Dear van Schaik et al,

Thank you for the substantial work undertaken in revising the manuscript. The paper has made good progress; however, a few remaining issues need to be resolved before it can be accepted.

Lines 172-174 and 267-268:
The terminology concerning turbulence in TurbSim should be corrected. The turbulence spectrum prescribed in TurbSim is not itself stochastic; it defines the target spectral density. The stochastic character of the generated time series arises from the random phases used to construct the turbulent realization. I therefore suggest avoiding the expression "stochastic turbulence spectrum".

A shorter and more accurate formulation would be:
"TurbSim is used to generate the turbulent inflow fields required by OpenFAST."

Lines 175-180 and 274-276:
I do not object to the use of USRVKM or to the use of height-dependent turbulence parameters. However, the integral length scales supplied to USRVKM must be physically realistic.

The values used in the TurbSim example file cited by the authors are explicitly described in the TurbSim documentation as made-up demonstration values and should not be used as an atmospheric parameterization. The values used here, approximately 3-13 m, are also substantially smaller than realistic atmospheric integral length scales. This is not merely a matter of interpretation. The integral length scale is an input to the von Karman spectrum and directly controls the distribution of turbulent energy across frequencies. Using unrealistically small integral length scales shifts the spectral peak towards substantially higher frequencies and therefore produces an unrealistic turbulence spectrum.

Consequently, stating that "the prescribed length-scale values are treated only as numerical inputs" does not resolve the problem. The integral length scale is indeed a model input, but it is a physical model parameter with a direct effect on the generated turbulence field. Whether or not the authors assign physical meaning to it in the discussion does not remove its physical effect on the simulation.

I therefore request that the authors replace the arbitrary TurbSim example values with a physically defensible height-dependent integral-length-scale profile and rerun the affected turbulent simulations. A straightforward option would be to use a standard-based atmospheric length-scale formulation, for example the expression given in Eurocode EN 1991-1-4:2005+A1, Annex B, Eq. B.1, or another published formulation appropriate for a von Karman spectrum. The selected formulation and its applicability should be stated clearly.

This would be a considerably simpler and more defensible solution than retaining known unrealistic values and adding extensive discussion to justify their use.

Best regards,

Etienne Cheynet

Dear Dr Cheynet,

Thank you for your further clarification and constructive guidance. We also apologise for misunderstanding the resubmission date and for any inconvenience this caused.

We have corrected the terminology to state: “TurbSim is used to generate the turbulent inflow fields required by OpenFAST.” We agree that the prescribed spectrum defines the target spectral density, whereas the stochastic character arises from the random phases used to generate the turbulent realisation.

We also acknowledge that our previous explanation concerning the integral length scales did not adequately address your concern. Their influence on the generated turbulence cannot be resolved simply by limiting their interpretation.

Following your recommendation, we have replaced the demonstration length-scale values with a height-dependent profile based on EN 1991-1-4:2005+A1:2010, Annex B, Eq. B.1, and rerun the affected turbulent Gotthard simulations. The revised methods describe the formulation, and the corresponding OpenFAST results in Table 2 and Figures 4, 8 and 9 have been updated. The analytical predictions and deterministic simulations remain unchanged.

The updated comparison does not change the principal conclusion: the analytical model retains lower aggregate RMSE and MAE than OpenFAST across the selected wake-free cases, although individual cases can favour OpenFAST. We have updated the manuscript text accordingly.

Thank you for helping us make the turbulence specification and numerical comparison more defensible.

Kind regards,

Brandon van Schaik, on behalf of all authors