Reply to reviewer 1

General reply:

We appreciate the reviewers time for reading the manuscript and providing feedback to our analysis. As mentioned in a previous reply, modeling the issues of the hot-cold zero-line calibration for certain orbits as tidal mode and applying the ASF to remove this bias to obtain reliable mean winds is equivalent to the solar beta angle filtering. So, there is no contradiction at all. However, to avoid further discussion, we repeated the entire analysis using only a solar beta angle filter as suggested in Dhadly et al., 2021 and compared the results to our filtering. To keep things consistent the climatological fits both, include the ASF. Given the agreement, we are confident that both methods are applicable as a quality control mechanism for TIDI winds.

General Comment:

I appreciate the authors taking the time to respond to my comments, suggestions, and concerns. However, my key concerns remain, and I am not fully satisfied with the responses to the major issues raised in the previous revision. The authors cited the lack of orbital characteristics in the data files as a limitation for making improvements. However, I have checked that all necessary data to address bias (including solar beta to determine the terminator locations) is available in TIDI wind data files located at the data link provided in the manuscript. Additionally, the authors emphasized that the previous cited studies are focused on a latitude band of approximately 10S to 40N, whereas their study examines middle to high latitudes. However, this reasoning is not valid, as the bias associated with TIDI's zero-wind problem on one of the telescopes is independent of location and persists regardless of the satellite's location on the globe. Furthermore, as previously suggested, July is possibly not an ideal month for TIDI comparisons, as TIDI may be observing near the terminator by the end of the month. The authors have not addressed this concern in their responses.

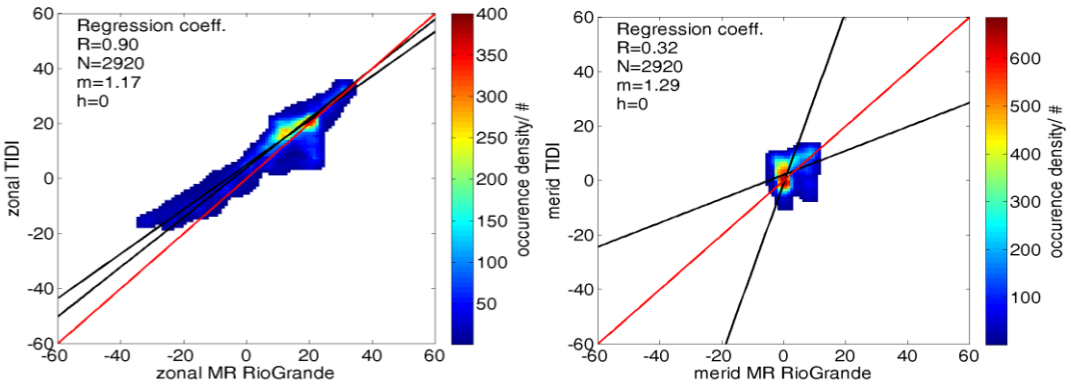
Reply:

We have been mistaken looking at the data base and searched for the solar beta angle in the group data of the netcdf file instead of the header attributes.

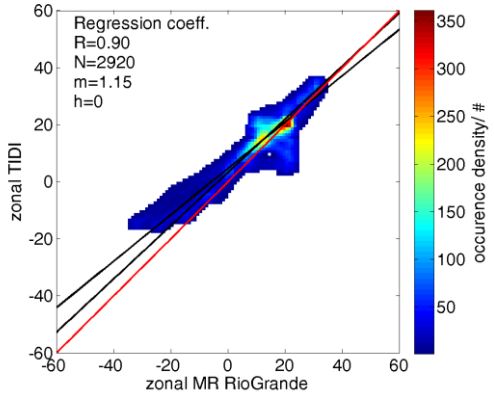
Comparison of statistical method Gauthier et al. versa solar beta angle Dhadly et al.:

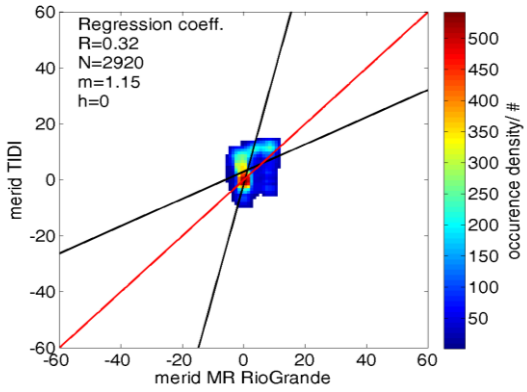
First, we computed the climatological database applying only the filter as described in the submitted manuscript and a second analysis only using the solar beta angles (<55°). We show a representative correlation for the Collm location.

