

# A case study on Polar Low over the Japan Sea

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## Abstract

Japan Sea is one of the areas where most frequently Polar Lows form in the North Pacific Ocean. However, the character of polar lows in this region has not been fully studied yet.

In order to investigate long time trends and variability of polar lows in this region, we use the NCEP reanalyses product to drive a regional climate model (COSMO-CLM) in order to produce higher spatial resolution.

Here, a case study of the polar low on 21-January 1997 is presented, a case already studied before by Fu (2004). With a spatial resolution of  $0.4^\circ$  and output interval of 1 hour, the COSMO-CLM simulation starting on 1 January 1997, reproduces the development of this polar low accurately. The wind field, vorticity field and water particles shows the detailed movement of the low. We made comparison between model result and observations (Fu, 2004), for several variables at different levels as pressure, temperature, dewpoint and wind speed, as well as single level variables cloud cover and precipitation. There is a significant anti-axisymmetry to the structure of polar low. In addition, the "eye" structure is clearly reproduced by the wind field and humidity analysis.