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Long-Term Variability of Extreme Low-Temperature in Winter in Mongolia

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The characteristics of extreme low-temperature events in Mongolia are examined using JRA-25/JCDAS reanalysis data for 1979-2010. In this study, Extreme Cold Day (ECD) which is an index to evaluate low-temperature events is defined by a daily mean surface air temperature difference lower than -10 degree within 2 days at each grid point.

The geographical distribution of winter mean ECD frequencies differs for every winter and are limited at the northern Eurasian Continent. Interannual variations in the area-averaged frequency of ECD in Mongolia during the 1980s-1990s showed decreasing trends. But in the 2000s, some year with high frequency existed.

The number of occurrence of ECD every ten years was changing spatially. In the 1980s,it mainly occurred over western part of Mongolia. On the other hand, in the 2000s,northern part of Mongolia had high number of occurrence. When cold surge in Mongolia which brings ECD occurred, atmospheric circulation tended to localized in the 2000s, compared with the 1980s. This may cause of limitation of the occurrence areas.