Arizona Geological Society Newsletter

JUNE 2018

JUNE 5, 2018 DINNER MEETING

Who: **Gary Huckleberry** is the featured speaker. See abstract below.

Where: 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, Student 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, June 1st. Please indicate Regular (Seared Chicken Breast Wrapped with Prosciutto), Vegetarian (Four Cheese Ravioli), or Salad (Chicken Caesar Salad) meal preference. Please cancel by **Friday, June 1st at 11 am** if you are unable to attend - no shows and late cancellations will be invoiced.

The June dinner meeting is sponsored by:

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

ABSTRACT

The Geoarcheology of Ancient Water Control in the Southwest: Lessons from the Past

By Gary Huckleberry, Dept of Geosciences, University of Arizona

The control and management of water in the North American Southwest dates back at least 3500 years and played a key role in long-term adaptations of ancient societies. Water was

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captured, diverted, and stored for purposes of domestic consumption and agricultural production. Strategies varied depending on local environmental factors and cultural needs. Hundreds of miles of canals were constructed along perennial rivers like the Salt, Gila, and Verde. Earthen reservoirs were constructed to capture runoff in the desert interior. Evidence for this ancient hydraulic infrastructure can be quite subtle depending on the scale of engineering and geological processes that modify the archaeological record. An understanding of geological surficial processes is essential for studying these ancient waterworks given that the physical remains are often defined by stratigraphy and best understood when placed within a geomorphic context. I will discuss some of my geoarchaeological research on ancient water control, focusing on the southern deserts of Arizona where water management was a hallmark trait of ancient societies like the Hohokam (A.D. 450-1450). This research makes clear that people have long dealt with the challenges of population growth and climate variability in arid environments, and that human resilience to stress varied through time. Such insights are relevant to the challenges we face today in the Southwest.

ABOUT THE SPEAKER

Gary Huckleberry received his doctorate from the Department of Geosciences at the University of Arizona and has conducted over 30 years of consulting and research in North and South America. He was a professor in the Department of Anthropology at Washington State University from 1995 to 2004, and served as Co-Editor of Geoarchaeology: An International Journal from 2007-2017. His specialties include geoarchaeology, geomorphology, soils, and stratigraphy and most of his research has been in desert environments. Current research projects include reconstructing El Niño history through study of flood deposits along the north coast of Peru, analysis of ancient agricultural soils in the high Atacama of Chile, excavating shell midden sites along the Gulf of California to understand ancient coastal adaptations, and identifying indigenous water control features in the North American Southwest for purposes of understanding human ecology and supporting modern Native American water rights claims.

~~Welcome New Members~~

Okiemute Enaughe Gail Heath El Janati M'hamed

AGS By-Laws Change Effective March 6th, 2018

Effective March 6, 2018, the AGS membership has voted to change Article IX, paragraph 2(d) of the AGS Bylaws from:

(d) 50-Year Members – members in good standing who have maintained continuous membership for a minimum of 50 years shall have the privileges of a full member of the Society and will be excused from further payment of dues.

to:

(d) 50-Year Members – members in good standing who have maintained membership for a minimum of 50 years shall have the privileges of a full member of the Society and will be excused from further payment of dues.

AGS Executive Committee Members Needed!

Are you interested in the future of the **Arizona Geological Society (AGS)**? Would you like to make a meaningful contribution to the geology profession in Arizona? If so, the AGS needs you! The **Arizona Geological Society Executive Committee** is currently looking for volunteers – professional geologists and students – to serve in these four open committee positions:

- **Vice Treasurer**
- **Vice Secretary**
- **Councilor**

The Executive Committee meets **once a month from 6 pm to 7:30 pm**. Your small commitment of time each month can make a huge difference for the AGS. If you are interested in one of these volunteer positions and would like more information, please contact the Arizona Geological Society by email at:

info@arizonageologicalsoc.org

Arizona Geological Society Membership Stats (5/30/2018)

Total Membership	Professional Members	Student Members	Organizational Members
436	339	90	7