Dhadly et al., 2021 - Solar beta angle <55°

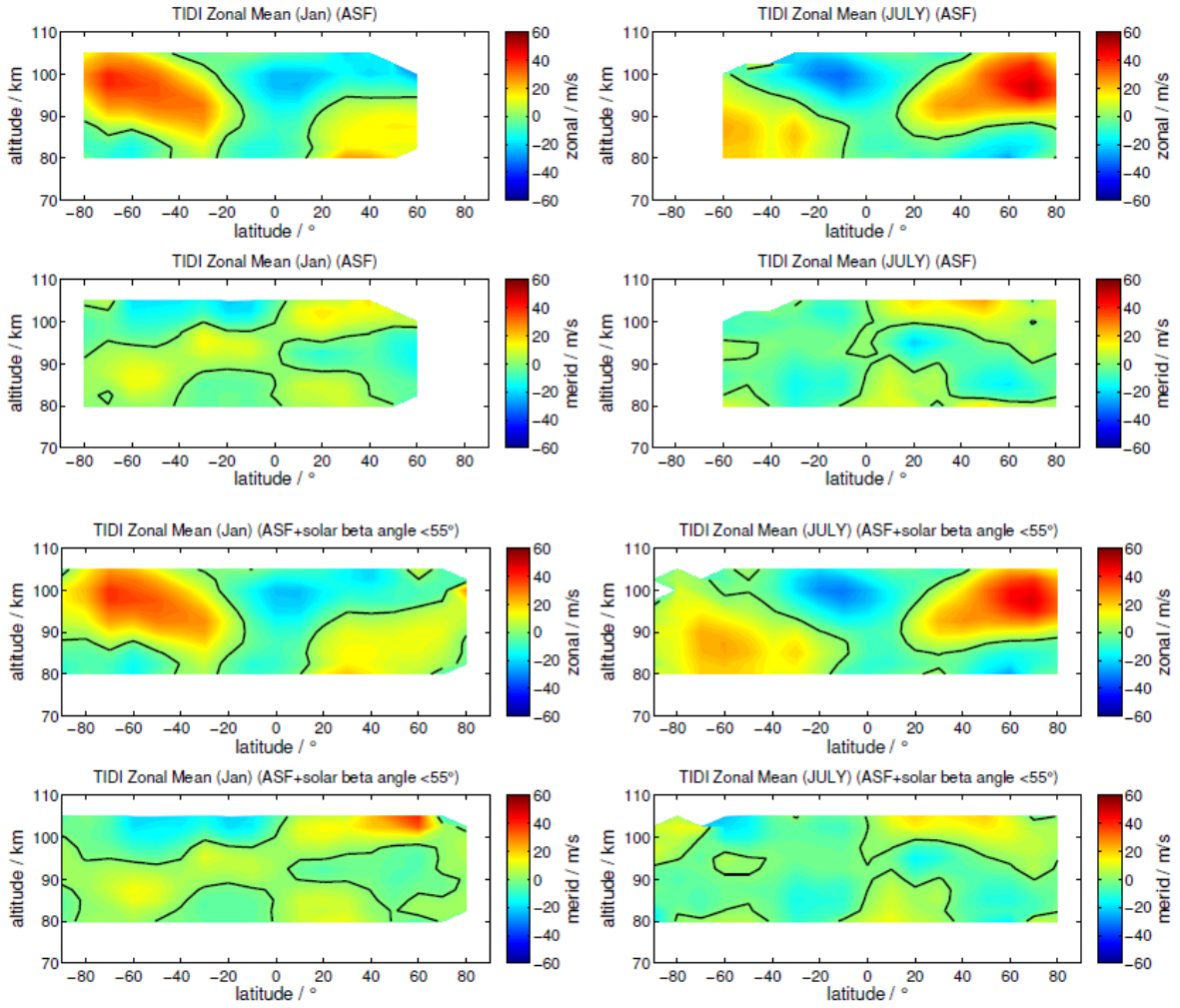


Gauthier et al. statistical filter + ASF





We also compared the latitudinal climatologies leveraging both methods, which resulted in nearly identical structures. However, due to the lower statistical limit of the minimum required number of measurements the solar beta angle filter resulted in an increased coverage during the hemispheric winter condition.



Reply to reviewer 2

General Reply:

We thank the reviewer for their assessment and appreciation of our manuscript. It compares mean wind climatologies from TIDI's extensive dataset and local meteor radars, with a statistical quality control procedure. The results show strong agreement, especially for zonal winds, where TIDI captures most seasonal patterns, though it is less precise for meridional winds.

General Comment:

The authors present a very nice comparison of TIDI data to meteor radar data for the lifetime of the TIDI instrument. They examine the global climatology derived from measurements. Zonal winds are found to have better agreement than meridional and some expected climatology results are seen. I recommend this paper for publishing with the very minor corrections suggested below, which are mostly proof-reading.

Comment:

Line 74: it is unclear what “This” is. The NCAR method?.

Reply:

We have revised this paragraph to be more clear which method refers to which organization.

Comment:

Figure 2, 3: Are a) and d) supposed to be the same plot? Maybe just have it once?

Reply:

We remove panel d) from the panel to avoid duplication of information.

Comment:

Line 128: Spacing issues with parentheses. Is “released” the word you want?

Reply:

We rephrased this sentence and corrected the parentheses.

Comment:

Line 160: Missing an “and”, perhaps?

Reply:

Corrected.

Comment:

Line 180: “Figures 5 and Figure 6”. Figures 5 and 6? Figures 5 and Figures 6? Plus, there’s an extra space I think before 6.

Reply:

Done.

Comment:

Discussion: Are there suggestions/conjectures as to why the meridional winds are less correlated that could be stated in the discussion of those winds?

Reply:

Meridional winds show lower correlation than meteor radar due to their weaker magnitudes on seasonal time scales, compared to zonal winds. This makes them more susceptible to local atmospheric wave variability and sampling effects.

We added it in the discussion part of the manuscript.