

Interactive comment on “Interannual variability and long term changes in planetary wave activity in the middle atmosphere observed by lidar” by A. Hauchecorne et al.

A. Hauchecorne et al.

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Referee comment: 1. The paper mentions at the beginning that stratospheric and mesospheric data is available but discusses in detail only stratospheric phenomena. It should explicitly be stated why planetary wave processes in the mesosphere are of lesser interest to the authors.

Author answer: We thank the referee for this good remark. Mesospheric wave processes are equally interesting. We intend to discuss also mesospheric data in the new version of the paper.

Referee comment: 2. It should be pointed out clearly, that the analysis is only catching transient (travelling) planetary waves (PWs). Possible effects of stationary PWs should

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be included in the discussion in Section 4 and in the conclusions in Section 5 where this issue is relevant.

Author answer:

We agree with the referee that with a fixed lidar it is only possible to sample the travelling component of planetary waves (PW) and that global data are needed to study stationary PW. However we consider that lidar data can provide a unique source of information concerning the characteristics of travelling PW in an altitude range (30 to 70 km) not well covered by other methods (satellites, meteorological analyses), especially for the mesosphere. Furthermore, the study of both PW components using ERA40 would be a totally different topic outside of the goal of this paper. We intend to refocus the paper on the characteristics of travelling waves in the stratosphere and in the mesosphere.

Referee comment: 3. In the spectra of Fig. 2 are indications of ultra-long oscillations (Julian and Madden) which are more prominent during QBO west than QBO east and more pronounced in the mesosphere than in the stratosphere. I think that this interesting phenomenon which is rarely seen in other mesosphere data sets would deserve a short additional paragraph.

Author answer: The suggestion to add a paragraph on ultra-long oscillations in the stratosphere and mesosphere is a good one. It will be added in the new version.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 11299, 2006.

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