



Arizona Geological Society Newsletter

OCTOBER 2017

October 3, 2017 DINNER MEETING

Who: Lily Jackson 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, Students Members free with on-line reservation (\$10 without).

RESERVATIONS ARE REQUIRED: Reserve on the AGS website (<http://www.arizonageologicalsoc.org/events>) by **11 a.m. Friday, September 29**. Please indicate Regular (Sweet Chili Chicken, vegetable medley and steamed rice), Vegetarian (Risotto) or Salad (Grilled Chopped Chicken) meal preference. Please cancel by **Friday, September 29 at 11 a.m.** if you are unable to attend - no shows and late cancellations will be invoiced. (Please call or text David Briggs at 520-784-3954 if you must cancel after the deadline. We may be able to sell your meal and you won't be billed).

The October
dinner meeting
is sponsored
by:



ABSTRACT

Andean river sediments as a window into the tectonic history of Ecuador

Lily Josephine Jackson, Ph.D. Candidate
University of Texas at Austin

The Andes of South America form the longest mountain range on Earth spanning over 7000 km. In contrast to much of the Andes, the tectonic history of the Ecuadorian segment involves one or many accretionary events with proposed timing ranging from the Late Cretaceous to the Eocene. Additionally, Ecuador's two Cordilleras (Eastern Cordillera and Western Cordillera) may have been among the most recent segments of the Andes to attain high topography, though the age of the Cordilleras remains debated. Topographic growth causes erosional unroofing, producing detritus that is then deposited adjacent to the growing mountain belt and incorporated into the sedimentary record of the event. Modern river sediments faithfully represent the outcrop geology within their catchments. Pairing detrital zircon U-Pb geochronology of river sands with quantitative

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GIS models of surface geology allows for interpretation of sediment provenance within river catchments. In Ecuador, we find that various morphotectonic regions have diagnostic U-Pb age spectra that reveal erosion and sediment transport related to key tectonic events. Morphotectonic provinces of Ecuador include the: (1) Late Cretaceous-Cenozoic sub-Andean and Oriente retroarc foreland basin; (2) Eastern Cordillera; (3) Interandean Valley; (4) Western Cordillera; and (5) forearc lowlands and coastal plain. In the Oriente foreland basin, Cretaceous-Neogene sediments are the dominant surface exposures, with Jurassic arc-related rocks restricted to the sub-Andean Zone. Diagnostic U-Pb age spectra for these foreland zones contain Jurassic, Triassic, and Cretaceous age peaks. In contrast, Eastern Cordillera exposures are metamorphosed Paleozoic-Mesozoic rocks and non-metamorphosed Triassic-Jurassic igneous intrusions. Diagnostic U-Pb age spectra for the Eastern Cordillera contains large age populations of Proterozoic and Paleozoic ages representing recycled cratonic material. Western Cordillera surface geology involves Late Cretaceous basement rocks, Cretaceous-Paleogene sedimentary rocks and Cenozoic volcanic cover. Diagnostic U-Pb age spectra for the Western Cordillera contain Neogene-Quaternary age populations with minor Triassic and Cretaceous ages. River samples draining Paleogene units in the easternmost Western Cordillera show Proterozoic and Paleozoic ages indicative of exhumation, erosion, and westward transport of detritus from the Eastern Cordillera. Furthermore, the dominant Proterozoic and Paleozoic ages that characterize the Eastern Cordillera rivers provide support for multiple recycling events prior to the current tectonic configuration of the Ecuadorian Andes.



ABOUT THE SPEAKER

Lily Jackson is a Ph.D. Candidate at the University of Texas at Austin in the Jackson School of Geosciences and a National Science Foundation Graduate Research Fellow.

Lily is a native Arizonan from Prescott. She graduated

magna cum laude with a bachelor of Science from the University of Arizona in 2014. While in Tucson, Lily was the recipient of the Arizona Geological Society Scholarship Award in 2013, and served as a Councilor to the AGS Executive Committee in 2014. Lily was named the outstanding senior in Geosciences for her graduating class.


Lily's research focuses on the Cenozoic tectonic history of northern Peru and Ecuador. Lily uses sedimentary basin analysis, detrital zircon U-Pb geochronology, stable isotope geochemistry, and field geology in her research.

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Member Spotlight: Marisa Lerew

AGS President-Elect *Marisa Lerew* was born in Phoenix, Arizona. She lived in Japan and Belgium growing up, but she eventually returned to Arizona. Marisa received a Bachelors of Science degree from the University of Arizona in 2012. Since that time, Marisa has been employed at the Silver Bell Mine. She lives in Tucson with Larry, her husband of 24 years, and their two dogs, a Chihuahua named Dora and a boxer named Murphy. Dora thinks she's the boss. The rest of the family lets her believe it's true.

Marisa has a black belt in Shuri Ryu karate and was the USA Karate Federation national champion in 1997. This skill has come in handy during AGS Executive Committee meetings. She has served on the AGS Executive Committee from 2015 to 2017 as a Counselor .



ABOVE: Marisa with her husband, Larry

How did you first become interested in geology?

I've always been interested in rocks and minerals. My mom would find interesting rocks and always had a pile of them under the kitchen sink waiting to be washed. We'd exchange rocks that we thought were neat. When I took a geology class at Pima College, it just clicked. I switched majors before the end of that semester.

What was your first job?

My very first job was at the El Dorado movie theater here in Tucson. I worked in the concession stand for about a year and a half until I convinced my manager that I'd make a good assistant manager. After I was promoted, I transferred to the Foothills. Larry (my husband) was their projectionist. I met him on my first day as an assistant manager. He's definitely the best thing I ever got from a job.

