



## **On the seasonal distribution on Rossby wave breaking and their impact on weather variables**

Andrea Schneidereit and Dieter Peters

Leibniz-Institute of Atmospheric Physics at the University of Rostock, Kühlungsborn, Germany (schneidereit@iap-kborn.de)

Rosby wave breaking on tropopause level is determined by the objective method according to Gabriel and Peters (2007). This method assumes that during the irreversible meridional overturning of potential vorticity contours the meridional component of the wave activity flux reaches its maximum value. According to the background flow, two different types of anticyclonic and two different types of cyclonic Rossby wave breaking can be distinguished. Analyzing seasonal cycle of the re-analysis data of the ECMWF, ERA-Interim, showing that the mean distributions of RWB events result mainly from the winter. Evaluating the composite distribution of precipitation and wind, reveal all four types are related with a special precipitation distribution. On the example of poleward anticyclonic RWB events, RWB-P2, a region can be identified where also the generation of inertia-gravity waves is possible. This region is located on the exit part of the breaking induced jet streak.

A GCM model study with zonal mean ozone and added zonally asymmetric ozone in stratosphere was performed. The induced radiative changes in the stratosphere are causing changes of the location of Rossby wave breaking events in the upper troposphere. This results from the changing background flow in the lower stratosphere, which induce more diffidence over the eastern North Atlantic. As a result, the distribution of RWB-P2 events is shifted significantly westwards.