A Multiple Snow Layer Model Including a Parameterization of Vertical Water Channel Process in Snowpack

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Tohkamachi Experimental Station in Niigata prefecture, Japan, which locates along Sea of Japan, usually has heavy snow in winter. In this site, much snow melting water and rain are observed in middle winter, because it has higher temperature than other cold regions. Then, there is much vertical water infiltrations which go through the water channel formed in the snowpack.

In this study, we attempt to implement new parameterization of the water channel process in our multiple snow layer model, which already has the infiltration process with the Darcy’s law, to validate vertical water fluxes at each snow layers. We found that the result in our model with new parameterization is better agreement with the observation than the result without the water channel processes.