

# Sustainable Arctic observing network for predicting weather extremes in mid-latitudes

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Routine atmospheric observations within and over the Arctic Ocean are very expensive and difficult to conduct because of factors such as logistics and the harsh environment. Nevertheless, the great benefit of such observations is their contribution to an improvement of skills of weather predictions over the Arctic and mid-latitudes. The Year of Polar Prediction (YOPP) from mid-2017 to mid-2019 proposed by the World Weather Research Programme - Polar Prediction Project (WWRP-PPP) would be the best opportunity to address the issues. The combination of observations and data assimilation is an effective way to understand the predictability of weather extremes in mid-latitudes. This talk presents the current activities related to PPP based on international special radiosonde observing network in the Arctic, and challenges toward YOPP. Comparing with summer and winter cases, the additional observations over the Arctic during winter were more effective for improving the predicting skills of weather extremes because the impact of the observations would be carried toward the mid-latitudes by the stronger jet stream and its frequent meanderings (Sato et al. 2016). During summer, on the other hand, the impact of extra observations was localized over the Arctic region but still important for precise weather forecasts over the Arctic Ocean, contributing to safe navigation along the Northern Sea Route (Yamazaki et al. 2015; Inoue et al. 2015; Ono et al. 2016). To consolidate the sustainable Arctic radiosonde observing network, increasing the frequency of observations at Arctic coastal stations, instead of commissioning special observations from ships and ice camps, would be a feasible way. In fact, several existing stations facing the Arctic Ocean have already increased the frequency of observations during winter and/or summer.

## References

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