



Arizona Geological Society Newsletter

DECEMBER 2017

December 5, 2017 DINNER MEETING

Who: Dr. Joellen L. Russell 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, December 1. Please indicate Regular (Roasted Turkey dinner), Vegetarian (Quinoa Roasted Vegetable Root) or Salad (Chopped Grilled Chicken Cobb Salad) meal preference. Please cancel by **Friday, December 1 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).

ABSTRACT

The ocean's role in the climate of the Anthropocene

by Joellen L. Russell

Associate Professor of Geosciences, University of Arizona, Tucson, AZ

Floats deployed by oceanographers are giving us ringside seats to the epic battle between the wind and the deep ocean around Antarctica which will determine the rate of global atmospheric warming over the next century. The poleward-shift and intensification of the Southern Hemisphere westerly winds has been shown to maintain the connection between the surface ocean and the atmosphere with the deep ocean even as the surface ocean warms. This “doorway” allows the vast deep ocean reservoir to play a significant role in the transient global climate response to increasing atmospheric greenhouse gases. Coupled climate and earth system models at low and high resolution all simulate poleward-shifted and intensified Southern Hemisphere surface westerly winds when subjected to an atmospheric carbon dioxide doubling. Comparisons of these simulations reveal how stratification, resolution and eddies affect the transient global climate response to increasing atmospheric greenhouse gases – and our collective fate.

ABOUT THE SPEAKER

Prof. Joellen Russell is the Thomas R. Brown Chair for Integrative Science and an Associate Professor at the University of Arizona in the Department of Geosciences. Her research uses global coupled climate models and earth system models to simulate the climate and carbon cycle of the past, the present and the future, and develops observationally-based metrics to evaluate these simulations. Before joining the University of Arizona, Dr. Russell was a Research Scientist at Princeton University and the National Ocean and

Continued on Page 2

Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (NOAA/GFDL). Prior to that, Dr. Russell was a fellow at the Joint Institute for the Study of Atmosphere and Oceans at the University of Washington. Prof. Russell currently serves as a member of the NOAA Science Advisory Board's Climate Working Group, as an Objective Leader for the Scientific Committee on Antarctic Research's AntarcticClimate21, and on the World Climate Research Program's Southern Ocean Region Panel. She is also an Associate Editor for the American Geophysical Union's journal, Paleoceanography and Paleoclimatology. Prof. Russell is one of the 14 scientists behind an amicus curiae brief supporting the plaintiff in the historic 2007 U.S. Supreme Court decision on carbon dioxide emissions and climate change, Commonwealth of Massachusetts, et al. v. U.S. Environmental Protection Agency. And in 2011, the American Association of Petroleum Geologists appointed her a Distinguished Lecturer. She received her A.B. in Environmental Geoscience from Harvard and her PhD in Oceanography from Scripps Institution of Oceanography, University of California, San Diego.



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Future of the Arizona Geological Society is Uncertain

by David F. Briggs, AGS President

Since its inception in 1948, the Arizona Geological Society (AGS) has been an organization run by members who volunteer their time to conduct Society business. Over the years, older members have been succeeded by younger professionals providing the AGS with an unbroken chain of leadership that has allowed the Society to flourish. The efforts of many volunteers have made it possible for the AGS to accomplish its mission to promote and encourage interest in the geology of the State of Arizona.

The AGS has sponsored field trips and symposia and published numerous field trip guidebooks and digests at irregular intervals. Monthly dinner meetings with presentations on a variety of topics have provided a forum for stimulating discussions, valuable networking opportunities, and camaraderie among colleagues and others with similar interests. The AGS has supported the next generation of geosciences professionals through academic scholarships to students at the University of Arizona, Arizona State University and Northern Arizona University. It has also helped educate government officials and the public about the importance of geology.

Recently, I have heard some members question the relevancy of the AGS. To be sure, our level of activity has waxed and waned over the years, but I believe it is misguided to consider the AGS irrelevant. All of the activities mentioned above are relevant to the Society's mission. However, there is one thing that is certain, none of AGS's accomplishments would have been possible had members not volunteered their time to make it a reality.

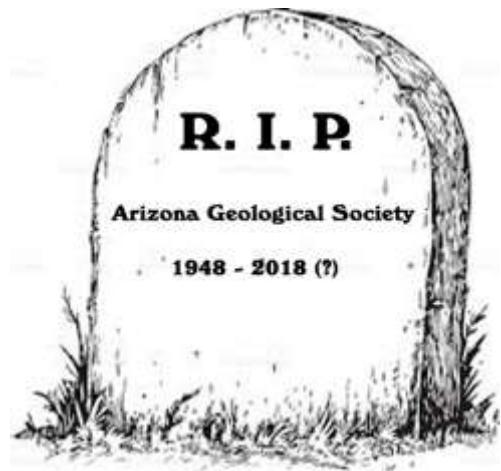
In recent years it has become increasingly difficult to find volunteers who are willing to make a commitment to serve on the Society's governing board and conduct other supporting activities. Unfilled positions and recent resignations from the Executive Committee threaten the viability of the organization itself. Without a full contingent of officers and councilors, AGS's ability to conduct business is in question.

Please take a moment to consider what you can do to help the Society. Whether it prospers and finds new and innovative ways to serve the geological community or becomes extinct, its future is in your hands. The Society's success in carrying out its mission depends on you and the amount of work you are willing to contribute to this endeavor. In addition to the satisfaction of knowing your efforts make a difference in our local world, you will gain a wider group of friends and colleagues and the appreciation of all AGS members.

