

# **THE “GUERRERO SUPERTERRANE”: A SINGLE TERRANE OR MULTIPLE ARC SEGMENTS?**

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The southwestern margin of North America (NA) includes thick Jurassic and Cretaceous volcanic sequences and numerous cogenetic plutonics that are typically mafic and yield primitive geochemical (isotopic) compositions. These igneous assemblages have long-been interpreted as products of intra-oceanic arcs that were sutured to NA. Several tectonic models suggest that this chain of arc rocks was one continuous island arc, the so-called Guerrero Superterrane, which collided contemporaneously during the Late Cretaceous along its length from southern California to southern Mexico. This interpretation is in direct contradiction with the observations from numerous geochemical, geochronological, structural, and geophysical studies that highlight dramatic along-strike variations in the belt.

We argue that the proposed Guerrero Superterrane is composed of at least three distinct segments (Santiago Peak, Alisitos, and Guerrero) with a major Early Cretaceous oblique slip structure juxtaposing the Santiago Peak and Alisitos segments and infer that a similar structure must juxtapose the Alisitos with the Guerrero. The Early Cretaceous Santiago Peak arc, from the Transverse Ranges in southern California to the ancestral Agua Blanca fault (aABF) in Baja California, developed subarially atop a Late Triassic-Jurassic NA accretionary prism. South of the aABF to at least the 30<sup>th</sup> parallel the Alisitos arc developed in a submarine environment on oceanic lithosphere seemingly isolated from continental influences until just prior to its accretion to NA. Accretion was accommodated along the aABF and Main Mártir Thrust, both major southwest-vergent ductile shear zones. South of the 27<sup>th</sup> parallel in mainland Mexico others have determined that the Guerrero segment is composed of multiple sub-segments each inferred to represent a distinct arc. However, each sub-segment has been shown to be built upon continentally-derived clastic sediments with an inferred NA. provenance. Thus, the entire Guerrero segment likely developed adjacent to the continent on distal slope basins and old accretionary prisms. In this view the east-vergent thrust faults common throughout the Guerrero segment likely accommodated the telescoping of a broad continental margin arc during the Late Cretaceous and not suturing.