



Comment on wes-2021-58

Anonymous Referee #1

Referee comment on "Efficient Bayesian calibration of aerodynamic wind turbine models using surrogate modeling" by Benjamin Sanderse et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-58-RC1>, 2021

"general comments":

This paper deals with PCE for surrogate modelling and sensitivity analysis for use in the Bayesian calibration of (1) airfoil polars and (2) yaw correction model of wind turbines. Data from the DanAero and New MEXICO experiments were deployed in the Bayesian updating process. This paper is well written, to the point, concise, and all assumptions underpinning the presented method and its limitations were clearly explained throughout the paper.

"specific comments":

- Under steady conditions, Bayesian updating the static airfoil polars is correct as described in the paper. The moment unsteady dynamics (large blade deflections) and turbulent inflow are accounted for, one needs then to also think about updating BOTH the Dynamic stall model AND input static airfoil polars. I suggest that the authors spend a bit of time discussion this issue in the paper.
- Once the static airfoil polars are updated conditional on the measurements, there is no guarantee that the new/update polars are actually correct. One possibility would be to verify the posterior predicted power output (if available) or the blade bending moment (if available) with the new/updated polars. I suggest that the authors spend a bit of time discussion this issue in the paper, and if possible compare the power output (for instance) before and after the updating of the polars.

"technical corrections":