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GSA Connects 2023 Meeting in Pittsburgh, Pennsylvania

Paper No. 109-12

Presentation Time: 8:00 AM-5:30 PM

DETAILED (1:24,000) GEOLOGIC MAPPING BETWEEN GRAND TETON AND YELLOWSTONE NATIONAL PARKS: IMPLICATIONS FOR MIOCENE-RECENT EXTENSION ON THE TETON AND RELATED FAULTS AND THE COLLAPSE OF NORTHERN PALEO-TETON TOPOGRAPHY

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The Basin and Range extensional province, which spans ~2500 km from central Mexico to northern Idaho and Montana, is composed of ~N-S striking normal faults that produce footwall ranges and correlative half graben basins. However, in southern Idaho and western Wyoming, the ranges appear to terminate abruptly against the boundaries of the Snake River Plain, and documenting precisely how this abrupt topographic transition formed remains as a persistent challenge. In the region between the active Teton fault and the present terminus of the Snake River Plain on the Yellowstone plateau, new and legacy geologic mapping has identified numerous recently active ~N-S striking normal faults that branch from the active Teton fault and offset a thick succession of young (<2.1 Ma) rhyolites. These normal faults occur from immediately north of Jackson Lake and continue northward into the Yellowstone plateau, where they intersect the ~72 ka Pitchstone plateau. In the map area, the west- and north-dipping 5.6 Ma Conant Creek and 2.1 Ma Huckleberry Ridge tuffs reveal significant thickness changes, indicating the presence of considerable preexisting topography during deposition of these units. Furthermore, extensional displacement of Mesozoic and Paleozoic units greatly exceeds the extensional displacement preserved in the overlying Huckleberry Ridge tuff, which is interpreted to indicate that considerable extension occurred prior to ~2 Ma. New balanced cross-sections oriented across and along the strike of the Teton Range are used to highlight the complex topographic evolution of the northern Teton Range and provide insight into the collapse/removal of paleo-Teton topography near the Huckleberry Ridge and Lava Creek caldera boundaries.

Session No. 109--Booth# 254

[T83. Best Student Geologic Mapping Competition \(Posters\)](#)

Monday, 16 October 2023: 8:00 AM-5:30 PM

Hall B (David L Lawrence Convention Center)

Geological Society of America *Abstracts with Programs*. Vol. 55, No. 6
doi: 10.1130/abs/2023AM-395817

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