

Response of ground temperature profile to the variation in snow depth in seasonal frozen ground area

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Snow is effective thermal insulator due to its low thermal conductivity. In the area of heavy snowfall, ground surface temperature during winter (i.e. temperature at the bottom of snow) tends to be strongly influenced by the amount of snow and its seasonal variation.

In relation with recent trend of warming, changes in snow amount and duration of the snow season are reported, which is considered to have more significant effect on ground temperature than the change in air temperature itself. It is therefore important to investigate such long-term change in snow pattern, and to evaluate its effect on ground temperature for understanding the ground thermal process responding to the climate change, and practically, for prediction of seasonal frozen ground.

In the institute of low temperature science, Hokkaido University, there is 10-year records of measurements on snow amount, snow temperature, ground temperature, and other meteorological elements, which is ideal to investigate these effects of snow on the ground temperature. In This study, quantitative evaluation will be done by revisiting these data.