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Case Study of Blowing Snow Potential Diagnosis with Dynamical Downscaling

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Blowing snow potential is diagnosed for typical cases in roads around Sapporo, Japan, as snow concentration and visibility based on dynamically downscaled data with 1-km resolution. The results are consistent with the blowing-snow records on time and place of traffic disruption, when the dynamical downscaling (DDS) reproduced wind speed well for a case. Moreover, the DDS-based diagnosis had a strength on the onset and cease of blowing snow in the event. The diagnosis with mesoscale model analysis with 5-km resolution does not reproduce the blowing snow events in most area, however. Hence, the DDS potentially, not perfectly, adds the value to estimate blowing snow potential, despite a large scale-gap from an explicit representation of small-scale turbulence related to blowing snow. The meteorological forecast with 1-km resolution might improve the estimate of blowing snow potential.