

Ophiolites and Mesozoic Terrane Tectonics in Western North America

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In Mesozoic time, a complex mosaic of island arcs and intervening oceanic marginal basins separated North America from the main Pacific-Farallon-Kula plate system. These oceanic regions are preserved as three major belts of ophiolites and related island arc complexes are present along the central North American Cordillera. Ophiolite belts thus are the primary record of major interactions between oceanic plates and the continent. An eastern belt (*e.g.*, Stikinia-Intermontane-Sierra Nevada superterrane, Canada, USA; western Baja California, Mexico; possible correlatives around the Caribbean margin--Moores, 1998, *Int. Geol. Rev.*) represent a mature oceanic island arc emplaced in mid-Jurassic-Cretaceous time. A middle belt (*e.g.* Coast Range/Great Valley ophiolite, Smartville complex, Josephine complex, California, formed about 150-160 Ma and was emplaced about 140-150 Ma. A western belt (*e.g.* Wrangellia/Insular superterrane and of Canada and U.S; possibly Cordillera Occidental (Piñon) of Columbia and Ecuador) was emplaced during late Cretaceous/Tertiary time.

Conflicting sinistral and dextral motions at varying locations and times along the North American Cordilleran margin suggest slip-line tectonics during island arc-continent collisions, similar to the Indian-Eurasian collision. Direct contact between the Kula/Farallon plates and North America possibly first occurred in late Cretaceous time (95 Ma). The northward translation of the Wrangellia/Insular superterrane after its arrival in the "Baja BC" position, may be recorded in the Franciscan complex-Great Valley sequence of California's Coast Ranges.