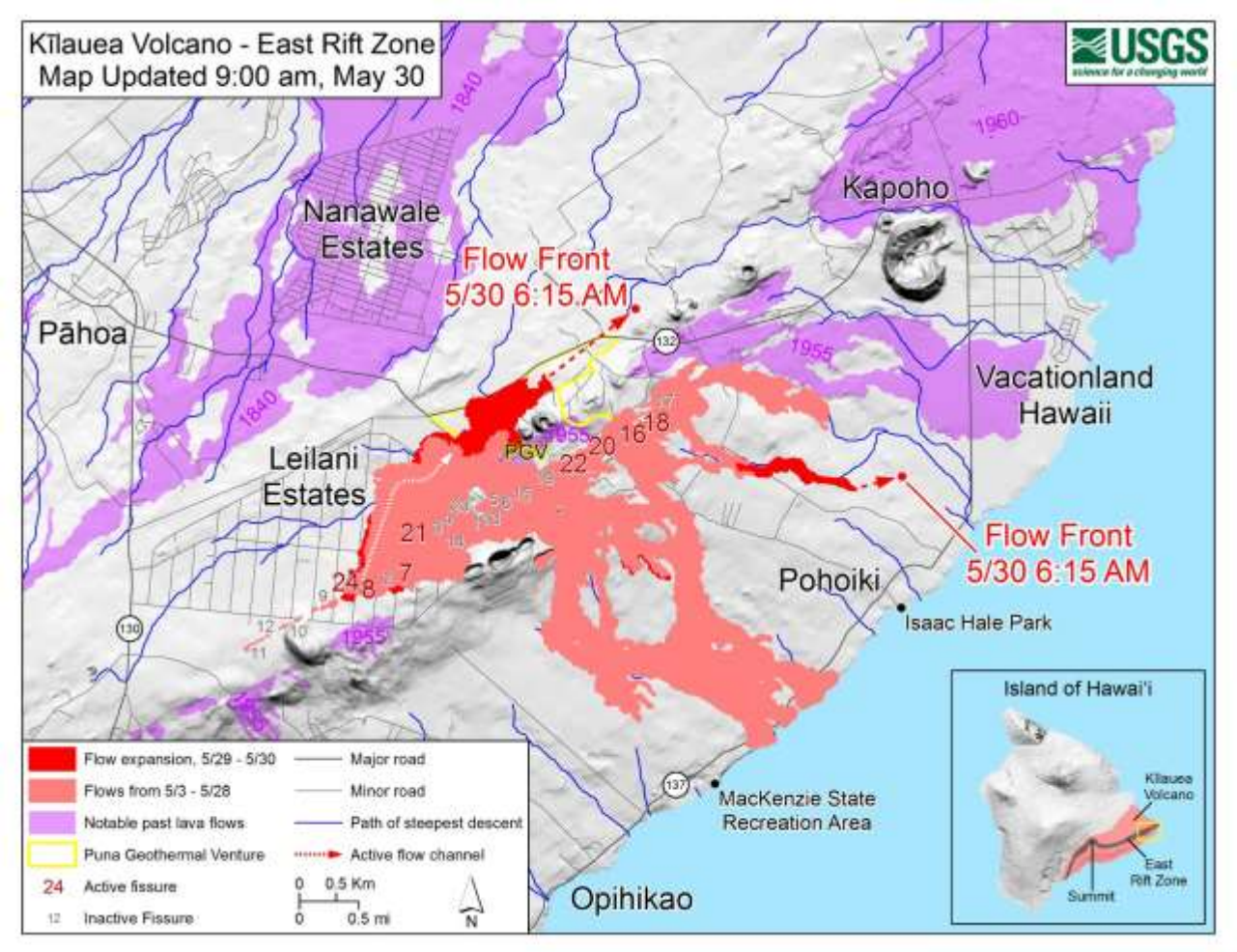
Member Highlights: Dinner Meeting on May 1st, 2018

Above: Dr. William B. White regales the AGS membership with a fascinating presentation on cave science.

Figures and Photos of Kilauea's East Rift Zone and Summit Eruptions by the U.S. Geological Survey

This is a developing story, so please keep checking the USGS Hawaiian Volcano Observatory Kīlauea status website for daily activity updates. In addition, public-domain current photos, videos, and maps are available. You can also visit the USGS home page, the USGS Facebook page, and the USGS Twitter feed as updates become available.

Check out this page for a summary of the recent activity: https://www.usgs.gov/news/k-lauea-volcano-erupts



Map of Kīlauea Volcano's lower East Rift Zone as of 9:00 a.m. HST, May 30, 2018. Given the dynamic nature of Kīlauea's lower East Rift Zone eruption, with changing vent locations, fissures starting and stopping, and varying rates of lava effusion, map details shown here are accurate as of the date/time noted—and could have changed rapidly since that time. (USGS Volcanoes Facebook Page. May 30th, 2018.)

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At Kīlauea Volcano's summit, explosions occur about two times a day, producing ash up to between 8,000 and 10,000 feet above sea level. There are several minor explosions that occur, intermixed with larger explosions. The largest so far reached 30,000 ft above sea leel on May 17th, 2018.

