

General comments

This is an interesting study comparing several reanalysis datasets to analyze the momentum equation during sudden stratospheric warmings (SSW). In particular, I find useful the idea of analyzing the latest reanalysis ensemble separately. Having so many available datasets, an evaluation of how they perform depending on the topic of the study is required. I have enjoyed reading the manuscript and I appreciate the advises and recommendations regarding the uses of different reanalysis in stratospheric dynamics. The contain of this manuscript would be valuable for the scientific community so I recommend it for publication. I only have some minor questions listed next.

Specific comments

Page 6, line 10: What happens if a SSW is detected in less than 4 datasets? Is it excluded? Does this happen in many cases?

Table 2: Why the analysis stops in 2010? There is no data for some reanalysis considered herein?

Page 7, line 5 and Page 24, last paragraph: The authors argue that split and displacement SSW-types result from different planetary-scale wave forcing which motivates that distinction. I wonder whether it would be more meaningful to distinguish between wavenumber 1 and 2 as SSW precursors instead of the split/displacement sub-classification. As shown in previous studies (e.g., Banca et al. JGR-2012), the ratio W2/W1 events will be much smaller than the split/displacement type, but it could be worthy to check whether differences are significant in that case.

Page 12, line 8: What do you mean with “our interpretation of the evolution of SSW events”?

Technical corrections

Figure 2: It is difficult to distinguish the thin and thick lines. Maybe using dashed and solid lines as in figure 5?

Figures 3 and 4: I have found difficult to distinguish contours with this color scale. Especially in a printed version.

Figure 6 (right column): Note that some plots are out of range.

Page 8, line 9: events or event?

Page 10, line 25: quantities.,

Page 15, 4: Here, and in other parts of the text: m/s/day. This notation is confusing, I would suggest using $\text{ms}^{-1}\text{day}^{-1}$