THE LATE CENOZOIC EXHUMATION PATTERN IN A TRANSPRESSIONAL SETTING: FAIRWEATHER RANGE, ALASKA

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New apatite (U-Th)/He ages (as young as 1.6 Ma) indicate rapid, recent cooling of the zone surrounding the Fairweather Fault of southeast Alaska. This is consistent with previously measured apatite fission track ages (O'Sullivan et al., 1997), as well as the rugged topography of the eastern St. Elias Mountains and Fairweather Range. However, rapid exhumation in this region is surprising based on regional tectonics. Active motion of the Yakutat microplate with respect to North America is nearly parallel to the plate margin, and thus active convergence at the plate boundary should be minor (Fletcher and Freymueller, 1999). There is also minimal evidence for active shortening on geologic structures. These young cooling ages are also comparable to the youngest ages in the core of the St. Elias Orogen to the northwest, where the Yakutat block is colliding into North America at several cm/yr. The simplest explanation for this apparent misfit may be a change in relative plate motion. All (U-Th)/He ages are <5 Ma, and most are ~2-3 Ma, suggesting rapid denudation in the mid-Pliocene. We hope to test this hypothesis with new age-elevation sample transects. Another possible explanation is that minor transpression or wrenching occurs today along the Fairweather Fault. In this case we would expect an age relationship with the fault. However, there are no apparent trends in cooling ages along or away from its trace. We will further test for spatial trends in exhumation using new samples from Glacier Bay National Park and elsewhere. In addition to elucidating active tectonics, existing data and new ages will constrain the long-term sediment budget related to glacial erosion and the permanent fraction of the geodetically observed rapid (~2-3cm/yr) modern uplift (Larsen et al., 2004).