

Wind Energ. Sci. Discuss., referee comment RC1  
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## Comment on wes-2022-59

Kirsten Dyer (Referee)

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Referee comment on "Lifetime prediction of turbine blades using global precipitation products from satellites" by Merete Badger et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2022-59-RC1>, 2022

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*Thank you for reviewing our manuscript and for the constructive comments. Our response is given here below (in italics).*

line 38 - amend to state that blades are only replaced if not repaired

*Response: We have clarified this (line 38 in the revised manuscript): "It can lead to unforeseen operation and maintenance (O&M) cost and, if untreated, to replacement of wind turbine blades (Mishnaevsky and Thomsen, 2020)".*

line 48 - This paragraph should also state the consideration of LEP rain erosion performance

*Response: We now mention LEP (line 43 in the revised manuscript): "Another strategy is to enforce the turbine blades in order to make them more resistant to leading edge erosion. Coatings, tapes, and erosion shields represent different forms of leading edge protection that are commercially available (Herring et al., 2019)".*

line 51 - you only reference one set of offshore data but Robbie Herring published Characterisation of the Offshore Environment in the same journal and it's not mentioned.

*Response: We have added a reference to Herring et al., 2020 (see line 56 in the revised manuscript).*

line 204 - the closing comments from Jakobs paper state the damage model is only based on one coating system. It should be repeat stated in this paper. It might be worth some surmising on the implications of the data accuracy between Imerg and in-situ data for damage modelling accuracy if further work by Jakob/others showed that some coatings were not just affected by total impingement but also nature of the impingement eg intensity level which is a fair assumption on viscoelastic coatings.

*Response: We have expanded the description of the erosion damage model and mentioned that the model is based on one type of coating (line 227 in the revised manuscript): "It should be noted that other coating systems might give other lifetimes dependent upon their properties and response to impacting speed, rain intensity, and droplet size".*

*And in the Discussion (line 460 in the revised manuscript): "The damage model by Bech et al. (2022) is valid for the specific coating system tested. It is surmised that other coating systems will responded differently depending on their viscoelastic properties, the thickness of coating and adhesion to the substrate".*