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Supra-glacial ponds and spatial temporal changes of glacier surface environment (Thermal resistance, NDWI, and glacier f

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Glacier surface environments, such as debris thickness, ponds, channels, play a important role for local melting condition.

Debris thickness affects local mass balance because of its insulation effect. In additions, ponds and ice cliffs, which were widely distributed on the debris-covered area, absorbed heat as hot spot. Hence, spatial distribution and the temporal changes of those factors are important for glacier melting, which could cause to emerge of supra-glacial ponds and its expansion to glacial lakes.

In this study, we analyzed some factors (thermal resistance, NDWI, and glacier flow velocity), which could contribute to glacier melting, using ASTER and Landsat satellite imagery. We report the relation between area change of supra-glacial ponds and those factors. We will show the result in presentation.

Keywords: glacial lake, glacier, ASTER, Landsat, thermal resistance, NDWI