

Response to Reviewer, Technical Corrections: “Characteristics of long-track tropopause polar vortices”

Original reviewer comments are in black, author responses are in red.

Reviewer 1

(1) RRTM-experiments: Could the authors say something about how the PV tendencies are computed from the radiative heating / cooling rates? Note that the PV tendency does not only depend on the vertical gradient of the heating rate, but it is also proportional to the absolute vorticity. Did you assume a typical value for the absolute vorticity when converting gradients of the heating rates to PV tendencies or did you take the actual vorticity profile? I think this should be specified in the paper. Also, I am wondering whether the cyclonic vorticity present (once the TPV exists) may help to further strengthen the PV rates?

Average vorticity profiles were taken and used in the same manner as the temperature and humidity profiles. This has been added to the text. To your second point, while we didn't explicitly explore this in the paper, we expect that that would be the case. As the TPV strengthens and additional cyclonic vorticity is present, the rate of PV development should increase as a result.

(2) L31: stratopshere → stratosphere

Corrected.

(3) L247: Do you mean a “shortwave trough”?

Shortwave ridge, added.

(4) L387: “...for winter case lysis events...” sounds odd, suggest rephrasing.

Rephrased.

(5) L416: predominate → predominant

Corrected.