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Title Design of Comparison Observation System in Permafrost Regions between Alaska and Qinghai-Tibet Plateau

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Abstract - text box
The land surface and subsurface processes and their complex interactions are of great importance to improve the performance of Earth System Models in cold regions including the high-altitude and high-latitude regions. The in-situ observations for those processes are especially important for cold regions ecosystems where topography, permafrost, hydrology, vegetation, and biogeochemistry are inextricably linked. The implications of such linkages include permafrost thaw and deepening of the active layer, changing productivity, and watershed-scale changes in ground surface. In order to compare the difference of ground thermal regimes between the third pole regions and the Arctic regions, in September of 2018, an integrated automatic weather station was set up through collaboration of State Key Laboratory of Cryospheric Science and International Arctic Research Center at Teller site of Nome, Alaska. At the same time, the active layer monitoring site to measure soil temperatures at five levels has been deployed. Until the September of 2019, the air temperature, the ground surface temperature, and soil temperature data have been collected for a whole freezing-thawing period. In this study, the ground surface freezing-thawing condition has been analyzed to identify the different impact factors of meteorological and local parameters between both sites. Furthermore, the influence of vegetation cover on the ground surface thermal regime has been analyzed. The result will enhance our understanding the energy and water exchange mechanism between atmosphere and ground surface.