Author response to comments by Reviewer 2 of "Local Correlation-based Transition Models for High-Reynolds-Number Wind Turbine Airfoils"

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We thank Reviewer 2 for the constructive comments and suggestions which have helped to improve the manuscript. We have tried to address most of the concerns as best as possible. We hope that Reviewer 2 would be satisfied by our changes to the manuscript and our responses. Each issue raised by a specific comment in the report is addressed in detail below.

I appreciate the effort the authors have made to improve the manuscript. It looks (and reads) much better now. However, I still have some doubts about the use of the NREL 5MW data for the comparisons. These data are not only synthesized but also (as the text in the files states) corrected for a blade aspect ratio of 17. Hence the 17 in the file names. The data should be uncorrected for this before they can be properly compared to 2dsimulations. Because of the nature of these data the entry experiment in the legend of the graphs with the comparisons is also not valid. I still wonder why the authors, despite the uncertainties around these data, decide to keep these comparisons in the manuscript.

We understand the reviewer's concern regarding the reference data for the comparison of DU airfoil series. The main goal of this study is to evaluate the suitability of two exsiting transition models for airfoil design which requires the accurate prediction of the glide ratio near the design operating point region. For DU series airfoils and NACA64-618, the predictions of glide ratio are clearly improved using the two-equation model at the linear portion of the lift curve as shown in Fig. 11 and Fig. A1. The same trend is also confirmed through DU-00-W212 airfoil and FFA series airfoils by comparing with experimental and other predictions using e^{N} method at various Reynolds numbers.

Although the reference data for DU series airfoils are not only "synthesized" but also corrected for a blade aspect ratio of 17, the current comparisons are still relevant to the main focus of this paper. Also, we believe the difference between the two transition model predictions of the glide ratio is much larger than the effect of aspect ratio because a similar trend is also observed in the other comparison studies for DU-00-W212 and FFA series airfoils. Thus, we would like to keep the section 4.3 for DU series airfoil and NACA64-618 after providing additional information regarding the reference because it can still support the high-level message of this study.

In the revised manuscript, we provided additional informaion regarding the reference data at the section 4.3 as follows:

"Also, the available reference data was corrected for a blade aspect ratio of 17 in the DOWEC 6MW pre-design report [1]. However, we believe the data is still valid as a reference in explaining any differences of model predictions."

Bibliography

[1] Kooijman, H. J. T., Lindenburg, C., Winkelaar, D., and van der Hooft, E. L.: Aero-elastic modelling of the DOWEC 6 MW pre-design in PHATAS, Tech. rep., ECN, 2003.