

Authors response to the reviewer#2 on “Are mean vertical velocities from PMSE a good representation of mean vertical winds?” by Nikoloz Gudadze et al.

We thank the referee for her/his positive and helpful feedbacks. We appreciate all the efforts improving the manuscript and acknowledge the given comments and suggestions. We provide detailed replies to all the raised comments listed below. All changes in the manuscript will be highlighted as bold text.

The remarked language changes are also included.

General Comment

Comment:

The description of the measurements is insufficient for readers not familiar with the topic. More details, and even basics of the MAARSY radar; e.g., the geographic coordinates are only provided in the abstract. More information is necessary here. Few more information on the experiments would also be helpful. Have the experiments been run continuously during both seasons? Which is the grid size for binning (page 2, line 5)? This and more information would improve the paper.

Reply:

We have extended information and description on the instrument and observational details.

Specific issues:

Comment:

P2 | 17: “...considering the Bousinesq approximation...” delete this part of the sentence. Continuity equation does not require incompressible fluid.

Reply: *Done*

Comment:

P3, ll 22-24: The mechanism is described later, but should be outlined here.

Reply: *Done.*

Comment:

P3, l 28: This sentence requires information that is only provided below or missing, namely the latitude of the observations, and an explanation what “PMSE 5 beam radial velocity” means.

Reply: *Information is added.*

Comment:

P4, I 2: What does MAARSY stands for? It should not only be provided in the abstract.

Reply: *Explanation of the abbreviation added.*

Comment:

P4, I 22: more homogeneous than what?

Reply: *Than within instantaneous measurements. Sentence is rephrased.*

Comment:

P7 I 17: Jacobi, 2011 shows midlatitude winds, not polar ones. If you want to add more references, you may wish to refer to radar based wind climatologies like Portnyagin et al., 2004.

Reply: *Thank you for the suggestion of interesting reference. We agree and changed accordingly.*

Comment:

P8, I 16: ".. but not in certain circumstances associated with a target parameter." I do not understand what this means.

Reply: *Reworded as ".. but not in certain circumstances associated with a background conditions."*

Comment:

P9 I5 /Figures 5 and 6: I did not understand what the red points mean.

Reply: *Reworded. Red points indicates mean of those vertical velocities corresponding to uncertainties lower than a given threshold.*

Comment:

Figure 1: The blow-up on the right panels is not necessary in my opinion. The vertical resolution is 500 m and the effect is visible on the left panels also.

Reply: *The main reason to zoom out the middle part of the right panels is to highlight the error bars given on red curve of the weighted averages. We add a sentences in figure description to point attention of the reader.*

Minor comments

Comment:

P2, I 29: admitted -> considered

Reply: *Accepted*

Comment:

P6, l 7: excluding the -> except for a

Reply: *Accepted*

Comment:

P6 l 25: "We have also ... " something went wrong with this sentence

Reply: *Reworded*

Comment:

P8, l 22: downward the -> the downward

Reply: *Done*

Comment:

P9, l 4: remove "relatively"

Reply: *Done*

Comment:

P 16, l 28: Stober et al., 2018: refer to the final revised paper

Reply: *Done*