

## ***Interactive comment on “Planetary wave activity in the Arctic and Antarctic lower stratospheres during 2007 and 2008” by S. P. Alexander and M. G. Shepherd***

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We thank the Referee for these comments on our manuscript. Referee 3 mentioned that a fully detailed analysis of the height structure of planetary waves, which is available with COSMIC, was not conducted. We would like to assure the Referee that results on the vertical structure of the stratosphere throughout the 10-40 km range as seen by COSMIC were available at the time of the submission of the original manuscript. However, as we had a different idea about which results to include, some of the earlier variability-with-height results were not considered further. This has been addressed in the revised manuscript, where the amplitudes of travelling and stationary waves in

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both hemispheres are considered in detail. Due to the recent availability of COSMIC data from the boreal winter of 2008-09, we have included a discussion on wave activity during that year's major sudden stratospheric warming and have related it to that observed in the preceding two winters. In our opinion, the inclusion of these recent data strengthens and expands the results of the manuscript, especially with respect to the NH. In the revised manuscript, we have also followed the suggestion of Referee 1 for the extraction of travelling and stationary planetary waves instead of the linear least squares fitting (Equation 8) from the original manuscript. In summary, the eastward and westward temperature perturbations are obtained via Hayashi's (1971) space-time analysis, as previously. The stationary waves are then separated from the travelling waves (Pogoreltsev et al. (2009)). Wavelet analysis is then conducted on these travelling and stationary time series at each height. We note variations in maximum wave amplitudes in these analyses however we do not extract individual, discrete waves. The height variations in amplitudes are then discussed in detail.

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