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Based on the GDAS (Global Data Assimilation System) information, the conditions for the formation and evolution of a polar cyclone in the Barents Sea in December 2020 are studied. The cyclone is interesting because after entering the Kara Sea, the cyclone did not weaken as usual but continued to intensify. The formation of the cyclone occurred near the ice edge under conditions of the cold Arctic air outbreak. After entering the Kara Sea, the cyclone continued to deepen, which was facilitated by latent and sensible heat fluxes in the ice-free western part of the sea. According to weather station data, when the cyclone moved further over land, the wind direction changed from mainly southern to northern, and wind speed increased significantly. There also was a sharp decrease in air temperature by 7–10 °C for three hours.

Keywords: polar cyclone, global data assimilation system, wind speed, latent and sensible heat fluxes

Tab. 1. Fig. 6. Ref. 8.