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Pattern of fault displacement in a linked normal fault array

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Normal fault arrays grow through the interaction and linkage of neighboring faults. This mechanism of fault growth allows for along-strike variability in both fault displacement and displacement rate. Coupled with erosion, this transient fault behavior should have an impact on range-scale patterns of denudation. We use geologic mapping and low-temperature thermochronology to constrain the range-scale patterns of displacement and denudation along the southern Wassuk Range of Nevada, USA. Results from apatite fission track and (U-Th)/He analysis indicate a decrease in displacement and displacement rate toward the southern tip of the fault array. Apparent apatite fission track ages increase from 8.2 $\pm$ 1.0 Ma, near the center of the array, to 56.2 $\pm$ 3.7 Ma near the southern fault tip. Apparent (U-Th)/He ages on apatite also increase from the center toward the tip of the fault array, from 2.1 $\pm$ 1.1 Ma to 5.7 $\pm$ 0.1 Ma respectively. Two samples, taken from a relay zone between two fault segments, yielded apatite fission track ages that are older than surrounding samples. These anomalously old ages may reflect lower displacement caused by fault tip interaction, however, additional samples are needed to resolve this problem. The results of this study will be used to place additional constraints on models of fault displacement and range-scale denudation.