

Dear Reviewer,

Thank you for reviewing the manuscript. Your comments were very helpful and improved the quality of the manuscript. The responses can be found below each reviewer comment.

RC 1. The introduction is difficult to read. It does not follow a linear progression of ideas, and it is unclear what the author is trying to convey when reviewing results of previous studies. The entire introduction needs to be restructured: what is the main message? Can individual messages be organized into separate paragraphs which then discuss previous results that support that individual message? Several statements about previous work are ambiguous and qualitative, and need to be elaborated to convey their respective scientific messages and/or quantitative results. An example of restructuring the introduction would be to start with the main message, and then give supporting evidence: "The effect of the lidar's spatial averaging can be predicted from theories that have been verified experimentally. Several theories have been used in previous studies, depending on the type of lidar and measurements available. For example, the work of X and Y did ... For a different application, the work of Z and Q considered ... " And then finish with motivation for your work: " While previous work has considered X, it is still unknown whether Y..."

Response: The introduction has been restructured to convey a clearer message and present the ideas in a more linear way. The changes are indicated in a mark-up pdf file called 'amt-2018-229-RC1+2 - Markup.pdf' and the final version can be found in the pdf file 'amt-2018-229-manuscript-version2.pdf'.

RC 2. Results are difficult to follow at times, and the text needs restructuring overall. Several comments about the methods and results can be found in the PDF.

Response: Also the sections describing the methods and the results have been reworked for an overall improved structure.

RC 3. The purpose of the work only became clear to me when I finished reading the conclusion. This should have been clear from the very beginning.

Response: Similar to RC1, the paragraph on the purpose of the work has been extended. In our opinion this will now help the reader to understand the work more easily.

RC 4. Minor comments can be found throughout the document (annotated pdf). Highlighted words without comments need to be revised either for word choice, typos, or grammar. Commas are missing in several places making ideas a bit hard to follow at times. I recommend having an editor review the manuscript for readability. There is also a lot of confusion when using past tenses in a non-consistent way.

Response: We went through all the minor comments in the attached PDF and replied and corrected all of them. A pdf file 'amt-2018-229-RC2-supplement_AC.pdf' with the responses to each comment can be found in the supplement.