

Online Supplement description for : “Quantifying pollution transport from the Asian monsoon anticyclone into the lower stratosphere”

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The online data supplement includes the PV-gradient based boundary values for the Asian monsoon anticyclone, calculated using the method of Ploeger et al. (2015) from ERA-Interim reanalysis data for the levels 370 and 380 K potential temperature and for the periods 1 July to 1 September of the years 2010, 2011, 2012 and 2013. For details on the calculation see the appendix section in the manuscript and Ploeger et al. (2015). For further questions about the data contact the corresponding author (F. Ploeger, f.ploeger@fz-juelich.de).

The files monsoon_barrier_PV_level_period.nc include the data for each level and period, respectively. Included variables are:

- “time”:
Coordinate variable time in Julian seconds for the respective period.
- “ndays”:
ndays(time) is the (minimum) number of days for the time-averaging in the PV-barrier calculation around the given date (for details see Ploeger et al., 2015). For instance, if ndays is 1 the PV data at a given time was averaged over the time window between [time – ndays, time + ndays] for calculating the PV-barrier value (including all six-hourly ERA-Interim data in this time-range). The maximum number of ndays allowed is 3. If no barrier is found for ndays between 1 and 3, missing values are written to the data.
- “pv_barrier”:
Variable pv_barrier(time) is the calculated PV-gradient based transport barrier value for the Asian monsoon anticyclone for the given time.
- “pv_barrier_int”:
Variable pv_barrier_int(time) is the PV-gradient based transport barrier time series with missing value data (where no gradient maximum has been found) filled by interpolation from neighbouring values (for details see appendix section in the manuscript).

References

Ploeger, F., Gottschling, C., Griebach, S., Groß, J.-U., Günther, G., Konopka, P., Müller, R., Riese, M., Stroh, F., Tao, M., Ungermann, J., Vogel, B., and von Hobe, M.: A potential vorticity-based determination of the transport barrier in the Asian summer monsoon anticyclone, *Atmos. Chem. Phys.*, 15, 13 145–13 159, doi:doi:10.5194/acp-15-13145-2015, warning: BibtexKey has changed!!, 2015.