August 2, 2017

Dear Mr. Stoffelen,

We would like to thank you for the time you have spent conducting the review process and providing constructive comments. We are very pleased to read that you find our contribution acceptable for the publication in AMT and that you commend our manuscript clarity and structure.

We agree that the revised manuscript did not undergo major changes when compared to the initial submission. In fact, we extended it by adding the content that the reviewers requested (e.g., review of the multi-lidar literature, wind retrieval accuracy, etc.), and made the manuscript more clearer for future readers.

We carefully addressed your feedbacks to include some parts of the open discussion, which have not been part of the revised manuscript, in to the latest version (revision 2) of the paper. Specifically, we pointed out what is new that the manuscript brings to the readership, what assumption was made in the wake analysis, and particularly stated the wider applicability of the presented methodology. The revisions follow below.

On the page 2 we extended the paragraph which starts on the line 30:
Original paragraph: *In this paper, we propose such a methodology. The methodology will be discussed through its application to a pilot experiment that took place in a complex and forested site in Portugal.*

Revised paragraph: *In this paper, we propose such a methodology. The methodology will be discussed through its application to a pilot experiment, Perdigão-2015, that took place in a complex and forested site in Portugal, where the two WindScanner systems were operated simultaneously, for the first time. Besides the methodology and operation of the WindScanner systems, this manuscript also presents: a review of the two WindScanner systems, novel scanning methods, observational highlights of multi-lidar measurements of a single turbine wake and inflow conditions in complex terrain, multi-lidar measurements of wind resources along a ridge and observations of valley flows. It should be pointed out that the data analysis or discussions of particular flow situations are not the purpose of the present manuscript, and are included as a result and illustration of the presented methodology.*

The paragraph on the page 22 starting at the line 11 of the reviewed manuscript (wake analysis) has been clarified by adding the following statement to point out how we differentiated between different states of the atmosphere:
Due to the lack of temperature and heat flux measurements, we established an empirical relation between the period of a day and atmospheric stability.

In Section 5.2 (discussion) the initial paragraph has been extended to point out the applicability of the presented methodology and how the methodology can be executed differently.

Original paragraph: *In this paper, we presented the methodology for conducting field studies with multi-Doppler lidars. This was a preliminary 10 attempt to outline and define systematic steps that can lead to the acquisition of high-quality datasets from field studies.*

Revised paragraph: *In this paper, we presented the methodology for conducting field studies with multi-Doppler lidars. This was a preliminary attempt to outline and define systematic steps that can lead to the acquisition of high-quality datasets from field studies. Despite being developed for multi-Doppler lidar experiments, the methodology can be used for any field campaign. The majority of the presented steps are relevant for all field experiments (e.g., defining scientific question, planning infrastructure, etc.), while some are WindScanner specific (e.g., scanning mode design). In this manuscript, we presented a sequential execution of the steps. However, some steps can and should run in parallel (e.g., data archiving and dissemination with execution and data collection) and some steps can be merged together (e.g., experiment layout design and infrastructure planning).*

In the same section the last paragraph has been rephrased and updated with the latest information related to the methodology application beyond Perdigão-2015:

Original paragraph: *Despite the environmental conditions, challenges imposed by the site, and technical issues with the instruments, high-quality observations of the various flow aspects of the Perdigão site have been acquired, with a few highlights outlined in this paper. Also, the datasets are used for the design of a longer, and instrumentation-wise more extensive Perdigão-2017 field campaign, that will take place in the first half of 2017 over a period of six months.*

Revised paragraph: *Despite the environmental conditions, challenges imposed by the site, and technical issues with the instruments, high-quality observations of the various flow aspects of the Perdigão site have been acquired, with a few highlights outlined in this paper. Also, the datasets and presented methodology have been used for the design of a longer, and instrumentation-wise more extensive Perdigão-2017 field campaign, which took place in the first half of 2017 over a period of six months (Witze, 2017; Fernando et al., 2017). Besides the Perdigão-2015 and Perdigão-2017, the methodology has been successfully applied in several experiments, such as for example the Kassel-2016 and RUNE campaigns (Floors et al., 2016).*

On behalf of all co-authors,

Nikola Vasiljević and José Palma