

Interactive comment on “Intercomparisons of HIRDLS, COSMIC and SABER for the detection of stratospheric gravity waves” by C. J. Wright et al.

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Response to Reviewers

Anonymous Referee #1

Major A The criterion applied is a distance of 180 km: the ‘ten times’ statement was incorrect and left over from a much earlier version of the manuscript. The text will be corrected to reflect this. Text will be added to the correlation analysis section (s.4) to emphasise the importance of phase in this analysis. See also response to point Major D.

Major B Text will be added to section 4.1 discussing these issues.

C437

Major C Based on the two reviewers’ responses, the lower bound for the comparison range has been moved vertically upwards to ~ 20 km and the analysis repeated. An explanation for this will be added to s.3. This improves the results: a significant number of weakly correlated results in figure 3 are eliminated, and similarly the obtained distributions are tighter in figure 4. The text will be updated to reflect this. DISCUSS ALTITUDE RANGE.

Major D The relevant parts of s.4 will be rewritten to emphasise these points more strongly.

Major E Mention of this will be included in the changes made response to Major Point B, above.

p.739 l.6 Will be added.

p.741 last line Remsberg et al (2008) table 1 and figure 6 give a precision at these altitudes of ~ 0.8 K. The text and table will be updated to reflect this.

p.742 l.17 Yes. This does not affect directly the distance-colocation criterion: whilst the primary justification was due to the propagation distance, the justifications based on wavelength atmospheric path length still stand. As regards the vertical propagation distance, this reduction in vertical distance by a factor of 2π means that the height range covered can be safely reduced to start at an altitude of 20 km, rather than the original 16 km, while still expecting waves to be within the height range covered by all three instruments. The text will be rewritten to reflect these changes.

p.743 l.3 See response to Major Comment A, above.

p.743 l.10 See response to p.742 l.17, above.

p.743 s.3.2 Subsection will be merged with the previous subsection. The heading for section 3 will also be adjusted.

p.743 l.9 See response to Major Comment C, above.

C438

p.744 l.13 Changing the lower bound to 20 km does indeed improve the number of matches significantly (in particular, HIRDLS-SABER goes from 19233 to 26824). The text will be updated to reflect this.

p.754 l.4 Will be corrected.

pp.761,763,764 Figure caption size will be increased throughout.

p.738 l.4 / p741, l.12 Will be corrected.

p.739 bottom All three instances will be rephrased to resolve repetition

p.749 l.20 Will be corrected.

Anonymous Referee #2

s.2 References to figure 3 of Alexander and Barnett (2007) will be added. This figure shows approximate resolution footprints for COSMIC and HIRDLS directly, and the equivalent footprint for SABER can be easily extrapolated from this.

s.3.1, p.743 l.3 See response to Anonymous Referee #1's Major A, above.

s.3.2 p.743 l.9 The lower bound has been adjusted to 20 km. See response to Major C, above.

Table 1 Generally conservative bounds have been adopted for all three instruments in the table. Whilst COSMIC profiles often do extend both above and below the range described, we feel that the values from Anthes et al (2008) are reflective of the great majority of profiles in the dataset.

Figure Captions Figure caption size will be increased throughout.