



Arizona Geological Society Newsletter

SEPTEMBER 2018

SEPTEMBER 4, 2018 DINNER MEETING

Who: **Jim Reed** is the featured speaker. See abstract below.

Where: We will recommence our regular dinner meetings at the Sheraton. Sheraton Tucson Hotel and Suites, 5151 East Grant Road, (at the intersection of Grant and Rosemont on the North side of Grant in the **SABINO BALLROOM** (enter at northwest corner of the building) and go upstairs to the meeting room.

When: Cash Bar at 6 p.m.—Dinner at 7 p.m.—Talk at 8 p.m.

Cost: Members \$30, Guests \$33, Students Members free with online reservation (\$10 without).

RESERVATIONS ARE REQUIRED: Reserve on the AGS website (<http://www.arizonageologicalsoc.org/events>) by **11 am on Friday, August 31st**. Please indicate Regular (Grilled Chicken Breast with a Sundried Tomato and Thyme Cream Sauce), Vegetarian (Quinoa Roasted Vegetable Root), or Salad (Chicken Caesar Salad) meal preference. Please cancel by **Friday, August 31st at 11 am** if you are unable to attend - no shows and late cancellations will be invoiced.

The September dinner meeting is sponsored by



If you are interested in sponsoring a dinner meeting, please email:
vpmarketing@arizonageologicalsoc.org

ABSTRACT

Applying Geological Exploration Methods Towards the Location of Clandestine Gravesites

By **Jim Reed, NecroSearch International**

In 1988, NecroSearch International, a non-profit organization, was founded to provide

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the international law enforcement community with scientific assistance in locating clandestine gravesites related to homicides. Thirty years later, NecroSearch has assisted police and district attorneys with more than 300 cases in 40 states on four continents. Although geology is just one of many different disciplines that are provided by NecroSearch volunteers, this presentation will focus on how geological exploration methods have been applied towards solving crimes.

Examples of the following geological topics as applied towards actual homicide investigations will be presented:

- Computer Methods (e.g. multivariate grid and block modeling)
- Drone-Based Methods (e.g. LIDAR, MAG, Multispectral Imagery, Thermal Infrared)
- Geochemistry (e.g. soil gasses, alternate light source detection)
- Geomorphology (e.g. subsidence and soil desiccation)
- Geophysics (e.g. electromagnetics, ground penetrating radar)
- Geotechnical (e.g. compaction and penetrometer surveys)
- Hydrogeology (e.g. surface and groundwater flow and evidence transport)
- Mineralogy (e.g. tracing minerals to source locations)
- Paleontology (e.g. urbanite index fossils as time horizons)
- Stratigraphy (e.g. Steno's law of superposition and soil mixing)

More information may be obtained at www.NecroSearch.org.

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~ ~ Welcome New Members ~ ~

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Tiffany McGlade

Bridget Moffly

Melli Rose

David Saba

Nawik Saraiva

ABOUT THE SPEAKER



Jim Reed is the Director of R&D at RockWare, Inc, a geological software development and consulting company with offices in Golden, Colorado and Lugano, Switzerland. Prior to founding RockWare in 1983, Jim worked at NASA, Arch Coal, Freeport, AMAX, and Wold Minerals. Jim received his geological education at the University of Wyoming and Washington University in St. Louis. He is currently a councilor with the Colorado Scientific Society and a volunteer with NecroSearch International. Over 30,000 indi-

viduals, corporations, universities, and government agencies on all continents use Jim’s software products.

Arizona Geological Society Membership Stats (8/29/2018)

Total Membership	Professional Members	Student Members	Organizational Members
445	335	103	7

Member Spotlight: August 2018 Borderlands Meeting



Top: AGS members socialize while watching a documentary film about the Sweet Home Mine.

Fissure Damage in Apache Junction

By Michael Conway, Arizona Geology e-Magazine, AZGS



The 2018 monsoon season has produced some fresh earth fissure activity near Apache Junction east of Phoenix.

