

## **Factors controlling along-strike variations in a fold-thrust belt formed during collision of the Alisitos arc, Peninsular Ranges, Baja California, MX**

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The oceanic Alisitos island arc (AA), which forms the southern segment of the western zone of the Peninsular Ranges of Baja California, accreted to North America between 115 and 103 Ma. A fold-thrust belt (FTB) occurs along the suture that juxtaposes the arc with the Santiago Peak arc (SP) to the north and older continental margin arc units to the east. This FTB exhibits substantial along-strike variations.

The northern portion of the suture is a 15-20-km-wide, WNW-ESE-trending FTB with subhorizontal fold hinges, evidence for sinistral transpression, and ductile strain increasing NNE-ward towards the suture. Contemporaneous deformation in the SP ceases within a few kilometers north of the suture. Orthogonal convergence dominated the eastern margin of the AA. In the northern Sierra San Pedro Mártir (SSPM), the FTB is 20-25 km wide with folds possessing steeply dipping hinge lines near a ductile shear zone that places Mesozoic mid-crustal (~6 kbar) rocks over shallow-crustal (<2 kbar) AA rocks. Similar displacement in the southern SSPM is recorded in a 20-km-wide doubly-vergent fan structure with inverted metamorphic gradients. Farther south, in the Sierra Calamajue (SC), the fan structure is absent and a NW-SE-trending FTB dominated by brittle-ductile deformation and folds with subhorizontal hinge lines is <10 km wide, although deformation may extend NE-ward into Paleozoic units.

Along-strike variations in the FTB result from (1) changes in the tectonic setting, which changes from sinistral transpression in the north to normal convergence along the eastern margin of the arc and probably accounts for the counterclockwise deflection of structures in the northern AA, (2) the pre-existing geometry of the continental margin, including a promontory forming a rigid buttress at the latitude of the SSPM, and (3) rheologic changes caused by the transition from miogeoclinal units east of the SSPM to slope basin deposits east of the SC.