

## ***Interactive comment on “Validation of the Aura High Resolution Dynamics Limb Sounder geopotential heights” by L. L. Smith and J. C. Gille***

**Anonymous Referee #1**

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This reviewer is not an expert in satellite data analysis or comparison, though I have used data from space-borne sensors to compare with my own work.

This is a fairly well structured paper that is easy to read and understand. The presentation is important for those who will ultimately use HIRDLS data for science studies.

I have a few minor issues that should be easily remedied, so that the paper can be published.

On page 1006, lines 25-27 (and referring to Fig. 1), the authors state: "The minimum in the predicted GPH precision at approximately 10 hPa corresponds to the location of the THNA. Notice the predicted precision increases ...". This is a semantic issue, but generally "increased precision" means better precision. If they change the term to

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"uncertainty" in both the text and figure or do something similar, that would help.

Page 1007, line 1, I am not sure what is meant by the "ellipsoid".

The authors' main reference for comparison of the data is ERA-Interim. I was able to find that ERA-Interim is an empirical model made up of data from 25 instruments on 45 satellites. Of course, all of these instruments do not measure what is being compared to HIRDLS. So it would be useful for the uninitiated reader, such as myself, if the authors could provide a paragraph describing the ERA-Interim data they will use for comparison and why they consider it to be authoritative.

It is important to establish the authority of the ERA-Interim data, as the authors consistently refer to the HIRDLS data as biased. Not biased with respect to ERA-Interim, though that is implied, but simply biased. One would like to think that a new measurement results in reduced bias and that HIRDLS might be correcting a bias in ERA-Interim, but if this is not the case, the authors should be clear about why.

There are several references to comparisons with GEOS5, WACCM, and NCEP/NCAR Reanalysis data that are not shown, yet are stated as fact that they are similar. This is generally a no-no. I can see the reasons, however. The paper could have almost twice as many figures. Is there some way to either reference other work, reference to access to these data through online database resources for the reader to compare, should (s)he desire, or to add one or two figures as examples to show their point? It would be nice to have some confirming evidence.

Other comments: 1. Please make the axes labels on your figures more readable. The fonts are microscopic. 2. Figures 9 and 11 standard deviations color bars go negative. Although the deviations themselves do not have this flaw, I urge the authors to use color bars with positive values only.

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