

TECTONIC CONTROLS ON STRIKE-SLIP BASIN DEVELOPMENT ADJACENT TO THE DENALI FAULT SYSTEM IN THE EASTERN ALASKA RANGE, ALASKA

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Uplift and exhumation in the Alaska Range are related to slip on the Denali fault system. Rapid exhumation of rocks north of the Denali fault is attributed to a change in the kinematics of the Denali fault system in response to flat-slab subduction of the Yakutat microplate with southern Alaska starting in the late Oligocene. Neogene cooling ages south of the Denali fault suggest that splay faults facilitate episodic exhumation in this region, yet cooling ages are sparse near these faults and the kinematics of these splay faults is largely unknown. I hypothesize that faults splaying from the Denali fault facilitate localized exhumation south of the Denali fault, which is recorded in local basin sediments. To test this, I will employ geologic mapping, fault kinematic analyses, thermochronometry, and detrital clast dating to explore the tectonic history of the Broxson Gulch fault and adjacent Oligocene-Neogene basin strata south of the Denali fault. By combining these data, I will reveal the relationship between splay fault activity in the Denali fault system, exhumation in the eastern Alaska Range, and development of localized foreland basins. Correlating the geometry and timing of exhumation with basin formation in the Broxson Gulch area will increase our understanding of how the Alaska Range and adjacent basins responded to and record kinematic changes in the Denali fault system during the Oligocene and into the Neogene. Results from my work will increase regional cooling age coverage and illuminate the link between tectonics, exhumation, and sedimentation in the Alaska Range.

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