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**Tectonic map of Alaska: A record of deformation before, during, and after assembly of the northwest promontory of North America**

Moore, T.E.<sup>1</sup>, and Box, S.E.

<sup>1</sup> U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA, USA (tmoore@usgs.gov)

<sup>2</sup> U.S. Geological Survey, 904 West Riverside Avenue, Spokane, WA, USA (sbox@usgs.gov)

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Alaska has a complex history of deformation that formed along the Cordilleran and Arctic margins of North America through interactions with ancient and modern-day ocean basins and with continental elements derived from Laurentia, Siberia, and Baltica. The consequence of these interactions is an array of terranes with deformational features acquired prior to, during, and after their arrival in Alaska. We present a new tectonic map and summarize these tectonic events by distinguishing three tectonic domains having related deformational histories. The northern domain consists of terranes lying generally north of the Tintina-Kaltag faults that were involved in north-vergent arc-continent collision events formed during the Late Jurassic to Early Cretaceous early Brookian orogeny. This deformation resulted from the subduction of the northern margin of North America beneath oceanic arcs of the Paleo-Pacific Ocean, followed by counter-clockwise rotation of Arctic Alaska as a consequence of rotational rifting of the Amerasia basin in the Early Cretaceous. In addition, northernmost Alaska exhibits Devonian north-vergent folding and thrusting (Romanzof orogen) acquired prior to the rotation as part of the Ellesmerian-Caledonian orogenic belt in the Canadian Arctic Islands. To the south, the second domain includes the large, continental Farewell and Yukon-Tanana terranes that lack the imprint of the Brookian orogeny. These terranes record discrete episodes of Permian collisional deformation (Early Permian Browns Fork and Late Permian Klondike orogenies, respectively). The tectonic origin of the Browns Fork orogeny is uncertain; the Klondike orogeny resulted from closure of the Seventymile-Slide Mountain ocean and consequent subduction of the western margin of North America beneath an east-facing arc built on previously rifted continental crust. Later episodes of Middle Jurassic ductile contractional and middle Cretaceous ductile extensional deformation of uncertain origin affected only the Yukon-Tanana terrane. Smaller terranes between these two large terranes record northwest-vergent middle Cretaceous folding and thrusting, the northeastern end of which was probably displaced from the Mackenzie Mountains orogenic belt in the Yukon during early Cenozoic dextral motion on the orogen-parallel Tintina strike-slip fault. The third domain lies south of the Denali Fault in southern Alaska and consists of the Alexander, Wrangellia, and Peninsular (AWP) island-arc terranes and adjoining southern Alaska accretionary (SAA) complex. The AWP terrane contains a Paleozoic and Mesozoic magmatic arc complex amalgamated by Pennsylvanian and Middle/ Late Jurassic tectonic events before collision against the western margin of North America in the mid- to Late Cretaceous. The SAA complex to the south exhibits a record of south-facing subduction and accretion along the southern margin of Alaska that began in the Late Triassic and continues today. Forearc accretion was interrupted by episodes of subduction erosion in the Jurassic and Early Cretaceous and an important episode of ridge subduction in the Paleogene. The latter event caused flat-slab subduction that resulted in northwest-vergent folding and strike-slip tectonism across Alaska and was accompanied by a second, late Brookian, episode of north-vergent thrusting in the Brooks Range and North Slope. Neogene tectonics in Alaska are dominated by subduction at the Aleutian trench and, in its northeasternmost part, collision of the offshore Yakutat terrane at the St. Elias orogen. Subduction of this terrane began at ~30 Ma and culminated in collisional underthrusting of an oceanic plateau beneath North America since 5-6 Ma. The

collision has produced thrusting and dextral transpression throughout southern Alaska and, to the north, far-field thrusting along the Beaufort Sea margin of northeastern Alaska. Juxtaposition of the northern and central domains occurred during the middle Cretaceous, whereas Late Cretaceous deformation across central and western Alaska marks the final collision and consolidation of the southern domain with the remainder of Alaska.

