

Interactive comment on “Validation of Aeolus wind products above the Atlantic Ocean” by Holger Baars et al.

Anonymous Referee #2

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This is a good paper that makes an important contribution by investigating direct comparisons of Aeolus wind measurements with radiosonde-observed winds over the ocean. Although the number of cases is limited, nevertheless the conclusions from the comparisons are self-consistent and demonstrate the important conclusion that Aeolus is making acceptable and representative measurements of the horizontal line of sight winds. The point illustrated from the analysis that the large vertical range bins in the upper troposphere lead to underestimate of the maximum wind in regions where the vertical shear is high is important. I believe that the paper is suitable for publication following correction and clarification of a few minor issues that I describe below.

Line 10: “proof” should be “prove” or “provide proof”.

Line 34: It should be noted that Atmospheric Motion Vectors (AMVs) can also be com-
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puted by tracking features in the water vapor field.

Line 153: It isn't obvious to me that the Rayleighcloudy wind product is without value. I realize that the presence of aerosols complicates the wind retrieval in the Rayleigh channel, but I'm not aware that the Rayleighcloudy product is deemed totally useless. If the Aeolus project team has stated this then the authors should provide a reference.

Lines 157-162: Although references are provided, as a reader it would be nice to have a few sentences describing in general terms how the error threshold and validity flags are computed.

Line 200: Perhaps I missed it, but it would be useful to state in the text that because the Aeolus lidar beam is not nadir-pointing, the horizontal distance from the radiosonde to the Aeolus measurement volumes changes as a function of height as well as radiosonde movement. It's a simple and obvious point, but it can't hurt to note it.

Figure 3 and Figure 7: In looking at the figures on a laptop, I found it somewhat difficult to differentiate the colors in the Mie cloud and Rayleigh clear plots. Perhaps the authors could use a different technique for separating the plots, such as dashed or dotted lines.

Line 247: The inability of Aeolus to characterize the maximum wind under strong shear conditions near the tropopause is useful to point out. However, it should probably be noted that this isn't an error in the Aeolus measurement, but rather an averaging effect that obscures an important parameter.

Line 253: Changing the range bins on Aeolus to 1 km has potentially negative consequences on the measurement in that it reduces the number of photons available, thus increasing the random error. The authors might want to comment on whether the Aeolus team chose to accept this increase in random error or compensate for it by, e.g., reducing the horizontal resolution.

Figure 5: it would be nice to provide a N-S reference on the plots.

Line 353: A sentence explaining why the authors prefer to use MAD as the statistic to
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represent the random error would be useful.

Table 2 Caption: The caption seems to be defining medium absolute deviation (MAD) as MAD - random error, which doesn't make sense.

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