

General comments:

The authors have made some significant improvements upon the structure of the manuscript. The different sections are better separated and furthermore they added a new section “Discussion” which seems very helpful to the reader for this kind of manuscript with so much information. The authors have also improved the quality and description of the figures. In my opinion, the “Conclusions” section needs a little more work as the current version feels incomplete. I suggest to include the values for the most important findings of the study in this section. Regarding the scientific context, I do not have any additional comments. It is a study that could be particularly useful for researchers working with wind lidar measurements. Please find my technical comments below.

Technical comments:

P8 Table 1: The second line displays the azimuth angle, however the name of the variable is elevation angle. It should be corrected.

P8 Table 1: Above the table 1, there are two references “Cariou and Boquet (2010); Bodini et al. (2019)”, which are not clear to me to which part of the text they refer to.

P8 L196-199: This sentence needs rephrasing as it describes a simple functionality of the lidar in a confusing way. In addition, I am not sure that the term “complex options” needs to be supported by the reference “Clifton et al., 2015”.

P9 L205: Maybe “during” is more correct than “through” in this context.

P13 L304: Correct the typo “explicitly”.

P14 L314-315: One sentence is written inside a parenthesis “(Different notions...representation to measure.)”. If the parenthesis was included in the previous sentence written with fewer words or remain as it is without the brackets, the text would flow better.

P17 L414: Replace “An” with “A”.

P17 L414-416: The first two sentences of the paragraph “An common representation...reconstructed velocity components” could be simplified as it is a bit confusing in its’ current state.

P22 L539-542: The sentence “Analysis of the limiting...(Rosenbusch et al., 2021).” seems to either miss some information or have some extra words that are not needed. Maybe “when” has to be removed and “whereas” has to be replaced by “on the contrary”?

P27 L619: Is the word “across” necessary in this sentence?

P31 L707-708: The sentence “As in Rahlves...in the stable case, Fig. 13).” likely misses a conjunction to connect the verbs.

P31 L710: Add “to” after “due”.

P32 L729: Do you mean “In select flat conditions,...” instead of “In select, flat conditions”?

P36 L790-793: No need to use parenthesis for this text.

P41 Conclusions: In the conclusions, the authors summarize their work without providing the values for the most significant results. I believe that the section with conclusions works better when it can be read as a stand-alone text. In that regard, I recommend to include some values of the results in the conclusions similarly to the abstract.