

北極海のラジオゾンデ観測データが冬の中緯度で生じる寒波の予報精度に与える影響

Impact of radiosonde data over the Arctic ice on forecasting winter extreme weather over mid latitude

*佐藤 和敏¹、猪上 淳^{1,2,3}、山崎 哲²、Kim Joo-hong⁴、Maturilli Marion⁵、Dethloff Klaus⁵、Hudson Stephen⁶

*Kazutoshi Sato¹, Jun Inoue^{1,2,3}, Akira Yamazaki², Joo-hong Kim⁴, Marion Maturilli⁵, Klaus Dethloff⁵, Stephen R Hudson⁶

1.国立極地研究所、2.海洋研究開発機構、3.総合研究大学院大学、4.Korea Polar Research Institute、5.Alfred Wegener Institute、6.Norwegian Polar Institute

1.National Institute of Polar Research, 2.Japan Agency for Marine-Earth Science and Technology, 3.SOKENDAI (Graduate University for Advanced Studies), 4.Korea Polar Research Institute, 5.Alfred Wegener Institute, 6.Norwegian Polar Institute

In February 2015, the Arctic air outbreak caused extreme cold events and heavy snowfall over the mid latitude, in particular over the North America. During the winter, special radiosonde observations were made on the Norwegian RV Lance around the north of Svalbard under the N-ICE2015 project. We investigated the impact of the radiosonde data on forecasting of a cold extreme event over the eastern North America using the AFES-LETKF experimental ensemble reanalysis version2 (ALERA2) data set. ALERA2 was used as the reference reanalysis (CTL) while the observing-system experiment (OSE) assimilated the same observational data set, except for the radiosonde data obtained by the RV Lance. Using these two reanalysis data as initial values, ensemble forecasting experiments were conducted. Comparing these ensemble forecasts, there were large differences in the position and depth of a predicted polar vortex. The CTL forecast well predicted the southward intrusion of the polar vortex which pushed a cold air over the eastern North America from the Canadian Archipelago. In the OSE forecast, in contrast, the trough associated with southward intrusion of the polar vortex was weak, which prevented a cold outbreak from Arctic. This result suggested that the radiosonde observations over the central Arctic would improve the skill of weather forecasts during winter.

キーワード：北極、極渦、アンサンブル予報

Keywords: Arctic, polar vortex, ensemble forecast