**Analysis of Near-surface Permafrost Monitoring Station Data from Alaska**

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Recent observations of near-surface soil temperatures over the Circumpolar Arctic show continuing warming of the permafrost-affected soils. Rapid warming of the North Pole suggests amplified permafrost thaw with possible release of labile carbon stored within the first 3 m of permafrost into the atmosphere. Release of the currently frozen soil carbon to the atmosphere could accelerate and amplify anthropogenic climate warming. A consolidated near-surface permafrost dataset is needed to better understand the corresponding climate impact and constrain the permafrost thermal and spatial conditions in the land system models. In this study, we compile shallow ground temperature measurements collected by the U.S. Geological Survey (USGS) and the Geophysical Institute, University of Alaska Fairbanks (UAF) permafrost monitoring networks in Alaska. This dataset represents an initial effort in consolidating information on near-surface permafrost dynamics in the Northern Hemisphere. The Alaskan dataset includes air and ground temperature data, volumetric water content and snow depth measured since 1998. We used trend analysis to understand the dataset and recent permafrost thermal dynamics. The results of our analysis show the highest warming trend (+0.30°C/yr) in the Alaska North Slope. We found strong relationship between the thermal offset at the ground surface and snow depths less 0.40 m. Based on the calculated linear trend projections we predict increase in near-surface temperature dynamics at 1 m in the range of 1.53–1.91°C for the North Slope and stable warming (greater than 0°C) for the Interior over the next 20–25 years.

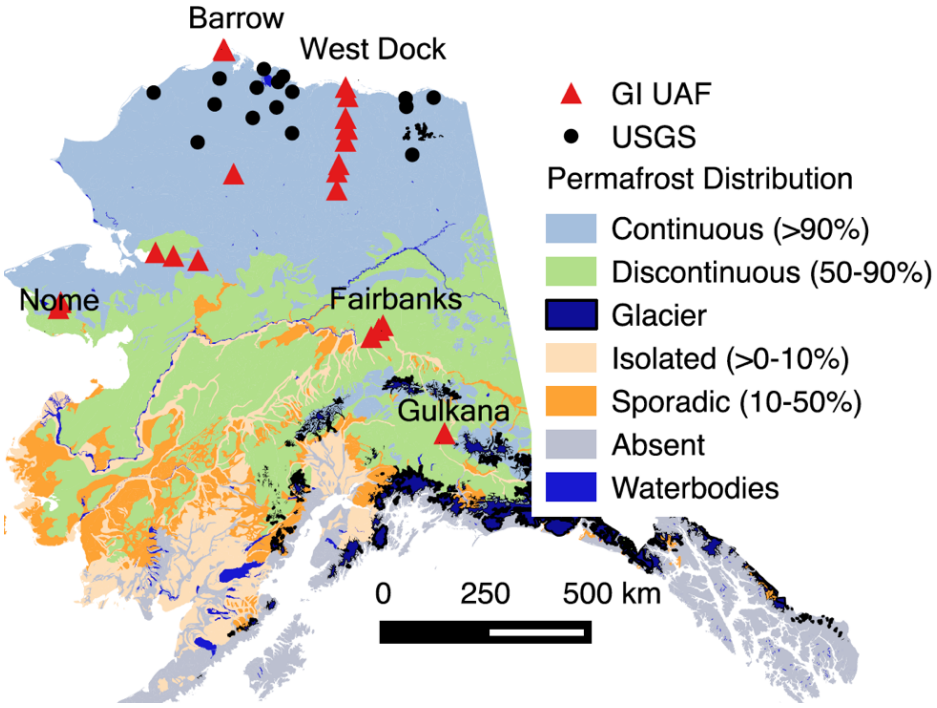


**Figure 1.** Locations of USGS and Geophysical Institute UAF permafrost monitoring stations in Alaska.