We thank the editor and the reviewer for their comments on the revised version of our paper. We prepared a new version of the manuscript following the reviewer's suggestions.

Please find our answers to the reviewer's comments below:

- page 4, line 13: However, vertical velocities in reanalysis themselves suffer from large inaccuracies (see e.g. Abalos et al 2015)
We have added this remark and the reference.

- page 10, line 22: Thank you for adding the convection scheme comparison to the main part of the paper. I know I suggested it, and I still think it can be an interesting addition - however, I realized that the comparison is performed for only one year, which I would not consider being enough to get statistically robust results in a free-running model. Also, you probably need some spin-up to reach an equilibrium climate with the new convection schemes.
So unless you want to put more work into this I'm afraid I have to revise my opinion and vote for taking this part out again.

We have moved convection comparison back to the appendix and added an additional comment to make clear that these experiments are only run for one year.

- page 13, top: Thank you for showing the test of the method in the answer to the reviewer comments. I would suggest to add a short sentence on the robustness of the method to the paper.

The following sentences have been added:

The robustness of this transformation has been checked by first applying Eq. (10) and then using the inverse transformation to convert omega_theta to thetadot_test. The differences between the original thetadot and thetadot_test are found to be smaller than 10^{-6} K (not shown).

- page 13, line 8 / 10: labels to Fig. 5 and 6 wrong way round? (seasonal climatology is Fig. 6)

The labels of the figures have been corrected.