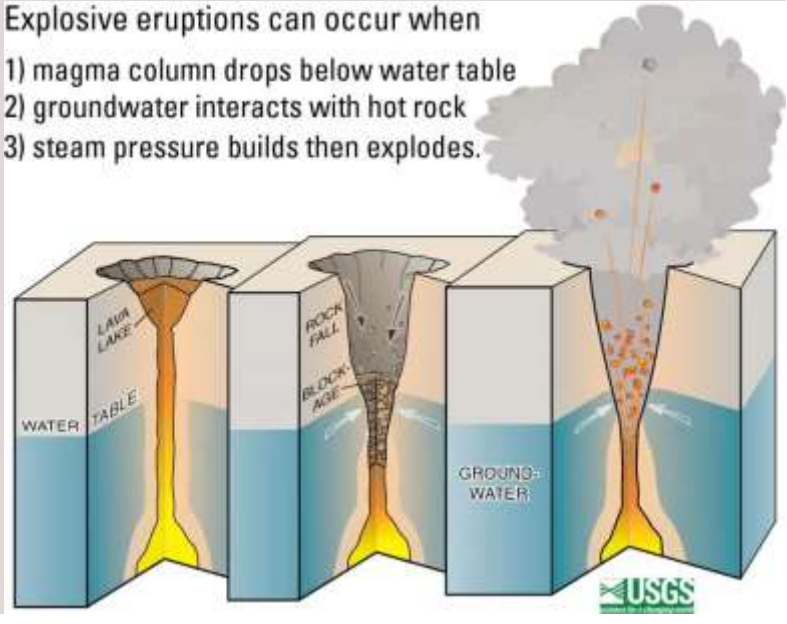
The larger explosions produce ashfall that travels downwind. For forecasts of where the ash is headed and how much ash could fall, consult the Ash3D model output at:

https://volcanoes.usgs.gov/observatories/hvo/activity_2018.html

The model is updated twice daily with new wind information.

The diagram to the right illustrates how at Kīlauea, when the lava column drops below the water table, groundwater may come into contact with with magma or hot rocks, causing violent steam explosions as the water flash-boils. During these explosions, ballistic blocks up to 6 ft across could be thrown in all directions and up to half a mile or more from the summit crater. Smaller (pebble-size) rocks could be thrown several miles downwind, and ash may fall over wide areas. In the 1924 explosions, ash may have reached as high as 20,000 feet above sea level, as far north as North Hilo (Hakalau), in lower Puna, and as far south as Waiohinu. More information on the 1924 eruptions may be found at:

https://volcanoes.usgs.gov/volcanoes/kilauea/geo_hist_1924_halemaumau.html



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Various images from USGS Volcanoes featuring Kilauea's East Rift Zone eruption.

Top Left: The ocean entry is producing a laze plume. Laze is formed when hot lava hits the ocean sending hydrochloric acid and steam with fine glass particles into the air. Health hazards of laze include lung damage, and eye and skin irritation.

Top Right: Fissure 22 fountain erupting lava flows into Leilani Estates subdivision.

Bottom Left: Close-up of Fisure 22 lava fountaining during overflight.

Bottom Right: Lava flows advancing through areas of lush vegetation.

New AZGS Publication: Cretaceous Tectonic Setting of Colorado Plateau

New AZGS Contributed Report (CR-18-G) ~ Notes on the Cretaceous and Laramide of the Colorado Plateau by William R. Dickinson.

William R. Dickinson was in the process of preparing a comprehensive publication on the Mesozoic stratigraphy and tectonic setting of the Colorado Plateau when he died abruptly while on a geoarchaeological expedition to Tonga (Spencer, 2016). The book was largely written and the completed chapters were published posthumously by the Geological Society of America (Dickinson, 2018).

Dickinson had drafted figures and written figure captions and some text for three additional chapters that were not included in GSA Special Paper 533. The topics of those three chapters are as follows:

- Lower Cretaceous Cedar Mountain – Burro Canyon deposystem
- Upper Cretaceous Mancos – Mesaverde deposystem
- Laramide Orogeny

Direct link to AZGS repository digital copy of Dickinson 2018: http://repository.azgs.az.gov/uri_gin/azgs/dlio/1892

Please contact the AGS Secretary if your company is interested in advertising in this monthly newsletter.

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.

FREEPORT-McMoRAN

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 _____

Name: _____ Position: _____

Company: _____

Mailing Address: _____

Street: _____ City: _____ State: _____ Zip Code: _____

Work Phone: _____ Home Phone: _____

Fax Number: _____ Cellular Phone: _____

E-mail: _____ Check this box if you do not have an email address ☐

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.

If registered geologist/engineer, indicate registration number and State: _____

Enclosed is a _____ tax-deductible contribution to the ☐ J. Harold Courtright or the ☐ M. Lee Allison