

Recent variation of snow as a water resource in the Japanese Alps

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The region of Japan that lies along the Sea of Japan is known to experience some of the heaviest snowfall in the world. In this region, precipitation brought by snowfall is more important as a water resource than rainfall. Recent studies have reported that the amount of snowfall in Japan will decrease as a result of global warming. However, these studies used data observed at low altitudes. The question arises whether the same theory can be applied to high-altitude mountain areas. Therefore, in this study, we discuss the relationship between temperature and the amount of snow using observation data for the Japanese Alps region and present the results of some meteorological observations we carried out at high-altitude sites in the Japanese Alps region. A relatively large part of the Japanese Alps region is within the altitude range of 1,000-3,000 m and the snowfall there serves as a vital water resource. Therefore, the effect of global warming on snow accumulation in mountain areas is a crucial issue. At places with high altitude in the Japanese Alps, it is rare for the air temperature to rise to around 0 °C at the current levels of temperature increase. An increase in winter precipitation should lead directly to an increase in snow accumulation in the high altitude area. Under the present circumstances, the role of the mountain regions as a system for purification of water and air that is essential for human beings existence is not duly recognized and is undervalued. However, there is no doubt that we need to understand the response of mountain regions to global-scale environmental change in the near future. To achieve that, we need to discuss the matter based on proper observation data. We therefore plan to continue our meteorological observations at high altitude mountain regions.

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