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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Investigation of inertia-gravity waves in the upper troposphere/lower stratosphere overnorthern Germany observed with collocated VHF/UHF radars" *by* A. Serafimovich et al.

Anonymous Referee #2

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General

I understand that this paper is an extension of the Peter et al. (2003) paper. In Peter et al. it is shown that inertia gravity waves appear on the north-eastward side of an anti-cyclone. In Serafimovitch et al. the authors attributed the generation of these waves to a Rossby wave braking. The problem is that the anti-cyclone and the probable Rossby wave breaking occurs near the region where the measurements has been made on day 17, but after this date the structure is displaced eastward and on day 19 the region is covered by a cyclone. The techniques used to analyse the data are very interesting but I think that many result are over-interpreted.

Details

The wavelet transform (fig. 3) show a period of approx. 12 h and a vertical wavelength of 4 km. On fig. 4 the zonal wind perturbation after some filtering process during day 17 and from 2 to 15 km show a wave of 12 h period and 4 km vertical wavelength. Furthermore, in all the time/height scheme the phase velocity is downward. This is coherent but we have to conclude that this wave can not be generated at 9 km. The same problem appears in both observations stations. A wave of 6 h periods appears on fig 5 but this time on meridional wind perturbations. Why for the 12 h period wave only the zonal wind and for the 6 h period wave only the meridional wind? Moreover the filtering process used for the 6 h wave is not justified by the result of the wavelet analysis. The 6 h period appear as a limit of the validity (green line) but all the other intermediate periods can exist. These results are in contradiction with other analyses made in the paper and the conclusion which seems to show that there is a wave propagating downward and another upward from 9 km where they are generated by the breaking of a Rossby wave.

Suggestion

Which follows has been perhaps studied in the Peters et al. (2003) paper from which I know only the abstract. If it in not the case I suggest: Fig 2 shows something very interesting. The mean meridional wind shows a structure typical of a wave of 30 h period. The same period appears in the wavelet analisis With your data you can eliminate a mean in the zonal wind. It is possible that the same period will appear in this wind. If this is the case we can study the origin of this wave with very simple methods

My conclusion

I think that this paper involved a considerable technical effort but it can not be published in the actual form. The authors must be more critical on the result and eliminate the contradictions.

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Interactive Comment