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## Joint 118th Annual Cordilleran/72nd Annual Rocky Mountain Section Meeting - 2022

Paper No. 26-5

Presentation Time: 3:10 PM

### PERI-GLACIAL FEATURES MAPPED IN THE CHUKCHI BORDERLAND; CONSTRAINTS ON GLACIAL EXTENT AND MOTION

**KEITH, Bradley**, Geology, Sonoma State University, 1801 E Cotati Ave, Rohnert Park, CA 94928, ANFINSON, Owen A., Department of Geology, Sonoma State University, 1801 East Cotati Ave, Rohnert Park, CA 94928 and COAKLEY, Bernard J.

Here we present newly acquired bathymetric data from the Chukchi Borderland region of the Amerasian Basin, Arctic Ocean. The data was acquired aboard the research vessel Sikuliaq from August 1st to September 30, 2021. The Sikuliaq is equipped with a hull mounted Kongsberg EM302 and EM710 multibeam echosounder and a Kongsberg TOPAS PS18 sub bottom profiler. Previous expeditions in the region have generated swath bathymetry data that indicates the presence of deep-keel gouges and mega scale glacial lineations. The primary goal of this research is to process and interpret the initial bathymetric data set to determine if it suggests the presence of both deep-keel gouges and mega scale glacial lineations throughout the region. We have processed and interpreted a 1.5 km wide swath of bathymetric and sub bottom profiling data approximately 275 km long eastward from the Chukchi Plateau to the Northwind Ridge.

Initial processing suggests at least some evidence of these features that would have likely been created during the Last Glacial Maximum. During this period, sea level was estimated to be roughly 125 meters lower than today, allowing for massive glaciers to exist in the relatively shallow waters of the Chukchi Plateau. During the initial processing, we identified several sets of parallel grooves in the ocean floor along with drumlins, typically streamlined perpendicular to bathymetric contours and parallel to mega scale glacial lineations. Evidence of moraines was also found in the vicinity of the mega scale glacial lineations, parallel to bathymetric contours and perpendicular to parallel grooves. These parallel grooves are indicative of deep-keel gouges and mega scale glacial lineations, however additional processing and potentially future data acquisition is needed. The interpretation of these data will allow for a more detailed map of glacial movement to be created within the region, which may provide insight into the Arctic climate during the Last Glacial Maximum.

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