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Transport of polar/subtropical air mass at the Observatoire de Haute Provence (OHP) from 1985 to 2002

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Potential vorticity (PV) on isentropic surface is a good tracer for transport of air mass in the stratosphere. Fine PV fields at 16 isentropic levels (350 K to 950 K) from 1985 to 2002 are reproduced by the high-resolution isentropic advection model (MIMOSA) based on 6-hourly ERA40 Reanalysis data set. By an objective method based on the gradient of PV versus equivalent latitude, PV values at the border of polar and subtropical air masses on the isentropic levels (every 25 K between 450 K and 650 K) are evaluated. The occurrence of these air masses at OHP are calculated by comparing PV at OHP with these criteria for various time periods. In general, the influence of polar and subtropical air masses is negligible at the lower levels ($<$ 500 K) but significant at the higher levels ($>$ 550 K). The average fraction of polar air mass during winter is 9%. It reaches 33% in the 2000-2001 winter at the highest levels of the study. The average fraction of subtropical air mass during summer is 34% above 550 K. The ozone evolution and its trends calculation related to these influences are discussed. This study is supported by the CANDIDOZ project of the European Commission (Chemical and Dynamical Influences on Decadal Ozone Change).
Hauchecorne, A., et al., Quantification of the transport of chemical constituents from the polar vortex to middle latitudes in the lower stratosphere using the high-resolution advection model MIMOSA and effective diffusivity, *J. Geophys. Res.*, 107, doi:10.1029/2001JD000491, 2002