Author response to comments by Referee 1 of "Local Correlation-based Transition Models for High-Reynolds-Number Wind Turbine Airfoils"

Yong Su Jung, Ganesh Vijayakumar, James Baeder and Shreyas Ananthan

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We thank Reviewer 1 for the comments. Again, we have tried to address the reviewer's concern and revised the manuscript based on the comments. We hope that Reviewer 1 would be satisfied by our responses and following changes to the manuscript.

I would like to thank authors for the effort to improve the paper with the suggestions. It looks much better and now it is easier to follow. However, there is one particular issue which I would like to highlight here. The value of using synthesized RFOIL simulation results of NREL 5MW airfoils as a "validation case" is still not really clear in the manuscript. Even though you mention that it is for the sake of explaining the differences of one and two eqn. transition model predictions, you still treat the reference data as if it is the correct one. Example: line 354-355 "All simulations miss the prediction of stall angle as is typical of the challenges in 2D RANS-CFD modeling of airfoils". The accuracy of the stall angle in the reference data is surely questionable because it is also coming from a prediction method. Furthermore, in Figure 11, this data is still referred as "experimental" and at least the drag data of both airfoils higher than about 10 degrees of angle of attack seem doubtful as if they are wrongly synthesized or the interpolation or correction of the high AR effects are not done correctly perhaps. These kind of issues bring further doubts about the validity of the reference; hence the value and the validity of the comparisons. I recommend to revise the manuscript further to clarify these issues.

- We agrees with the reviewer's comment on "experiment" as a legend of the reference data in Fig. 11. Therefore, we have changed the legend of the reference data from "Experiment" to "Reference" in Fig. 11. and Fig. A1. In the manuscript, the information on how the reference data were generated is already provided in detail from the previous revision in line 315-320.
- Reviewer doubts about the validity of the reference data by pointing the drag data at higher than 10 degree angles of attack, where the drag is sharply increased linearly. However, a similar behavior can be seen in the experimental data for DU00-W-212 airfoil in Fig. 10. The experimental data shows earlier stall angle than the corresponding predictions at both Reynolds numbers. More like linear shape of drag after stall in the reference data in Fig. 11 might be due to the synthesized or interpolation process as the reviewer already commented. However, the data after stall is not the main subject of the current study and cannot be an issue.

- Reviewer concerns about the accuracy of the stall angle of the reference data in Fig. 11 because it is also coming from a prediction method (RFOIL) partially. However, when it is compared with the current predictions, the trends of differences are close to the comparisons with experiments as shown in Fig. 10. On the other hand, as another reference in the manuscript, the pure predictions using EllipSys2D shows the same stall behavior with one of current predictions as shown in Fig. 12. This might be due to either/both effects of the synthesizing experiment or/and better stall prediction using RFOIL. Therefore, we think the synthesized data is still valid as a "Reference" not an "Experiment".
- In the revised manuscript, therefore, we have updated the corresponding discussion for Fig. 11 as follows:
  "Overall, the current simulations predicted delayed stall angles compared to the reference data. It should be noted that the same trend is also observed in the previous comparison with pure experimental data for the DU00-W-212 airfoil in Fig. 10, which is a typical challenge in 2D RANS-CFD modeling of airfoils. The unphysical linear increment in the drag coefficient is observed after the stall angle only in the reference data. This might be due to the synthesized process between RFOIL calculations and experimental data."