Evaluation of winter season visibility reduction event cause by blowing snow in Hokkaido region
（北海道地方における吹雪による冬季の視程低下イベントの評価）

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　　Visibility is a crucial meteorological factor that affect public safety. In Hokkaido, during winter season, visibility reduces by blowing snow, which increases a risk of traffic accidents. Therefore, spatial and temporal information of visibility is indispensable, especially for air and ground traffic systems. However, spatial distributions of the severity and frequency of low visibility events and the influence of climate change on the winter season visibility change remain unknown.

　　This study conducted a statistical analysis of winter visibility by using observed data at Japan Meteorological Agency's stations. The results show that occurrence frequency of low visibility cases with visibility less than 3 km is highest in Japan Sea side region, followed by Okhotsk Sea side and Pacific side regions. Differences within the region in the frequency are thought to be resulted from the difference in measurement methodologies between visual observation and visibility meter observation or the difference in local factors surrounding the stations such as land cover and terrain.

　　In addition, this study examined a methodology for estimating visibility at each station using snow mass flux calculated from precipitation, wind speed, and air temperature. After verification of the estimation skill, future change of visibility was investigated using future climate change data derived from d4PDF database. Generally, visibility reduction event was projected to decrease in the future because of the snowfall decrease in Hokkaido region. However, under the snowfall condition with air temperature below -2 ℃, frequency of low visibility event (<3km) was increased, due to the increase in snow mass flux resulted from projected increase in frequency of extremely strong snowfall event.

　　Keywords: low visibility; blowing snow; future change; estimating visibility