



## **Identification of Cold Air Development in the Northern Hemisphere with objective methods**

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An objective method has been developed to produce a complete climatology of Cold Air Development (CAD) events. The algorithm for the identification of CADs is based on the determination of the following parameters: (1) Absolute topography at 500 and 1000 hPa; (2) Thermal front parameter at 500 hPa; (3) Equivalent thickness at 500-850 hPa; (4) Temperature advection at 500 hPa; (5) Vorticity advection at 300 and 500 hPa. The data used to calculate those parameters consist on 6 hourly temperature, u-wind, v-wind, relative humidity and geopotential height from the NCAR-NCEP in several pressure levels for the region from 20°N to 70°N latitude and from 180°W to 180°E longitude. The algorithm begins with the identification of troughs by using 500 hPa and 1000 hPa topographies and continues through the use of consecutive diagnosis parameters. Those points fulfilling all the parameters are considered as representative of CADs and from them a complete 57 years climatology, between 1948 and 2004, as been created. A preliminary analysis has been performed in order to identify areas of major incidence of CADs, their interannual variability and the existence of trends during the analyzed period. So a list of CADs was built to study these systems.