

# **TIMING AND CONTINUITY OF SEDIMENT SOURCE ROCK EXHUMATION ALONG THE UPPER ALASKA PENINSULA-COOK INLET FOREARC BASIN CORRIDOR, ALASKA: INFERENCES FROM APATITE AND ZIRCON FISSION-TRACK THERMOCHRONOLOGY**

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Exhumed granitic rocks comprising the Aleutian-Alaska intrusive arc extend from Becharof Lake on the upper Alaska Peninsula (AKP) northeastward ~600 km along the western and northern margins of Cook Inlet (CI) to a position north of the Matanuska Valley. The elevated Middle Jurassic- to earliest Oligocene-age intrusive arc roots are separated from the early and modern forearc by a system of regional-scale transpressional faults represented by the Bruin Bay, Lake Clark, Capps Glacier, and Castle Mountain faults. Major pulses of coarse, clastic sediment derived from arc sources and deposited into the adjacent forearc basin since Late Jurassic time or earlier suggest episodic motion along these structures likely exerted a fundamental, long-term control on basin margin denudation, and sediment accommodation and dispersal, yet the kinematic history of the basin is not well understood. Understanding the timing, rate, and continuity of sediment source-rock exhumation across major faults can provide important constraints on the kinematic history of faulted terranes, especially when considered in context with the evolution of adjacent sedimentary basins. Thirty apatite, and eleven zircon fission-track ages from samples recently collected at five locations across the Bruin Bay fault on the upper AKP, and the Lake Clark and Capps Glacier faults in the upper CI area span Middle Jurassic to Late Oligocene time. Preliminary results suggest that cooling episodes recorded in intrusive arc rocks are broadly coeval with periods of arc-derived proximal sedimentation in the forearc basin and are interpreted to represent cooling during exhumation of the arc roots. Commonly contrasting hangingwall and footwall cooling histories suggest that cooling was driven, in part, by differential exhumation across fault boundaries. On the upper AKP, Jurassic-age arc rocks record two periods of rapid exhumation (Middle to Late Jurassic time, and Middle to Late Eocene time) that overlap with deposition of the Naknek and Copper Lake Formations, respectively. Preliminary results from Cretaceous-Tertiary granitoids along the northwestern CI basin margin record exhumation during Early to Late Eocene time that is coeval with West Foreland Formation and lower Hemlock Conglomerate deposition. Periods of Early Cretaceous and Late Eocene cooling of upper AKP basin deposits are interpreted as episodes of basin inversion and exhumation. Accelerated Eocene exhumation in the southeastern region of the upper AKP and northwestern CI margin overlaps with the timing of Kula-Farallon ridge subduction and associated passing of a slab window, perhaps implying a relationship between Paleogene plate boundary reorganization and regional exhumation along the northwestern forearc basin margin.