

The difference on the amount of snowfall of wind direction dependency in heavy snowfall area and non-heavy snowfall area

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In this study, we compared the climatological wind direction, the most frequent wind direction on snowfall days, and the most likely wind direction for snowfall in heavy snowfall areas and non-heavy snowfall areas. The data used in this study are daily snowfall data from 99 meteorological stations in Japan. The analysis period is from December to March of the following year, 1961/62 to 2020/21. The wind direction data were obtained from the daily wind speed data on the 925-hPa surface of the JRA-55 long-term reanalysis data of the Japan Meteorological Agency (JMA), and the data of the grid points at the shortest distances in the second quadrant were used as the wind over that point.

In this study, the top five points (Iwamizawa, Kutchan, Aomori, Shinjo, and Takada) in terms of average daily snowfall are defined as heavy snowfall areas. The results showed that the climatological wind direction, the most frequent wind direction on snowfall days, and the most likely wind direction for snowfall matched the climatological wind direction in heavy snowfall areas except for a few points. On the other hand, in non-snowfall areas, the climatological wind direction and the most likely wind direction for snowfall matched in few points. These results suggest the difference on the amount of snowfall of wind direction in heavy snowfall areas and non-heavy snowfall areas.

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