Responses to the Editor and Referees

General Comments:

Dear Dr. Gunter Stober.

EDITOR: **"one reviewer is now pleased, but the other reviewer still has major concerns. I did read the comments and believe it is easy to implement them. The raised points are reasonable and it is recommended to follow the suggestions. Please submit a revised version of your manuscript highlighting the changes according to the reviewer's suggestion. "**

AUTHORS: Thank you for your support. We have revised the manuscript considering the comments from the Referee #2. We have marked the changes in the tracked changes file and our point-by-point reply is following this letter.

Best regards,

The authors.

Referee #1:

REFEREE:**"accepted as is"**

AUTHORS: We appreciate the contribution from the Referee #1 and the recognition that was given for our efforts to address the concerns pointed out.

Referee #2:

REFEREE:**"Comments on the paper 'Comparison of meteor radar and TIDI winds in the Brazilian equatorial region1 by Ana Roberta Paulino, Delis Otildes Rodrigues, Igo Paulino, Lourivaldo Mota Lima, Ricardo Arlen Buriti, Paulo Prado Batista, Aaron Ridley, and Chen Wu. The theme of the study is relevant to the journal. However, I believe that results of the data analysis can be significantly more informative, and the study requires additional efforts. I think it will not take a lot of time."**

AUTHORS: We appreciate the time of the Referee #2 revising the manuscript and we thank for the important suggestions, which certainly will improve the quality of the manuscript. We did our best to address all unclear points as suggested by the Referee #2.

REFEREE:**"Abstract. The authors write in the abstract that they use a grid of ±5 degrees. However, the reader may find in the Introduction, that a grid of ±10 was used."**

AUTHORS: Thank you for this important observation. Initially, we have worked with a ±10 degrees box, however, following several suggestions during the peer review process, we have changed the analysis to a box of ±5 degrees. We have changed it in the Introduction.

REFEREE:**"Fig.5-6. The comparison shows a large difference between MR and TIDI winds. Therefore, a question arises about the method of the comparison. I would like to repeat a part of my previous comments about the TIDI data processing. It is unclear: how the authors deal with gaps, how the authors deal with wind seasonal changes and long-term wind oscillations. Wind speeds at different LT hours were taken from different days. Therefore, planetary waves or strong prevailing wind changing will create additional short-term variability. The MR data allow to check this effect, the MR wind can be taken at LT hours of the TIDI winds."**

AUTHORS: Thank you so much for this important comment. We agree with the total concern of the referee and it was one of our concerns as well. Due to the quasi-sun synchronous orbit of the TIMED, a time interval of about 60 day is necessary to cover an entire day. Even using a 60 day window, we can observe several gaps in Figure 4 and 6. Extending this window, it is likely that the gaps will be reduced, however, the seasonal changes, as pointed out by the referee, can change the pattern of the winds. So, after several tests, we decided to keep a 60 day window, even with the presence of the gaps. In fact, it is an important result for the proposal of the manuscript that shows the limitation of this instrument to conduct this kind of study with TIDI data. As the meteor radar has continuous measurement every day, Figures 3 and 5 do not present gaps and the values are smoothed compared to the TIDI ones. The basic idea of this comparison was to check whether within a reasonable time window, the TIDI could reproduce the same behavior of the meteor winds. It is important to remember that in Figure 1, we compared almost simultaneous measurements and the profiles were quite different from each other. In this case, we have averaged all TIDI wind profiles within a time range along the

two months as a representative month.

REFEREE:**Also, there is a limit for large MR winds to remove unphysically large values. Did the authors use any limit values for the TIDI winds? Perhaps it is better to provide a comparison between prevailing winds, diurnal and semidiurnal tides."**

AUTHORS: Thank you for this question and comment. We have used the same filter of the meteor winds in the TIDI winds, i.e., winds faster than 150 m/s were considered missed points. Comparing prevailing wind and tides is indeed a good suggestion for future work, thank you for suggesting this. However, we understand this kind of analysis is out of the scope of the present manuscript. We would have to implement, test and validate a methodology to calculate tides from the TIDI data and certainly it will take a long time to be done.

REFEREE:**"Ln 130. Unclear statement: 'Maybe the presence of the small oscillations oscillations during some days could modulate the observed diurnal tide phase.' Why can't large oscillations modulate the tidal phase? "**

AUTHORS: The referee is right. As small as large oscillation could modulate the tidal phase. We have fixed the statement. Thank you for the suggestion.

REFEREE:**"Fig. 1 Indeed, the TIDI wind profiles are not instantaneous. There is need of about 2 minutes to obtain LOS wind velocity."**

AUTHORS: Yes, the referee is right. We have changed it to "quasi instantaneous" and explained it in the Introduction. Thank you.

