Geophysical Research Abstracts, Vol. 8, 08519, 2006
SRef-ID: 1607-7962/gra/EGU06-A-08519

A potential vorticity perspective on upper-level precursors of polar lows

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This study is based on the premise that polar lows are often triggered by distinct tropopause-level structures in the form of highly localised positive potential vorticity (PV) anomalies. An examination is undertaken of the nature of these precursor features. The precursor life-cycle, synoptic origin and, in particular, the strength of influence at the surface are explored for a particular case. The accrued information can shed light on the origin and dynamics of the precursors and on the pre-genesis phase of the associated polar low. In turn this can serve to assess their importance for the early forecasting of polar lows.