Wind Energ. Sci. Discuss., referee comment RC1
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Comment on wes-2021-76

Anonymous Referee #1

Referee comment on "Data-driven farm-wide fatigue estimation on jacket-foundation OWTs for multiple SHM setups" by Francisco d N Santos et al., Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2021-76-RC1, 2021

This manuscript presents a data-driven approach based on ANN for estimating the thrust load and then fatigue damage on jacket foundation, by using SCADA measurements and tower top acceleration. I have some comments that are needed to be addressed to improve the presentations:

-The methodology section should improve a lot. Section 2.2.1 discusses Tier one which is about the estimation and validation of thrust load. Then Section 2.2.2 is focused on feature selection so that it reviews different techniques but does not clearly answer the question that which technique is applied to this work. The reader expects to realize what you have applied in the methodology section. Please provide references for the techniques that you have mentioned there. Maybe it is better to name the Section methodology, then creating two subsections Input data and the Proposed Estimation Algorithm. Please improve the structure to make it easier for readers to follow the work.

-Please explain why ADAMAX is used for optimizing ANN training. What are other alternatives and what is making ADAMAX different in this context?

-Is it possible to provide a confidence interval for the estimation error by applying different techniques like what is used in the following publication:

Online condition monitoring of floating wind turbines drivetrain by means of digital twin, FK Moghadam, AR Nejad - Mechanical Systems and Signal Processing, 2022

-Please list the general specification of the under investigation turbines, including the

rated power and speed.

-Could you give a comment on Figures 6 and 13 results, and explain in the text how the error is correlated to wind speed?

-The highest error in DEL does not correspond to the highest error in thrust load estimation. Could you add a comment on that? Is it possible to do a sensitivity analysis to see which parameter contributes the most to the DEL error?

-Could you move the schematic diagram presented in Fig. 15 related to the farm-wide DEL to the methodology section?

-Line 125 "To avoid excessive drifts in this transformation a lower frequency bound of 0.1Hz is used.", please elaborate more or possibly provide a reference.

-Line 152 "In the current contribution we focus primarily on the DEL estimation in the FA direction, as this is considered most relevant for the current jacket foundations." Could you provide a reference?

-Line 170 "The thrust load can be obtained from measurements by low-pass filtering the bending moment timeseries (with an upper frequency bound of 0.2 Hz)." Why is the cut-off frequency chosen to be 0.2 Hz?

-Site-to-side in figure 2 should change to side-to-side.

-Multiple grammatical errors. e.g. "a intermediate" in Line 27 that should be corrected.