Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2022-63

Anonymous Referee #1

Referee comment on "Evaluation of Aeolus L2B wind product with wind profiling radar measurements and numerical weather prediction model equivalents over Australia" by Haichen Zuo et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-63-RC1, 2022

General Comments

Overall well presented and useful comparison of Aeolus / wind profiles / NWP wind measurements

Specific Comments :

Bias' is discussed in several places (e.g. Line 59 / Sect. 3.1, Table 3) but no confidence limits are given for these biases. This makes it impossible to understand if they are significant or if differences between 'bias' in different cases are significant. Please add confidence limits for the biases

In Figs 5 and A2, Fig. 5. 'uncertainty' in bias for different height bins is shown by shaded areas - these look surprisingly small given the very low number of samples in the height bins in many cases. How is 'uncertainty' defined ? 95% confidence limits or something else ?

The conclusions (Lines 361-364) say : "When comparing with the ground-based radar measurements, no significant biases (absolute mean bias < 0.7 m s-1) and good agreements (R > 0.9) were found for both Rayleigh-clear and Mie-cloudy winds. For the Rayleigh channel, the wind detection during ascending orbits has higher accuracy than during descending orbits, while for the Mie channel, a large bias was obtained during ascending orbit. "

This says first there are ‘no significant biases’ and then ‘a large bias was obtained’. Which is it ? Adding the confidence limits for the biases should help with getting this right.

Minor points :

There are numerous small grammar / language errors which are distracting - probably a copy editor can take care of most of these, although any co-authors who are proficient in English should also check.

For example : Lines 36-38

“Wind retrievals of ALADIN are based on light scattering by atmospheric molecules and particulates (aerosol, cloud droplets, and ice crystals) which move with the ambient wind and the Doppler effect (Ingmann and Straume, 2016). “ - this says particulates ..move with … the Doppler effect. It needs changing to

“Wind retrievals of ALADIN are based on light scattering by atmospheric molecules and particulates (aerosol, cloud droplets, and ice crystals), which move with the ambient wind, and on the Doppler effect (Ingmann and Straume, 2016). “

In Line 56 “Ray-clear “ is used - everywhere else it is not shortened so it should be “Rayleigh-clear”