

Bedrock geology of the Glenn Highway from Anchorage to Sheep Mountain, Alaska

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ABSTRACT

This guide provides outcrop descriptions for a one-day field trip leaving from Anchorage, Alaska and ending at Sheep Mountain, Alaska. The field trip route provides opportunities to observe outcrops representing three bedrock successions that record the tectonic development of southern Alaska: (1) Lower to Middle Jurassic igneous and metamorphic rocks comprising the Talkeetna arc, one of the most complete accreted oceanic arc crustal sequences known world-wide, totaling 7 km of section; (2) A >3,800 m thick succession of Middle Jurassic–Upper Cretaceous marine forearc basinal deposits that record accretion of the Talkeetna arc against the former continental margin; and (3) a >2,900 m thick succession of Paleocene–Oligocene alluvial-fluvial strata and Eocene gabbro and rhyo-dacite km-scale intrusions emplaced in remnant forearc depocenters partly coeval with spreading ridge subduction and near-trench magmatism. These successions were uplifted and partly exhumed during flat-slab subduction of the Yakutat terrane beneath south-central Alaska during Oligocene–Holocene time. Outcrop descriptions emphasize sedimentary strata and igneous intrusions exposed near the Glenn Highway. Key stops include Upper Cretaceous marine mass flow deposits with diverse sedimentary structures, Paleocene–Eocene coal-bearing strata with abundant plant fossils, mid-Eocene rhyo-dacite plugs and gabbro sills that are hundreds of meters thick, and a cross-section through the seismogenic Castle Mountain fault zone. Field guides for linked trips during this meeting describe correlative strata exposed outboard (south) of the Matanuska forearc strata in the Chugach accretionary prism in the Chugach Mountains and the Kenai Peninsula.

Keywords – sedimentary geology, geochronology, geochemistry, tectonics, Alaska