What was your first job as a geologist?

My first geology job was at Silver Bell Mine. I was hired in May of 2013 and worked as a core splitter for the rest of the year until they could officially put me in the budget as a geologist. I split core, measured specific gravity and did point load tests. I also learned core logging from Kim Wilson (AGS President in 2014). She was a great teacher and mentor. I was thrilled to have a job that I enjoyed. I still feel like I have the best job in the world; there's always something new and interesting to learn.

What do you consider your greatest professional achievement?

My greatest professional achievement is being elected president of AGS. It may sound corny, but I feel that it's a real honor.

How about your greatest achievement EVER?

This is a hard question. I think I would have to say graduating and receiving my degree is my greatest accomplishment. Going back to school as an adult was hard. There were a lot more things going on in life, and sometimes it was a real struggle. I'm proud that I persevered because there

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What are your hobbies?

Honestly, I have too many hobbies. I play the ukulele and pennywhistle (not at the same time), and I also like to watercolor. I'm not great at any of them, but I enjoy all of them.

Water, Whiskey or Wine?

This is so un-geologist-like, but with those choices, I have to say water. If you added pineapple rum to the list then...

Thanks, Marisa! I look forward to seeing you lead AGS in 2018.



ABOVE: Selfie with stray dog in Peru.

2018 Dinner Meetings

In the ballot that was sent to members in last month, members were asked if they enjoyed the August meet-and-greet format. The overwhelming response was YES! Based on this, we are planning to do two or three alternate format meetings in 2018. The Executive Committee is open to your ideas. Ideally, we would like to have some sort of technical presentation (but perhaps a shorter one) in an informal atmosphere.

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AGS OFFICERS for 2018

In September, the following slate of officers was approved by the membership:

- ◆ President - Marisa Lerew
- ◆ Vice President, Field Trips - Wolf Schuh
- ◆ Vice President, Marketing - Don Applebee
- ◆ *Secretary - VACANT*
- ◆ *Vice Secretary - VACANT*
- ◆ Treasurer - Mike Conway
- ◆ Past President - David Briggs
- ◆ Counselor 1 (18-20) - William Whitty
- ◆ Counselor 1 (18-20) - Matt Wetzel
- ◆ Counselor 2 (17-19) - Dan Aiken
- ◆ Counselor 2 (17-19) - Leandra Marshall
- ◆ Counselor 3 (18-20) - Colin Campbell

Additional officers were appointed after the initial ballot was presented to the membership They are:

Karen Wenrich—2018 VP of Programs

Bob Cummings was appointed to the open Counselor 3 position by the Executive Committee on September 20.

Stan Evans was appointed to the Vice Treasurer position for the remainder of 2017 and 2018 by the Executive Committee.

Secretary and Assistant Secretary positions are still open and we are seeking volunteers.

Thank you to all who are serving our Society on the Executive Committee. Your hard work is appreciated.

FALL FIELD TRIP

The fall field trip to Jerome will be postponed until Spring of 2018. We are working on another field trip for Fall 2018. Stay tuned!

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

Interested in an 8-day Grand Canyon Geology raft trip in 2018? Contact Alison Jones for more information. ajones@clearcreekassociates.com

SCHOLARSHIPS!!

Attention Students: The deadline for applications for the Courtright and M. Lee Allison Scholarships is Friday, October 27, 2017. Please go to the AGS website to download application forms and instructions. The scholarships will be awarded at the December dinner meeting.

AGS Dues Increase

On September 21, the AGS Executive Committee voted to raise membership dues, effective immediately. The last dues increase was over 10 years ago. Since then, our expenses have continued to go up. A dues increase is necessary to help balance our operating budget. Annual dues for regular members are now \$35/year. There are no multi-year membership levels. Students will continue to have free memberships, but they must be renewed each year.

The Executive Committee did not take this action lightly. Our membership dues were low compared to other professional organizations that offer similar benefits, and a dues increase was overdue. Some of AGS's significant expenses include insurance, tax preparation, website hosting, dinner meetings, and storage of publications.

While the cost of a dinner should cover our dinner meeting costs, we sometimes end up losing money because of no-shows who did not pay in advance (we do bill these folks, but our collection rate is not 100%) and free dinners for speaker and guests. In addition, we are required to purchase a minimum number of meals; if we cannot meet the minimum we are billed at the end of the year. Dinner sponsorships help, but do not cover the entire cost. We are evaluating the degree of this problem, and we may need to institute an advance payment policy only.

We are grateful to our membership for their continued support of AGS's mission to promote and encourage interest in the science of geology and in the geology of the State of Arizona . With your continued membership we can continue this mission into the future.

Your membership dues support the following AGS benefits:

Field Trips	Monthly technical presentations at dinner meetings
Networking opportunities	Online document repository with free downloads
Monthly newsletter	Scholarship awards
Being a part of something important!	



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~ ~ Welcome New Members ~ ~

James Davis	Don Gest	Frank Grinere	Troy Johnson
Brad Johnson	Michael Muenich	Jason Penner	Tejo Permadi
John Porter	Brian Rudolph		

Arizona Geological Society is grateful to Freeport-McMoRan, Inc. for their generous support of our student members! Freeport-McMoRan sponsored student dinners for the 2017 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, arizonageologicalsociety.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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Company: _____

Mailing Address: _____

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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.

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 Scholarship Funds.