Effect of Fresh Snow on the Formation of Cold Air Pools at Kamikochi

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Snow cover is the important factor for the development of cold air pools because it acts as the insulation layer to ground heat flux and fresh snow with large albedo suppresses temperature rising on surface. In this study, meteorological survey was conducted in Kamikochi Valley, the Japanese Alps, to reveal characteristics and evolutions of temperature inversions and the effect of fresh snow on the formation of cold air pools.
The inversion duration and maximum inversion intensity showed positive relationship. Cold air pools with short duration which lasted only few hours are the most common. However, inversions persisted for about 13 hours, corresponded to the nighttime length in mid-winter at Kamikochi, also frequently formed. A few numbers of persistent cold air pools which lasted about whole day or longer were also observed. These long inversions were formed when fresh snow existed on surface. The duration of cold air pools decreased as the time passed from the latest snow fall. This was probably due to the loss of fresh snow and the decrease of surface albedo.

Keywords: Mountain Region, Cold Air Pool, Fresh Snow

