

Ice thickness of three perennial snow patches in the Hakuba Mountain Range

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More than 100 perennial snow patches are distributed throughout the northern Japanese Alps (Higuchi and Iozawa, 1971). Recently, seven of these perennial snow patches have been confirmed to be existing active glaciers (Fukui and Iida, 2012; Fukui et al. 2018; Arie et al. 2019). However, glacier surveys have not been conducted in all perennial snow patches, and the distribution of glaciers in the northern Japanese Alps is still unclear completely. In this study, we measured the ice thickness of Shakushizawa, Kaerazuzawa, and Hakubazawa perennial snow patches, which have large areas and high glacial potential, using ground-penetrating radar (GPR).

As a result of this study, it was confirmed that the maximum ice thickness in the Shakushizawa, Kaerazuzawa, and Hakubazawa perennial snow patches is about 30 m, 35 m, and 30 m, respectively. The ice thicknesses of three perennial snow patches were almost same with those of the seven glaciers that have been identified. Therefore, it is possible that the three perennial snow patches in the Hakuba Mountain Range are glaciers.

Reference

Arie, K., Narama, C., Fukui, K., Iida, H. and Takahashi, K.: Ice thickness and flow of the Karamatsuzawa perennial snow patch in the northern Japanese Alps, *Journal of the Japanese Society of Snow and Ice*, 81(6), 283–295, doi:10.5331/seppyo.81.6_283, 2019.

Fukui, K. and Iida, H.: Identifying active glaciers in Mt. Tateyama and Mt. Tsurugi in the northern Japanese Alps, central Japan, *Journal of the Japanese Society of Snow and Ice*, 74, 213–222, 2012.

Fukui, K., Iida, H. and Kosaka, T.: Newly Identifying Active Glaciers in the Northern Japanese Alps and Their Characteristics, *Geographical Review of Japan Series A*, 91(1), 43–61, <https://ci.nii.ac.jp/naid/40021445177/>, 2018.

Higuchi, K. and Iozawa, T.: Atlas of perennial snow patches in central Japan, Water Research Laboratory. Faculty of Science, Nagoya University., 1971.

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