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Interactive
comment

Interactive comment on "The Super-Turbine Wind Power Conversion Paradox: Using Machine Learning to Reduce Errors Caused by Jensen's Inequality" *by* Tyler C. McCandless and Sue Ellen Haupt

Anonymous Referee #1

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General comments

The authors in this paper forecasted wind speed to power to provide an estimate of generating capacity in which the effect of the local terrain and array orientation are being investigated. The impact of these parameters is tested with a hypothetical wind farm of 100 2-MW and found that there is about 3% difference due to Jensen's Inequality. The paper interesting and well fit within the scope of 'wind energy science' journal.

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Discussion paper

Specific comments

The following questions (specific comments) needs to be addressed; 1. The author claims that 'There are two main sources of error in wind power forecasting: the error in the underlying weather forecast (i.e., wind speed, and to a lesser degree air density)'. The impact of air density can't be ignored especially when turbines are in extreme high and low temperature. The air density can also improve the prediction accuracy and thus uncertainty. For more details see following papers, âĂć 'Incorporating air density into a Gaussian process wind turbine power curve model for improving fitting accuracy'. âĂć Wind power curve modeling in simple and complex terrain using statistical models. Needs to include such recent results into the literature review 2. Since this paper is about Jensen's Inequality; a solid literature review on that needed. 3. Why only two std deviations? What result would you get with more std deviation values? 4. How you pre-processed the data of Shagaya wind farms? Any reference or explanations? What kind of data have you used; SCADA? 5. In section 4; Random Forest a machine learning approach is being used. Why you have used this particular technique? Why not say GP, SVM or something else? What motivated you to use this techniques? Does this machine learning approach have any limitation? A reference needs to be included in this method of comparative analysis with other machine learning approach. 6. The author used the python package for random forest model construction but no explanation is given on the descriptions or methodology.

technical corrections

Use of simple sentences, a flow chart to describe the methodology needed. A thorough check on reference styling needs to be checked.

Interactive comment on Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2018-74, 2019.