

Possibility of blowing snow observation using the weather radar

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Blowing snow affects road traffic because it induces multiple collision accidents and causes vehicles to become stuck in snowdrift on the road. Blowing snow occurs suddenly and affects localized areas; therefore, it is desirable to obtain spatial and real-time information on occurrences of blowing snow to effectively mitigate damage from snowstorms. However, installing many pieces of equipment for continuous and automatic observation of blowing snow in a wide area is not realistic. To understand occurrences of blowing snow, there is no other way than to make estimation based on the weather conditions or visual judgment using images from road monitoring cameras and information from road patrol personnel. In this study, we discussed whether it is possible to spatially obtain real time information on surface blowing snow based on data observed in the sky by a weather radar with high temporal and spatial resolution (X-band MP radar). In this paper, radar data and results of surface observation were analyzed, and an improved correction coefficient for obtaining surface snowfall intensity using radar precipitation data was proposed. Snow mass flux in the sky was spatially calculated from radar data, and compared with measured surface snow mass flux. As a result of this study, a possibility for quantitatively understanding occurrences of blowing snow on the ground by using only the data of atmospheric conditions obtained by radar observation was suggested.