

Second review of the paper:

“Inter-comparison of stratospheric mean-meridional circulation and eddy mixing among six reanalysis data sets”

written by K. Miyazaki et al.

General:

Although most of my recommendations were included into the revised version I am still not happy with the current version of the paper. My largest concern is related to the formulation of the methodology in section 2.

Major points:

1. The most important tools which are necessary in this paper are relations (6) (for stream function), relation (8) (for mass flux), relation (11) (for K_{yy}) as well as relations (12), (13) and (14) (for the relative importance of mean and eddy transport)
2. Thus section 2.2 can be completely removed. Anyway, this section contains in my opinion only the well-known isentropic TEM formalism described in the standard text books like Andrews 1987. So I do not understand why all the other citations discussed in 2.2 are necessary.
3. So I would recommend to start with 2.2.1 and only state that e.g. \bar{v}^* is the mass-weighted isentropic mean (same for p_+). Then eq (6) (not necessarily eq (7)) and finally eq (8) can be introduced.
4. Here, you can shortly say that \bar{w}^* and $\bar{\theta}^*$ are different concepts and not go into the details (so eq (9) and (10) should be removed). Because you do not show that both velocities are the same, it does not make sense to show the opposite.
5. Then, the section 2.2.2 can follow.

Minor points:

1. Abstract: The sentence with AoA is misleading. It should be: The relative importance of the eddy mixing compared with the mean transport in the subtropical lower stratosphere shows increasing trends in ERA
2. Introduction. Page 3, after line 32: Please include also the results of Ploeger et al. papers showing a larger importance of eddy mixing for understanding of trends of AoA in ERA-Interim driven transport.