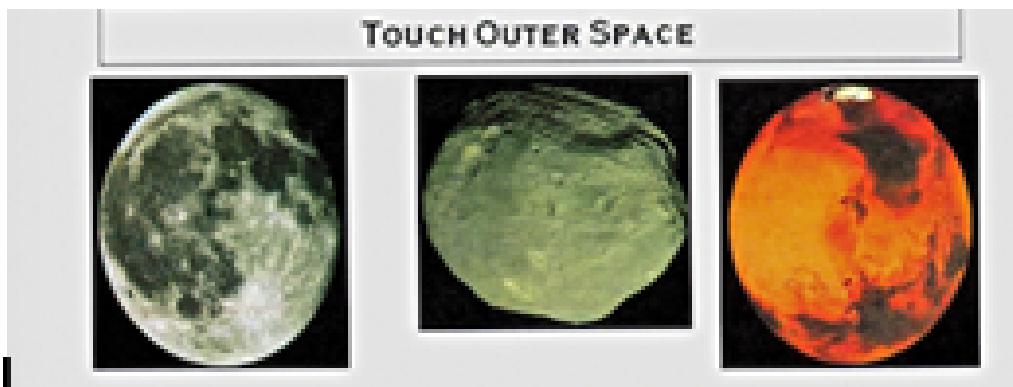
Learn about the geology around Florence and in Pinal County. Two billion years ago there was no Arizona or Pinal County only ocean. Find out what happened between then and now. In this area during that long time there were mountains, canyons, oceans, volcanoes and earthquakes, the climate was hot and cold and there were many different creatures including dinosaurs, mammoths and saber tooth tigers. Find out what the rocks you see on the hills around here are, how old they are and how they formed.

**PLEASE, PRE-REGISTER NOW AT: [WWW.ARTISANVILLAGEOFCOOLIDGE.ORG](http://WWW.ARTISANVILLAGEOFCOOLIDGE.ORG)**



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**Touch Outer Space and Pinal Gem and Mineral Show  
Saturday, March 10, 2018 from 10 AM to 4 PM**

**Where:** The Pinal Geology and Mineral Museum is located in the Artisan Village of Coolidge at 351 N. Arizona Boulevard in Coolidge, Arizona

You will be able to touch samples from Mars, the Moon, and the asteroid Vesta from 10AM to 1PM. Dr. Carleton Moore is bringing specimens to the Museum. There will be dealers set up selling minerals, meteorites, fossils, and lapidary material (10AM to 4PM). Admission to the Event and Museum is free. There are exhibits of rocks, minerals, and fossils. Special exhibits include fluorescent minerals, Arizona minerals, and Arizona geology. There is a kid's treasure hunt and a fossil dig where every kid can find and take home a small fossil collection. The Earth Science Museum will be represented at this 3<sup>rd</sup> Annual show by Lynne and Terry Dyer with their traveling museum of rocks, minerals and fossils along with Mandy Zimmermann with the egg carton program where you can make your own rock/mineral collection for \$1.

For more information go to [pinalgeologymuseum.org](http://pinalgeologymuseum.org) or call Ray Grant at 520-251-5419. Sponsored by the Pinal Gem and Mineral Society, the Mineralogical Society of Arizona, and the Artisan Village of Coolidge.

## ESM's Meeting Notice

ESM's next meeting will be at the Century Branch library, 1450 E. Highland, Phoenix, on Sunday, February 25, 2018, at 1:30 p.m.

**BECOME A MEMBER!**  
Join the Earth Science Museum's



### IS IT TIME TO RENEW YOUR MEMBERSHIP?

Please renew today! ☺☺☺

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**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](http://www.flaggmineralfoundation.org)

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society

<http://maricopalapidarysociety.com/>

Mineralogical Society of AZ

[www.msaaz.org](http://www.msaaz.org)

Payson Rimstones Rock Club

Sossaman Middle School

White Mountain Gem & Mineral Club

[www.whitemountain-azrockclub.org](http://www.whitemountain-azrockclub.org)

Wickenburg Gem & Mineral Society

<http://www.wickenburggms.org>

[www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438](http://www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438)

Staples Foundation

[www.staplesfoundation.org](http://www.staplesfoundation.org)

Anita Aiston

Stan & Susan Celestian

Russ Hart

Will & Carol McDonald

Debbie Michalowski

Dennis & Georgia Zeutenhorst

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*We're on the Web!*

Visit us on  and at:  
[www.earthsciencemuseum.org](http://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](http://www.earthsciencemuseum.org).

**NOTICE:**

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**THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!**

**EARTH SCIENCE MUSEUM  
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