

## Answer to all referees:

We thank the referees for their comments, which have helped us to improve the manuscript.

Overall the comments by the referees do not interfere with each other and they are therefore answered in separate additional files. However, the three referees have disparate opinions on the lidar data. Larry Mahrt considers the lidar data to be unique independent information, Marie Lothon recommends a revision of the lidar part and Christian Feigenwinter suggests removing the lidar part since the text is too long. Our solution, which should satisfy all three referees and has been accepted by the editor, is to split the study into two parts; one with focus on sonic anemometry and one describing the new lidar method for measuring flow angles and vertical velocities.

The alternative solution would be to remove the lidar part from the study. However, as the results of the flow angle analysis from the sonic anemometer points to two major instrumental problems (flow distortion by the instrument itself and imperfect vertical alignment), that are removed when using the lidar, we therefore prefer to underline the new method in a separate paper.

The structure of the new manuscripts will be as follows:

- (1) *Flow tilt angles near forest edges, I sonic anemometry*: The first study presents the sonic anemometer results, the Sorø forest site, the conceptual model for flow angles and the interpretation of the flow angles in relation to the terrain. It includes figures 1,3,4,5,6,7, 10 and 11. Authors for this paper are E. Dellwik, J. Mann and K.S. Larsen.
- (2) *Flow tilt angles near forest edges, II lidar anemometry*: In the second paper, the lidar method for measuring flow angles will be presented in more detail, the sonic and lidar results will be compared for two sites (Høvsøre and Sorø), and alternative lidar measurement techniques for flow angle measurements will be discussed. The main scientific contribution of the lidar study is to present the method and show the first results. Since the lidar technology for wind measurements is increasingly used and is improving fast, our conception is that this method could prove to be useful in the future. This study includes figures 2, 8 and 10 (bottom). In addition, we will include a figure of VAD as requested by one of the referees and a figure illustrating the conical scanning mode. Authors for this paper are E. Dellwik, J. Mann and F. Bingöl.

In addition to the suggested changes by the referees, we will also change the texts to reflect the new and more focused contents of the papers. Some figures will also be improved to make the manuscripts clearer in accordance with the comments of the referees.