

Interactive comment on “Multi-instrument gravity-wave measurements over Tierra del Fuego and the Drake Passage – Part 1: Potential energies and vertical wavelengths from AIRS, COSMIC, HIRDLS, MLS-Aura, SAAMER, SABER and radiosondes” by C. J. Wright et al.

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General Comments

[Annual vs Seasonal] Seasonal differences are indeed better highlighted by a by-season rather than a by-instrument plot, and a new figure has been added showing the data this way. Text has been added to section 6.1.2 discussing this new figure.

C4377

[Dissipation] The addition of the new figure above makes dissipation effects much more apparent, and it becomes clear we have misinterpreted our results in this area. There is in fact dissipation visible. All sections relating to dissipation have now been modified to make it clear that there is in fact significant dissipation, in particular in the UTLS in summer and in the upper stratosphere in spring.

[Radar comparability] We agree that the SAAMER meteor radar measures GW in a different way from the satellites and that care must be taken in comparing the different results. We are not assuming any particular relation between KE and PE and are presenting our results only in terms of their vertical structure and seasonal variability. Our comparisons of the radar and satellite observations are thus entirely qualitative and not quantitative. However, it is interesting to have a radar specifically designed to measure GW in the upper mesosphere available in the location where we focus our study and we think it is worthwhile to include these results. We have therefore revised the text to highlight the differences between the satellite and radar techniques and made it clear that our comparisons are qualitative only.

[Conclusions] We have trimmed the first point of section 8.2 significantly and emphasised that it is already well-known by adding text mentioning this at the beginning of the point. Combined observations will be addressed in Part II.

[Previous Studies] We have added citations to and some discussion of *Preusse et al* (2000) and *Wu et al* (2006).

Specific Comments

[P6898 L014] Slightly above the mesopause, at ~ 100 km. This has been specified in the text.

[P6801 L001] *Geller et al* (J. Clim, 2013) considered momentum fluxes only. We have modified the sentence to refer explicitly to potential energies.

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[P6803 L007] Rephrased.

[P6807 L003] Yes. This seems to be correct in the LaTeX I originally submitted, but appears incorrect in the version as typeset by the journal, which is odd.

[P6810 L021] Also yes, and also correct in the as-submitted version.

[P6816 L026] This has been clarified.

[P6819 L014] Fixed.

[P6820 L023] GWMF is correct - the reference is to a figure computed in *Alexander et al* (2009) which shows only GWMF, not GWPE.

[P6824 L011] These values are close in wavenumber space, and the spectral width of the peaks is such that values beyond the reported limit should be measured but mapped onto the closest quantised level. This has been clarified in the text.

[P6824 L023] Yes - MLS was added to the study after this paragraph was originally written, hence the mistake! Fixed.

[P6826 L007] Indeed - not sure how this slipped through! It's been fixed at the three locations where *Moffat-Griffin et al* (JGR, 2013) is mentioned.

[P6826 L024] Fixed.

[P6829 L012] Removed the first.

[P6830 L014] Fixed.

[P6835 L018] The seasonal distributions are similarly skewed. A caveat has been added to the text.

[P6835 L020] A citation to the highly relevant *Baumgaertner and McDonald* (2007) has been added - thank you for bringing it to our attention.

[P6836 L012] Fixed.

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[P6836 L021] "This suggests that" has been changed to "thus".

[P6836 L027] The sentence has been removed.

[P6841 L012] Omission of the HIRDLS data from early 2008 is valid due to the erratic behaviour of the HIRDLS optical chopper during this period (see e.g. page 6 of the *HIRDLS Data Quality Document* (2013), citation provided in paper references). These data were explicitly excluded from HIRDLS releases before the final V007 release for this reason. Mention of this has been added to the text.

[Fig 1] The axes are the along-track and across-track distances, in elements of data. These axes have been added to the figure.

[Fig 5 key] Indeed. This error arose due to a late figure rearrangement, and has been fixed.

[Fig 8] Fixed.

[Fig 13] The data missing on figure 13 appears to be AIRS data for 2013. These data have now been added. No corresponding text changes have been made, since the addition represents a fractionally small change and does not alter our conclusions in any way.

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