

## 172-8 - VOLCANISM AT 2.4 MA IN CENTRAL UTAH: PETROGENETIC SIMILARITIES TO THE YELLOWSTONE VOLCANIC FIELD



Tuesday, 11 October 2022



9:00 AM - 1:00 PM



Colorado Convention Center - Exhibit Hall F

### Booth No. 154

### Abstract

The Yellowstone volcanic field has been intensively studied to understand the origins and evolution of magmas producing caldera-forming eruptions and inter- and intra-caldera rhyolite domes. New  $^{40}\text{Ar}/^{39}\text{Ar}$  eruption ages coupled with geochemical data have improved our understanding of the eruptive chemostratigraphy and recurrence intervals, while zircon petrochronology aids in interpreting magmatic flux, storage conditions, and timescales of differentiation. Here, we use similar geochronologic and geochemical techniques to understand the magmatic evolution and eruptive history of anorogenic Basin and Range Pleistocene rhyolites in the Black Rock Desert of central Utah. Similar to Snake River Plain-Yellowstone volcanism, the Black Rock Desert is characterized by bimodal basalt-rhyolite volcanism, in which the oldest episode is comprised of at least six distinct rhyolite units of the South Twin complex that erupted during a narrow time period of 2.45 to 2.40 Ma. Eruptive products consist of domes, obsidian flows, and pyroclastic deposits, with the  $\sim 12\text{ km}^3$  South Twin Dome being the most prominent topographic feature of the complex. New  $^{40}\text{Ar}/^{39}\text{Ar}$  eruption ages on these lavas allow us to reevaluate the spatial and temporal evolution of the South Twin Complex. Further, zircon crystal morphology, geochemistry, and U/Pb dating allows us to assess conditions and timescales of silicic magma processes in the subvolcanic plumbing system. These combined records suggest an interconnected plumbing system that experienced rapid, yet punctuated, influxes of magma. This pattern of magmatic evolution is similar to the thermochemical trends observed for the caldera-forming eruptions of the Yellowstone volcanic field.

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### Author



**Tiffany Rivera**



Westminster College



Brian Jicha

University of Wisconsin-Madison

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