Improvements to the degree-hour method for the warning system for sediment-related disasters during strong winds

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In the snow zone, solid precipitation accumulates temporarily on the surface as the snow pack during the winter season, and when it melts in spring, the risk of landslides increases. Therefore, to evaluate the risk of landslide, it is important to predict the timing and intensity of meltwater volume. The degree-hour method is a simple way of doing this, but under strong wind conditions such as Foehn phenomena or rain on snowpack, much snow melts, and landslides occur much more frequently. Furthermore, the degree-hour method uses a degree -hour factor which is calculated by a statistical method, and so it can not predict the meltwater volume accurately under unusual weather conditions such as strong wind. By using the observational data in a heavy- snow district of warm-temperate zone, this paper shows the calculated relationship between the amount of latent heat transport and sensible heat transport and the meltwater volume during strong winds. Also, by comparing the result with the meltwater volume calculated by the degree- hour method , a better expression for the degree-hour method is shown. In addition, by examining the response of pore pressure data to the meltwater volume, parameters for the warning and evacuation system for sediment-related disasters are shown.

Keywords: warning and evacuation system for sediment-related disaster, meltwater, degree-hour method, strong wind