Dear Vasilis Riziotis,

thank you very much for your comments and thoughtful questions.

Thank you as well for the careful remarks on spelling and syntax, which are highly appreciated. All of your remarks related to the wording of the manuscript have been edited. They will not be listed here.

Comment from Referee 2:
The main weak point of the analyses is that between the two unrealistic extreme scenarios a) of the fully correlated and b) the uncorrelated wind fields there is no strong evidence that the intermediate field is close (in terms of spatial coherency) to the conventional wind field, against which load predictions are compared. A way to mitigate the above ambiguity is to compare spatial coherence function of the two fields like the authors do with autocorrelation function. At least this will give the picture of how realistic is the about 5% increase on the fatigue loads pre- dicted when intermittency effect is taken into account.

Authors response:

We agree that the coherence of any of the presented wind fields is highly idealized and that this indeed hampers the transferability of the presented results to practical applications. We hope this is clear by showing visual representations of the fielda in Fig. 6. However the main message of this paper is not that the intermittency will lead to an increase in fatigue by 5%, but rather that it can be demonstrated that the results are indeed affected, when intermittency is considered. The considered statistics do not seem to be filtered out by the rotor. In conclusion this work is more fundamental than applied research.

Unfortunately we did not manage to incorporate a more realistic coherence model within the time frame of this project due to the complexity of the problem. Our aim was to generate wind fields, featuring highly comparable statistics aside for the intermittency, more precisely the fourth moment of the 2 point statistics (and of course even higher statistics). We were abled to achieve this for individual time series only, not for entire fields. Thus, we faced the challenge to assemble wind fields from these time series without changing them and this simple approach was what we came up with first.

In related work we experimented with wind fields featuring more realistic spatial dynamics, but failed to conduct a consistent comparison between Gaussian and non-Gaussian. Briefly said the spatial dynamics had a bigger impact on the results than the temporal dynamics, which hampered drawing conclusions.

Note that intermittency is also expected to occur in the spatial dimensions. In the end it comes down to the lack of a model for turbulence that incorporates everything at once.

Modifications to the manuscript:

The conclusion section was edited to clearify this point.

Comment from Referee 2:
Figure 4 presents spectral characteristics of the axial wind component. Do you get the same good agreement for the other components. Moreover, the ratios sdv_u/sdv_v and sdu/sdv_w are they also maintained? These are also important parameter that drive fatigue loads.

Authors response:

The spectral and cross-spectral properties of the lateral and vertical velocity components are not discussed in this work. They have been modeled simplify as white noise signals, wherefore we do not expect any statistically significant differences between Gaussian and non-Gaussian fields to arise from these velocity components. Again be reminded that we value comparability between non-Gaussian and Gaussian fields over „realistic-ness“.

Comment from Referee 2:
The authors compare equivalent loads of the thrust and tower bottom bending moment. The above two load sensors are pretty much correlated and therefore they do not offer any additional information the one with respect to the other. It would be preferable to compare blade flapwise moment (which corresponds to the rotating frame) and tower top yaw and tilt moment plus the thrust or tower bottom bending moment. Yawing and titling moments are much more sensitive to the incoherent nature of the inflow.

Authors response:

Some of the sensors you indicate have indeed been analyzed in the scope of this work. The two sensors presented in this manuscript were the ones in which the trends were most clear. While they are as you point out highly correlated, still slight differences between their results are evident.

Other sensors, such as the blade root moment out of plane or the rotor torque did feature similar differences between Gaussian and non-Gaussian fields in the same magnitude. However their individual responses were not straightforward to explain. We took an in-depth look into their dynamics, but decided that for the message of this paper, a small set of sensors would be sufficient, as we wanted to avoid lengthy discussions of load dynamics that are not related to intermittency.

In other words, we show here the sensors that could be analyzed and understood the easiest.

Comment from Referee 2:
A global, lifetime fatigue damage estimation could be provided based on a standard Weibull or Rayleigh distribution of the wind.

It is recommended to extend the conclusion section by adding some qualitative discussion of the predicted change in the fatigue loads.

It would be nice to provide some quantification in the conclusions section.

Authors response:

We are aware that in a real application problem the wind-specific equivalent loads are combined with the probability of its wind bin and then integrated up. We calculated the relative EFL based on a wind class III Weibull distribution for the thrust. These values equate to 105.7% (fully correlated), 100.2% (delta correlated) and 102.3% (3x3 case).

However we believe it is also valuable to show the wind-specific EFL value against wind speed, so that potential trends etc. could be identified.

The conclusion section was edited, hopefully this is more clear now.

Modifications to the manuscript:

Firstly, Section 2.3 was modified to make this point more clear.

Secondly, the conclusion section now entails lifetime fatigue values.

Thirdly, the conclusion section also discusses the quality of the results hopefully more clearly now.

Comment from Referee 2:
EFL — the 1Hz equivalent load. Because Equivalent load can be defined for different frequencies.

Authors response:
While we fully agree that different sampling frequencies will have a significant impact on the fatigue load results, we have to admit we were not aware of this terminology.
To clarify: Our load data features a sampling frequency of 20Hz. We could imagine it makes sense to normalize by the number of sample points? In our case we chose T to be the number of seconds of the simulation. While this possibly deviates from common practice, it does not affect the results in a critical manner, since both of the loads that we compare have been calculated in a consistent manner.

Comment from Referee 2:
Fig. 7 — Which data points and why are they shifted?

Authors response:
Here was a mistake in the manuscript, saying the data has been *vertically* shifted. The data was indeed *HORIZONTALLY* shifted so that Gaussian and non-gaussian data points are separated slightly in x-direction.

Modifications to the manuscript:

This has been corrected in the manuscript.