On 9 Aug. 2018, ~ 2 inches of rain fell on Apache Junction in northern Pinal County. An existing earth fissure in the southwest corner of Apache Junction reopened and undermined a section of Houston Avenue that had previously collapsed in the July 2017 (Figure 1). The recent collapse was triggered as a van rolled across the undermined section of road (Figure 2). Fortunately, the driver was not injured; a tow truck hauled the van to safety.

On the following Monday morning, 13 Aug., AZGS's Joe Cook (Earth Fissure program manager) and Brian Gootee (drone pilot) examined the fissure and captured video illustrating the impact on Houston Avenue along with diagnostic features of the earth fissure north of the road (<https://tinyurl.com/EF-HoustonAve-2018>). The drone portion of the video, about 45 seconds long, begins north of the junction of E Baseline Ave. and S. Meridian Road and follows the fissure for about 2,500 feet to its intersection with Houston Ave.

The Houston Ave. earth fissure was first reported in the 1980s. It's active today and continues to disrupt roads and damage private property.

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With further monsoon rains, we can expect new or re-activated earth fissure activity in basins in Cochise, La Paz, Maricopa and Pinal Counties where fissures have broken out in the past. The Natural Hazards in Arizona viewer displays the locations of all earth fissures mapped in southern Arizona. The viewer includes strategies for minimizing the impact of fissures on roads, infrastructure, and property.



How you can help.

We continue to monitor earth fissure activity and update our earth fissure study area maps as needed. But we need your help. Please report any new or reactivated fissures to either

Joe Cook

(AZGS Earth Fissure Program manager;
joecook@email.arizona.edu)

or Mike Conway
(fmconway@email.arizona.edu).

Thanks!

Background.

Earth fissures are an anthropogenic hazard in some basin in southern and southeastern Arizona. The first fissures were reported in the late 1920s from near Eloy in the Picacho Basin. Fissures result from withdrawing groundwater from subterranean aquifers. As the groundwater is withdrawn, sediment grains are compacted, and the basin floor subsides. Subsidence drives tensional forces that result in fissure formation along the basin perimeter or above and adjacent to bedrock highs in the subsurface.

The original blog article is located here:

<http://blog.azgs.arizona.edu/blog/2018-08/earth-fissure-undermines-houston-avenue-apache-junction-arizona>

July 2018 was 4th warmest July on record for the globe

by The National Oceanic and Atmospheric Science Administration



Scorching temperatures broke heat records around the world last month, which ranked as the fourth warmest July on record. Excessive warmth during the first seven months of 2018 made it the fourth warmest year to date for the planet.

Climate by the numbers

July 2018

The average global temperature in July was 1.35 degrees F above the 20th-century average of 60.4 degrees. This was the fourth highest for July in the 139-year record (1880–2018). Last month was also the 42nd consecutive July and the 403rd consecutive month with temperatures above average.

The year to date // January through July

The year-to-date average global temperature was 1.39 degrees F above average of 56.9 degrees. This is 0.48 of a degree lower than the record high set in 2016 for the same YTD period.

Read a breakdown of NOAA's latest monthly global climate analysis here:

<https://www.ncei.noaa.gov/news/global-climate-201807>

Read more about notable climate facts and stats in the original article, located here:

<http://www.noaa.gov/news/july-2018-was-4th-warmest-july-on-record-for-globe>

Access NOAA's climate reports and related maps and images here:

<https://www.ncdc.noaa.gov/sotc/>

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Arizona Geological Society is grateful to Freeport-McMoRan, Inc. for their generous support of our student members!

Freeport-McMoRan sponsored student dinners for the 2018 AGS monthly meetings.



AGS MEMBERSHIP APPLICATION OR RENEWAL FORM

YOU CAN RENEW OR SIGN UP as a new member and pay online. Please go to our website, arizonageologicalsoc.org. Or use the form below if you are more comfortable with the old school approach.

Please mail check with membership form to: Arizona Geological Society, PO Box 40952, Tucson, AZ 85717

Dues (check box) 1 year: \$35; full-time student (membership is free)

NEW MEMBER or RENEWAL? (circle one) Date of submittal _____

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All newsletters will be sent by email. If you do not have an email address, we will mail a hard copy to you, but we cannot guarantee timeliness.

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