REFEREE:**"Fig 7-8. Please, show the seasonal wind changes for all available heights."**

AUTHORS: Thank you for the suggestion. We have changed Figure 7 and 8 according to the Referee suggestion. In fact, it seems to be better because it reduces the spread points. There are no significant differences regarding what is explored in these figures. We have also tested other individual altitudes and, in general, the behavior is similar. These figure are show as following:

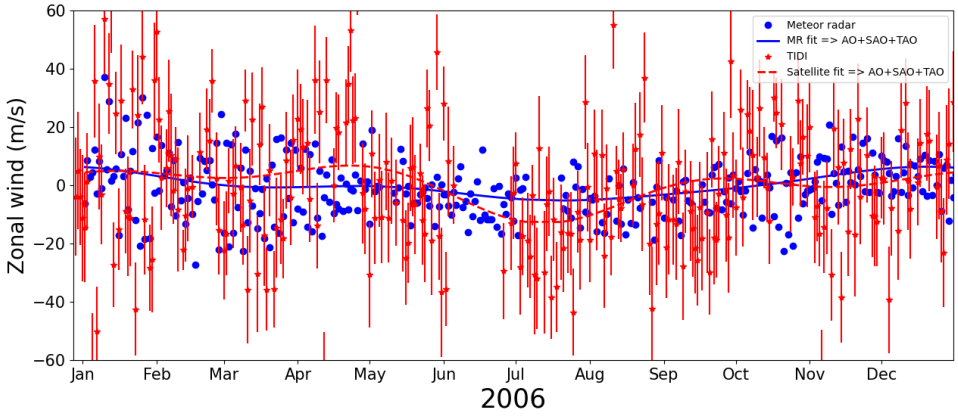

Figure 1: Temporal evolution of the meridional wind calculated for all available altitudes for the meteor radar (blue) and TIDI (red) during 2006. Solid blue line (meteor radar) and dashed red line (TIDI) represent the least square fits for AO, SAO and triannual oscillations (TAOs).

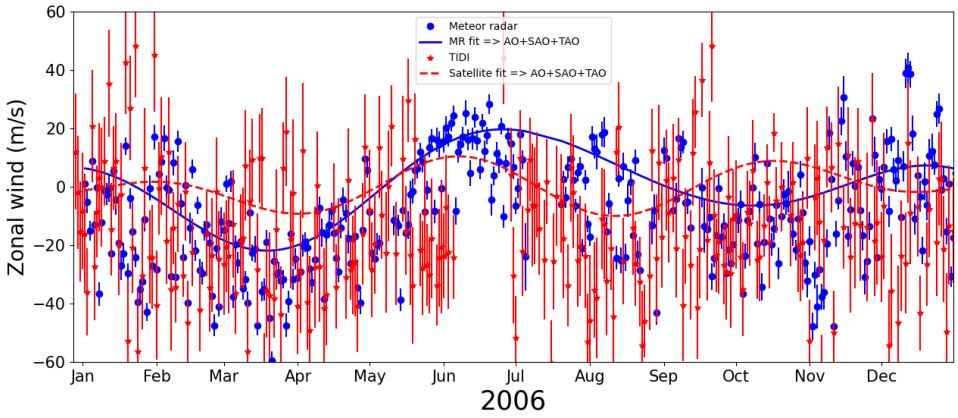

Figure 2: Same of Figure 1, but for the zonal component.

REFEREE:**"Table 1. Fig.7-8 show the seasonal wind changes, but the reader can find the parameters in Table 1 for the whole year 2006. It seems reasonable to present the parameters for different seasons."**

AUTHORS: Thank you for the suggestion, we have added some rows showing the parameter for all seasons as can see in Table 1 . It was also incorporated to the manuscript.

Table 1: Statistical parameters for a Gaussian distribution for the zonal and meridional winds measure by the TIDI and meteor radar.

		Zonal AVG	**Zonal SD**	**Merid. AVG**	**Merid. SD**
Total	**MR (m/s)**	-8.9	18.6	-1.0	10.2
	TIDI (m/s)	-14.3	23.0	-0.4	21.8
Summer	**MR (m/s)**	-17.7	18.0	1.0	13.7
	TIDI (m/s)	-13.0	24.0	2.2	24.6
Fall	**MR (m/s)**	-7.3	18.9	-2.5	8.5
	TIDI (m/s)	-16.8	18.5	4.1	24.1
Winter	**MR (m/s)**	-2.7	14.8	-5.6	7.0
	TIDI (m/s)	-16.3	27.3	-9.7	18.0
Springer	**MR (m/s)**	-6.8	18.5	1.7	8.4
	TIDI (m/s)	-11.9	20.7	2.3	17.5

REFEREE:**"Summary.The authors state that 'there are qualitative agreements with the meteor wind calculations. However, the meteor radar calculations for each month is smoother compared to the TIDI ones'. The agreement seems to be much worse. This is also an important result. In light of my comment 1, I propose a different formulation.."**

AUTHORS: Yes, the referee is right. We have reformulated this statement. Thank you for the suggestion.