



Identification of precursor Rossby waves and their triggers for a PV streamer climatology.

A. Twitchett, C. Schwierz

University of Leeds, Institute of Atmospheric Science, School of Earth and Environment, UK
(lecaf@env.leeds.ac.uk / Phone: +44 (0)113 343 7966)

Atmospheric Rossby waves are long planetary waves in the atmosphere which are observed as large-scale meanders of the mid-latitude jet stream. They are associated with surface baroclinic evolution and when wave breaking occurs this can lead to high impact weather such as heavy precipitation events. The waves travel along the potential vorticity (PV) gradient at the tropopause and wave breaking corresponds to PV streamer formation.

Using a northern hemisphere climatology from the ERA-40 data set of the frequency and occurrence of wave breaking events and streamer distribution the wave trains leading up to the events are analysed. Refined Hovmoller diagrams are used to depict and track the propagation of the wave trains and to locate the onset or trigger of the precursor waves. Their temporal and spatial variability is discussed and comments are made on the sensitivity to choices of parameters and diagnostic approaches. The understanding of what triggers the waves and subsequent wave breaking and the formation of the PV streamers is important for future prediction of such events, and thus also contributes to the goals of THORPEX.