

## An Intense Arctic Cyclone in August 2012: A Transition Mechanism to Arctic Cyclone

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An intense arctic cyclone in August 2012 is investigated in this study. Especially, we analyzed i) three dimensional structures and ii) mechanisms of the development focused on a transition process to arctic cyclone from extratropical cyclone.

The center pressure of the arctic cyclone decreases to 965 hPa, which is an all-time minimum in August arctic cyclones. In the early phase, the arctic cyclone is a shallow baroclinic cyclone originated with an arctic front of 60 degree north. Then the baroclinic cyclone undergoes the transition process of the arctic cyclone due to the merger with a relatively weak (990 hPa) preceding arctic cyclone. The shallow baroclinic cyclone becomes a deeper and wider barotropic cyclone with a couple of stratospheric warm core and tropospheric cold core. Analyses show that the transition to arctic cyclone plays some important role in the development of the arctic cyclone.

Keywords: arctic cyclone, extratropical cyclone, transition process