

September 2013 News Notes

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Field Camp 2013 wraps up



Field camp is one of those special experiences when it feels like you are suspended in a new sort of time zone – the six weeks seems long, yet flies by! The second half of field camp followed the usual pattern of increasing size and complexity of mapping areas – thrusts, folds, angular unconformities, all the good stuff! A successful trip to the Snake Range metamorphic core complex gave everyone the chance to collect garnet and staurolite, as well as oversized samples of mylonite! The annual visit to Bingham Canyon mine was not possible this year, as the mine was closed by an enormous landslide in the pit – do check that out via Google if you have not seen the pictures. A different sort of economic application of Sanpete geology was discovered in Manti this year, thanks to scouting by Charlie Corbato's son – a young couple using a classic Green River



limestone home base – as a 'cheese cave' for aging a variety of blue cheeses. They may have discovered a new type of cheese mold! Though we had a few more bumps and bruises, fortunately there were no more broken bones, and everyone left Ephraim



safe and sound. -Prof Terry Wilson, Field Camp instructor.

Alumni change lives

David Wright (PhD student) received support from the Friends of Orton Hall (FoH) fund, which is sustained by alumni contributions. Here, David describes how FoH helped advance his career and enrich his academic experience.

The Paleobiology Database program is a global, collection-based occurrence and taxonomic database for fossil plants and animals led by an international group of paleobiological researchers. Each summer this program invites 12 students from all over the world to participate in an intensive workshop in analytical methods at Macquarie University, Sydney, Australia. Participants are given hands-on instruction in statistical computing, multivariate analysis, and Monte Carlo simulation modeling for paleontological data sets. I was invited to attend the workshop this year. The Friends of Orton Hall funds provided crucial financial assistance for travel expenses allowing me to participate. The skills that I gained at the workshop will not only strengthen my dissertation research, but also broaden my opportunities as a researcher interested in evolution, biodiversity and global change through geologic time. I am very grateful for this great opportunity. Thank you!

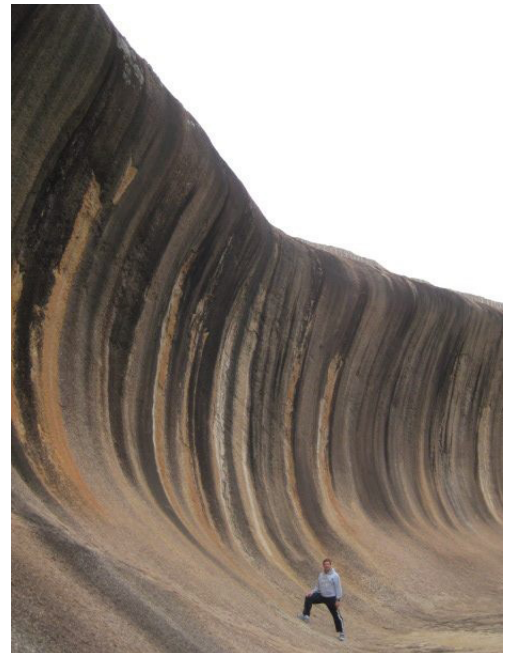
SES student's research featured on nbcnews.com

PhD student David Wright (advisor Prof Emeritus Bill Ausich) had his work with Alycia Stigall (Prof of Geology at Ohio University; SES B.S., 1999) featured on nbcnews.com ([link](#)). The article is entitled "450 million years ago, rising peaks let invasive species storm in". Congratulations, David!

NSF EAPSI fellows report

The National Science Foundation East Asia and Pacific Summer Institute (EAPSI) program supported two SES PhD students this summer. Congratulations to them both!

PhD student Jeff Pigott (adviser: Prof Wendy Panero) conducted research during the 2013 summer semester at Curtin University in Perth, Western Australia. Jeff was part of the computational chemistry group in the Department of Chemistry/Nanochemistry Research Institute. The project title was "Calculation of the Energetics of Water Incorporation in Majorite Garnet". The host scientists were Professor Kate Wright and Professor Julian Gale. Funding was provided through the NSF EAPSI and the living expenses were offset by the Australian Academy of Science. The research addresses the deep-Earth water budget through calculations of the energy associated with hydrogen incorporation into the high-pressure garnet phase (majorite) up to $P = 20$ GPa using a computational approach. The mechanism by which water is incorporated into mantle garnets has major implications for the interpretation of global-scale mantle processes, such as subduction and plume ascent which are ultimately linked to surface processes through plate tectonics. Additionally, Jeff had the opportunity to escape the confines of the office on an excursion to the southern Yilgarn craton to enjoy exposed late-Archean (2.7 Ga) granite.



This summer, Ben Vander Jagt (adviser Prof Michael Durand) conducted research at the University of Tasmania in Hobart, Tasmania, as part of the NSF East Asia and Pacific Summer Institute (EAPSI) fellowship. Ben worked with Dr. Arko Lucieer, a professor who specializes in earth observation using unmanned aerial vehicles. The focus of the research was to remotely estimate spatially continuous snow depths in mountainous terrain using Lidar and Photogrammetric techniques. Photogrammetry is the discipline which seeks to derive 3D information about natural landscapes from 2D images. The first part of the project involved constructing the UAV, mounting the different sensors, and calibrating the entire system. Luckily a large weather system came through in mid July and provided plenty of snow for to measure. Over the 1 hectare study area, snow depth was successfully remotely measured using both techniques. Snow depth was determined using photogrammetry to an accuracy of 3 centimeters at 5mm resolution, whereas the Lidar resolved the depth with an accuracy of 10 cm. This is the first time within the science community that a micro UAV has been used to map snow depth using the two above-mentioned techniques, so it was a very exciting and groundbreaking summer project. Ben also did a bit of whitewater kayaking, camping, and a whole lot of bushwalking. The Tasmanian Tiger eluded his camera this time, but he did thoroughly enjoy the other fauna and flora in the region.



von Frese attends ADMAP steering committee meeting

Prof von Frese attended the Antarctic Digital Magnetic Anomaly Project's (ADMAP) steering committee meeting for the production of the next generation Antarctic magnetic anomaly map (ADMAP-2) at the Korea Polar Research Institute (KOPRI) in Incheon, South Korea. Left: The ADMAP-2 steering committee includes (left to right) Ralph von Frese (OSU/BPRC), Marta Ghidella (Argentine Antarctic Institute, Buenos Aires, Argentina), Sasha Golynsky (VNIIOkeangeologica, St. Petersburg, Russia), Detlef Demaske (German Geosciences and Minerals Bureau, Hanover, Germany), Hyung Rae Kim (SES alumnus 2002; Kongju National Univ., Kongju, S. Korea), Jongkuk Hong (KOPRI), and Fausto Ferraccioli (British Antarctic Survey, Cambridge, UK). Right: The ADMAP-2 steering committee minus Hyung Rae Kim touring KOPRI's 7,487 ton icebreaker, the ARAON. This ship performs scientific research in both Arctic and Antarctic waters.

