

Response of surface runoff to rainfall and snowmelt in the Mt. Norikura alpine area

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In this paper, we present the spatiotemporal variations in physical and chemical characteristics of surface runoff due to rainfall and snowmelt in the Mt. Norikura alpine region, northern Japanese Alps. This investigation was conducted from June 22, 2016 to October 13, 2016.

In addition to a water quality investigation, rainfall investigation with a rain gauge was conducted. Despite discuss the potential of surface runoff generation. We used the method of API (antecedent precipitation index) for discuss the potential of surface runoff generation. Result from rain gauge data, we quantify tendency transition from base flow to direct flow. Consequently, we achieved quantitative assessments of surface runoff using API, and became able to grasp the presence of direct flow.

During the late period of melting season, we were not able to observe the surface runoff at some of investigation points. Despite during a non-rainfall period, surface runoff is observed every time at one investigation point only (elevation 2550 m a.s.l). This observation suggest that snow patch stably supply below a ground water quality locally.

From the results obtained in water quality investigation, it was found that HCO_3^- concentration of spring water is higher than that of melt water of snow patch.

The pH, electric conductivity and HCO_3^- concentration surface runoff were changed during flow event following rain. After it started raining, immediately these values rose and declined within a few hours. Afterwards, these values tend to gradually rose with declining water level.

Keywords: antecedent precipitation index, snow patch, ground water