185-10 - EOCENE TRIPLE-JUNCTION MIGRATION IN THE PACIFIC NORTHWEST AND ITS RELATIONSHIP TO TERRANE TRANSPORT

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Abstract

Tectonic reconstructions based on seafloor magnetic anomalies require the presence of at least one additional oceanic plate, the Kula, in the Pacific basin during the Paleogene. The location of the resulting triple-junction(s) between the North American, Farallon, Kula, and any additional oceanic plates, such as the proposed Resurrection plate, are largely constrained from geological data. Here we discuss evidence for the presence of the North American-Farallon-Kula triple-junction near the latitude of Washington during the middle through the latest Eocene. Evidence includes a southward younging belt of near-trench intrusions along Vancouver Island and western Washington (51-49 Ma). Regional right-lateral strike-slip faults in Washington reorganized coincident with emplacement of these near-trench intrusions with some faults initiating, or accelerating, during this time. Right-lateral strike-slip faulting continued at this latitude until the latest Eocene-earliest Oligocene when the faults were sealed by plutons related to the modern Cascadia arc. The termination of faulting is coincident with a distinct belt of near-trench magmatism on Vancouver Island that gets progressively younger to the north (39-35 Ma). We speculate that these events track the southward movement of the North American-Farallon-Kula triple-junction during the middle Eocene and its subsequent northward migration during the latest Eocene. We consider that this triple-junction marked the southern end of a dextral plate boundary between the Kula, and later the Pacific, oceanic plates and North America along which the terranes that presently compose southern Alaska (Peninsular, Chugach, and Yakutat) were moved northward during the Eocene and Oligocene. Restoring the Chugach terrane to a position off of British Columbia links the Sanak-Baranof belt of near-trench plutons with those exposed on Vancouver Island and western Washington and may provide the location of this terrane during this time.

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Author

E

Michael Eddy
Purdue University

Authors

Erin Donaghy

D

Purdue University

M

Robert Miller
San Jose State University

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