

POTENTIAL VORTICITY HOMOGENISATION AND THE EXTRATROPICAL TROPOPAUSE

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Baroclinic eddies control predominantly the height of the extratropical tropopause. Mixing due to those eddies tends to homogenise potential vorticity (PV) on isentropic surfaces, i.e. it tends to eliminate isentropic meridional PV gradients. This PV–homogenisation should occur mainly in the troposphere, since baroclinic eddies are mainly a tropospheric phenomenon. In order to test this hypothesis and to deduce the average degree of PV–homogenisation, data of once daily (12 UT) operational ECMWF–analyses are examined for the year 2001. Computing the average with respect to the meridional position of the tropopause reveals nearly constant degrees of PV–homogenisation in both, tropospheric and stratospheric parts of middleworld isentropes, i.e. of isentropes that cut the tropopause. This emphasises the importance of stratospheric dynamics in the formation and maintenance of the extratropical tropopause. A dynamically consistent description of the extratropical tropopause based on the observed constant tropospheric and stratospheric degrees of PV–homogenisation, respectively, is compiled.