

**“Sensitivity of fatigue reliability in wind turbines: effects of design turbulence and the Wöhler exponent”
(Manuscript number: wes-2023-47_R1)**

Thank you very much for the nice revision of the paper. I think that the quality of the paper has been improved significantly. I have just a few minor comments on your revision.

- 1) Eq. 11: The notation Mx_i is a bit confusing as it could be understood as $M \times x_i$. M_{x_i} would be much clearer but this is just a matter of taste.
- 2) Eq. 13: Is it actually $E[DEL_s^m]$ and not just DEL_s^m , as you talk about a single sample of a 10-minute time series here? $E[DEL_s^m]$ would mean that you average something, but the averaging of several seeds follows in Eq. 14. Hence, I think it should be DEL_s^m .
- 3) Eq. 14: Is it actually $E[DEL_{bin}^m]$ and not just DEL_{bin}^m on the left side of the equation? As the right side of the equation means to take the mean value, the current definitions would mean $E[DEL_{bin}^m] = E[DEL_s^m]$, and therefore, $DEL_{bin}^m = DEL_s^m$. Furthermore, in Fig. 4, you show DEL_{bin} (as written in the caption). And what you actually show is $(E[DEL_s^m])^{1/m} = DEL_{bin}$, is you rewrite Eq. 14 as follows: $DEL_{bin}^m = \sum_{s=1}^{SS} \frac{(DEL_s^m)^m}{SS}$. If you do this, you have to use DEL_{bin}^m instead of $E[DEL_{bin}^m]$ in Eq. 15 and 16 as well. This would remove all $E[...]$ in the paper, which makes things much clearer.
- 4) L. 552-554: Do you actually mean Fig. B1 and not Fig. 9? Is it $m = 12$ and not $m = 10$ (in line 554), as Fig. 9 shows $m = 10$. If you mean Fig. 9, a reference to Fig. B1 is missing.
- 5) Fig. 11: A legend is missing.
- 6) Comment 42 of the first review: “Section 3.2: How are the best fitting distributions determined? Out of which distributions is the best fitting distribution chosen? How is the goodness of the fit judged?” You answered the first two questions, i.e., how did you fit (maximum likelihood estimations (MLE)) and which distributions (GEV etc.). However, you did not answer, how the best distribution is chosen (I do not mean the best distribution parameters, this is done using MLE, but actually the best distribution, i.e., GEV etc.).
- 7) Comment 49 of the first review: “L. 547: You state that MC can only be done when having the computational resources. [...]” I am still not really convinced that MC is not suitable here. Even when using 1000 loops with 1 million evaluations of Eq. (21) each, the processor time is probably relatively small compared to processor time of the approximate 100,000 aero-elastic simulations and probably even low compared to using 6 seeds per bin (i.e., more than 1,000 aero-elastic simulations). However, it is fine to use FORM, as you showed that it is a sufficient approximation. Hence, you do not have to give further explanations on this topic in the revision.

Typos etc.:

- 8) Your notation is still not completely consistent, e.g., in Eq. 13, you write Neq but in line 256 it is N_{eq} . Similar, in line 249, it is M_i and in Eq. 12 it is Mx_i .
- 9) Table 5: Par 2 and Par 3.
- 10) Check you references, as, for example, Sørensen is not written correctly (l. 767).