

109-1 - NEW GEOLOGIC MAPPING OF THE ARCTIC D-1 NE AND TABLE MOUNTAIN D-5 NW 7.5' QUADRANGLES, NORTHEASTERN BROOKS RANGE, ALASKA



Monday, 16 October 2023



8:00 AM - 5:30 PM

*Hall B (2, David L Lawrence Convention Center)*

Booth No. 243

Abstract

We conducted new detailed bedrock mapping in the northeastern Brooks Range of Alaska to help constrain the middle Paleozoic tectonic setting of the Arctic Alaska terrane. The Arctic D-1 NE and Table Mountain D-5 NW 7.5' quadrangles are located at the intersection of four 1:250,000-scale quadrangles (Arctic, Mount Michelson, Demarcation Point, and Table Mountain). Our mapping across these quadrangle boundaries has revealed a continuous belt of Middle Devonian–Lower Carboniferous sedimentary and volcanic rocks, which are separated into four distinct thrust sheets, or plates, imbricated during the Mesozoic–Cenozoic Brookian orogeny. The structurally lowest plate is the para-autochthonous North Slope subterrane, which locally consists of the Ordovician–Lower Devonian(?) Romanzof formation unconformably overlain by a carbonate and chert cobble conglomerate facies of the Lower Mississippian Kekiktuk Conglomerate. The overlying Aichilik Pass Plate (new informal name) consists of the Middle–Upper(?) Devonian Ulungarat Formation and Lower Mississippian Kekiktuk Conglomerate. The overlying Guilbeau Pass Plate (new informal name) includes two new informally named units: the Double Mountain complex and the Chandalar unit. The Middle(?)–Upper Devonian Double Mountain complex is composed of bimodal volcanic rocks which laterally grade into phyllite and sheared polymictic pebble conglomerate. The complex is unconformably overlain by the Lower Mississippian Chandalar unit, which consists of a lower member dominated by ferruginous lithic and quartz arenite and an upper member dominated by mudstone and siltstone with minor quartz arenite. The uppermost structural plate is defined by the leading edge of the Endicott Mountains Allochthon and is comprised of the Carboniferous Kayak Shale and Lisburne Group. Ongoing geochronological, geochemical, and stratigraphic studies of these rocks will aim to clarify their tectonic setting, elucidate their role in the amalgamation history of Arctic Alaska, and potentially help clarify the record of subduction initiation and terrane transport in the northernmost North American Cordillera.

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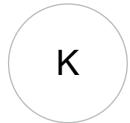


George Geier
Dartmouth College

Authors



Alec Lockett



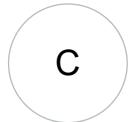
Emma Kroeger
Department of Environmental Engineering and Earth Sciences



Michelle L. Fame
Amherst College



William C. McClelland
University of Iowa



Christopher Connors
Washington and Lee University



Justin Strauss
Dartmouth College

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