New Dinner Payment Policy

The AGS Executive Committee voted in November to institute a pre-pay policy for dinner meetings, beginning in January 2018. This action was necessary due to the numbers of no-shows who never pay for the meal they reserved, even after frequent reminders. This has resulted in financial losses that are not acceptable for the Society.

For those members who need assistance with navigating the online payment, please contact an officer and we will be happy to walk you through the process.



2017 Courtright Scholarship Recipient

Michael A. Kassela

Michael Kassela received a B.S. in Geology from the University of Nevada, Las Vegas (UNLV) during the spring of 2017. While an undergraduate, he worked as an assistant to Jean Cline from 2014 to 2017 and completed a five-week field camp operated by Idaho State University during the summer 2016.

Michael is a first-year M.S. student at the University of Arizona. His research advisor is Eric Seedorff. He has recently completed a 10-day Ore Deposit Mapping short course offered by the Lowell Program in Economic Geology, where participants are taught and practice the Anaconda-style geologic mapping method and visited various mineral deposits in the Great Basin.

Michael's Master's research involves the geological mapping of the poorly studied Reese River mining district near Austin, Nevada, where approximately 20 million ounces of silver were mined from 96 Ma (K-Ar) veins cutting the Jurassic Austin pluton (159 Ma U-Pb). This research project will include detailed mapping of the various igneous phases of the Austin pluton, including the area of economically significant silver mineralization as well as the adjacent wall rocks. Data from petrographic studies, whole-rock geochemistry, electron probe analyses and U-Pb dating of the various intrusive phases will be incorporated into this mapping effort with a goal of structurally reconstructing of the original geometry of the Austin pluton and the mineralizing hydrothermal system. This research will help geologists understand the nature of the relationship between the silver-bearing veins and the Austin pluton.

Michael will receive the Courtright Scholarship award at AGS's December 5, 2017 dinner meeting.



2017 M. Lee Allison Scholarship Recipient Jessie K. Pearl

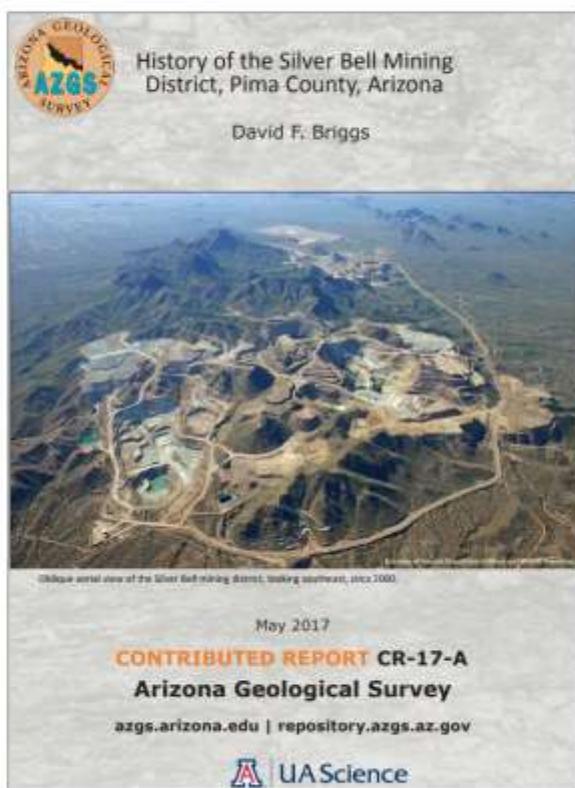
Jessie Pearl received a B. S. in Geology and Environmental Science from Tufts University in Medford, Massachusetts in 2013 and attended graduate school at the Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution during 2014-2015. Since 2015, Jessie has been working on a Ph.D in Geosciences at the University of Arizona, where her research interests are focused on paleoclimate, paleotempestology, dendrochronology, and global change. This research helps interpret the Earth's past landscapes and climate by analyzing coastal sediments and tree ring archives. She is particularly interested in the past 2,000 years of coastal landscapes, climate and storms that may help characterize future climate scenarios. This work will help prepare coastal communities for increased frequency and intensity of natural disasters and climate stresses. Her advisor is Kevin Anchukaitis.

Jessie has received numerous awards, fellowships and scholarships based on her academic and research achievements. She is a creative, intelligent and exceptional promising scientist, scholar and communicator, who is always willing to step forward to support her cohorts, peers and collaborators at a moment's notice. She communicates easily and precisely across a wide range of professional and public forums.

Jessie established a network of volunteers who live along Cape Cod's shore that monitor and report on storm-related changes at or near their residences. She currently serves as an instructor in the University of Arizona Sky School, an outreach group that introduces K-12 students in the Tucson metro area through day trips to explore the geology and ecology of the Sky Islands. Jessie is also a recipient of the University of Arizona's prestigious Carson Fellowship, which helps train graduate students improve their scientific communication skills and perform effective public outreach.

Jessie will be presented with the Courtright Scholarship award at AGS's December 5, 2017 dinner meeting.





New Publication

The Arizona Geological Survey recently released a report contributed by AGS President David Briggs on the History of the Silver Bell Mining District. This report can be downloaded at no cost from [this link](#).

The story of the Silver Bell mining district exemplifies the role copper mining played in the area's rich history. Over the past 150 years, the Silver Bell mining district evolved from a collection of small, intermittent, poorly financed and managed underground mining operations that struggled to make a profit from high-grade ores; to a small but profitable producer, deploying innovative mining practices and advancements in technology to successfully develop the district's large, low-grade copper resource.

Kudos to David!

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~~Welcome New Members~~

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Riley Burkart

Frank Hawkins

Brian Wernicke

Vivian Davidson

Yun Huang

Renzo Yaringaño

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.



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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)

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