

## USING DETRITAL ZIRCON GEOCHRONOLOGY TO TRACK ISLAND ARC COLLISION

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The Jura-Cretaceous Peninsular Ranges batholith (PRB) is composed of several NW-trending litho-stratigraphic basement assemblages. Between 32°N and 28°N latitude assemblages include from west to east: (1) the accreted Alisitos arc, which collided with North America between 115 and 100 Ma; (2) Cretaceous basinal assemblages; (3) Triassic-Jurassic basin deposits; and (4) Paleozoic North American passive margin strata. We present data from 7 detrital zircon samples collected from these basement assemblages and almost double the existing dataset of 8 samples. Detrital zircon populations in Paleozoic units are comparable to Ordovician passive margin units elsewhere in Baja California and the Southwestern Cordillera. A Triassic sample resembles Triassic-Jurassic clastic sedimentary units that extend from southern California to at least 28°N latitude and were derived from mostly cratonic sources. Cretaceous basinal assemblages show two patterns. First, Alisitos intra-arc deposits and sediments along the eastern flanks of the arc show little influx of cratonic material between 117 and 110 Ma, whereas coeval sediments deposited near the North American continent contain abundant cratonic detritus. Second, intra-arc strata contain large amounts of old detrital zircons after 110 Ma.

These data substantiate links between Paleozoic and early Mesozoic strata in the PRB and North America, and, furthermore, allow differentiation of several collapsed basin complexes including 1) early Mesozoic and Cretaceous basins located between the accreted Alisitos arc and Paleozoic strata and 2) Cretaceous intra-arc basins. Cretaceous basins associated with the Alisitos arc were either too distant or shielded from North American detritus prior to 110 Ma. During the final stages of accretion, far greater influx of continental detritus indicates that the arc and associated depositional centers were close enough to receive significant input from continental sources. The mix of ages in the detrital grains in these strata support reworking of nearby sources rather than erosion of distant cratonic basement complexes. The data provide a means of evaluating how sediment sources changed during island arc collision and at least partly enables tracking accretion of the Alisitos arc to the North American continent.