7. Student Spotlight: Megan Miller, Arizona State University

Hailing from Arizona State University (ASU), Megan M. Miller is a Ph.D. student and research assistant in the Remote Sensing and Tectonic Geodesy Laboratory (RaTLab) led by Professor Manoochehr Shirzaei. Megan is keenly interested in understanding the mechanics behind deformational processes and where they originate. She combines interferometric synthetic aperture radar (InSAR), GPS, and borehole and piezometer data with inverse and poroelastic theory to investigate anthropogenic and natural phenomena. She was recently awarded the NASA Earth and Space Science Fellowship to support her project, "Remote Sensing of Land Subsidence and Hydrological Properties Across Arizona." Only 17% of this year's applicants were accepted to receive this award within the competitive Earth Science Research program. Megan is currently leading a similar project with principal scientist Simon Cox at GNS Science in New Zealand as part of the NSF East Asia and Pacific Summer Institute (EAPSI) graduate fellowship program. The EAPSI program provides travel funds and a summer stipend for graduate students to conduct a research project at an international research institution of their choice. Her proposed project uses InSAR datasets from the 2010 Canterbury earthquakes to understand the interaction between aquifer systems and seismic faults in relation to changes in elastic storage and water management problems.

One trait Megan shares with other geoscientists is a passion for exploring the outdoors. This hobby drives her curiosity about the geomorphic processes that shape the landscape; however, her hiking trails did not initially lead her to a geoscience university program. Megan actually completed her first bachelor's degree in economics from ASU in 2004 and pursued a career as a stock broker. After several years, Megan's inquiring mind and interests in Earth science surpassed her business ambitions, and she quickly enrolled in the geological sciences undergraduate program. She recalls her geophysics course as being especially enjoyable, and it turned into one of the motivating factors for her to continue in this growing field. After finishing her degree in 2013, she eagerly enrolled in the ASU graduate program and started down her new path in near-surface geophysics.

Her strong ambitions and intellect helped her produce enough material to present a poster at the 2013 AGU Fall Meeting after only one semester as a graduate student. She has since given an oral presentation in 2014, the results of which were published in 2015 in *the Journal of Geophysical Research: Solid Earth*. Then at AGU in 2015, she received one of five Outstanding Student Paper Awards for the Near-Surface Geophysics Focus Group for her poster presentation titled "Spatiotemporal Distribution of Strain Field and Hydraulic Conductivity at the Phoenix Valley Basins, Constrained Using InSAR Time Series and Time-Dependent Models" (NS43A-1950). For this work, Megan observed anthropogenic land subsidence in the Phoenix valley after she analyzed different hydrologic parameters to generate an elastic aquifer model using a time-dependent modeling scheme. She subsequently created a compaction model, which allowed her to produce a three-dimensional distribution of hydraulic conductivities to support ongoing urban planning and management projects in the area.

If you are interested in Megan's work in the Arizona basin or would like to hear more about her New Zealand endeavors, please contact Megan (megan.m.miller@asu.edu).