

# **Orographic Effects on Polar Mesocyclones Genesis around the Western Offshore of Hokkaido Island**

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Polar mesocyclones (PMCs) are mesoscale, maritime cyclones that occur in high latitudes. Around the western offshore of Hokkaido island, PMCs frequently occur, affected by cold air outbreaks from the Eurasian Continent to the Sea of Japan. In this study, the effects of mountains on the eastern end of the Eurasian Continent (Sikhote-Alin mountain range) on the PMCs genesis are examined using the regional climate model. The long-term numerical simulation indicates that the PMCs genesis frequency is high over the western offshore of Hokkaido island and along the Strait of Tartary, with their dominant moving directions are southward and eastward. The sensitivity experiment, in which the Sikhote-Alin mountain range is removed, shows that the number of PMCs decreases over the western offshore of Hokkaido island and the period of time from the PMCs genesis until landfall becomes shorter. The PMCs generated over the Strait of Tartary does not vary significantly in the sensitivity experiment. This result suggests that the effect of mountains on the PMCs varies with the location of the PMCs genesis.