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Paper No. 185-1
Presentation Time: 9:00 AM-6:30 PM

CRUSTAL XENOLITHS, THEIR ZIRCONS AND APATITES: INVESTIGATING THE CONTINENTAL BASEMENT BENEATH THE CENTRAL ANDES

VELAZQUEZ SANTANA, Liannie C.[1], MCLEOD, Claire[1], BLAKEMORE, Daniel[1], SHAULIS, Barry[2] and BROWN, Kenneth[3], (1)Department of Geology and Environmental Earth Science, Miami University, 250 S. Patters Oxford, OH 45056, (2)Department of Geosciences, University of Arkansas, 340 N. Campus Dr., 216 Gearhart Hall, Fayetteville, AR 72701, (3)Department of Geosciences, DePauw University, P.O. Box 37, Greencast

The chemical similarity between Earth's continental crust and continental arc andesites implies a crucial petrogenetic link between continental arc magmatism and crustal growth. The Pleistocene-aged monogen of Pampa Aullagas and Quillacas on the Bolivian Eastern Altiplano erupted through *c.* 80 km of continental crust and are hosts to a petrologically diverse suite of crustal xenoliths. These xenoliths, collectively, rep long history of crustal terrane accretion and subduction zone magmatism along the western margin of South America. The sampled suite comprises igneous and metamorphic lithologies including microdiorites, granodiorites, gneisses, garnet-mica schists, and granulites. This study reports new whole-rock geochemical data, *in-situ* analysis of accessory apatite, and U-Pb geochronology of zircons in the sampled xenoliths aim of providing constraints on the petrogenesis of the suite and consequently, on the timescales of crustal differentiation, accretion, and growth beneath the modern-day Bolivian Altiplano.
Whole-rock geochemical data confirms compositional heterogeneity between the sampled xenoliths, as expected based on observed lithological and mineralogical variations. New U-Pb zircon ages from igneous record plutonism associated with Neogene (and younger) arc magmatism while previously dated zircons in metamorphic xenoliths range from the Devonian to the Paleoproterozoic (*McLeod et al., 2013, GSA Bul* Preliminary apatite REE data from two igneous xenoliths display variable but distinct geochemical characteristics (n=73): e.g. La_N/Ce_N (average 0.74 vs. 0.99), Eu anomalies range from 0.23-0.39 vs. 0.57-0.77, LREE La_N/Sm_N at 0.36-2.6 vs. 1.77-2.71, and variable HREE depletion: Gd_N/Lu_N 3.95-16.18 vs. 2.78-9.57, respectively. It is anticipated that this new dataset will allow crustal domain boundaries beneath Pampa Aullagas Quillacas to be evaluated, potentially leading to a renewed understanding of the tectonic block arrangement of the region. Ultimately, the bulk geochemical data combined with *in-situ* analysis of accessory phase vital insights into the processes and events that have established the continental basement on which the modern-day Andean Cordillera is constructed.

Session No. 185--Booth# 63
T37. Investigating the Origin of Arc Magmatism and the Evolution of Continental Crust from the Aleutians to the Southern Andes (Posters): In Honor of Suzanne Mahlburg Kay, Recipient of the Mineralogy, Geoche Petrology, and Volcanology Division Distinguished Geological Career Award
Tuesday, 24 September 2019: 9:00 AM-6:30 PM

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Back to: T37. Investigating the Origin of Arc Magmatism and the Evolution of Continental Crust from the Aleutians to the Southern Andes (Posters): In Honor of Suzanne Mahlburg Kay, Recipient of the Mine Geochemistry, Petrology, and Volcanology Division Distinguished Geological Career Award

Previous Abstract | Next Abstract >>