WIND ENERGY SCIENCE DISCUSSIONS

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Interactive comment

Interactive comment on "Validation of a lookup-table approach to modeling turbine fatigue loads in wind farms under active wake control" *by* Hector Mendez Reyes et al.

Anonymous Referee #1

Received and published: 12 July 2019

Page 4 Line 11: What are these corrections? Are they explained in (Bot 2015)?

Page 4 Line 14: Wouldn't it be useful to use the results with yaw misalignment in this paper to validate this power reduction factor, as well as validating the loads?

Page 4 Line 27: Upstream turbines would be next to each other ... perhaps also unlikely, but they could also be at different distances and with different thrust coefficients.

Page 5 Line 4: Please specify how the wake width is defined with respect to the Gaussian profile.

Page 6 Line 6: How far upstream of the rotor do you measure the wind speeds in Farm-

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Discussion paper

Flow, and are they affected by rotor induction? Is the wind input to Phatas considered to be far upstream, i.e. unaffected by the rotor induction? Are the wind speeds from FarmFlow compatible with what's required for Phatas, and if not, how do you correct for this?

Table 1 caption - spelling of 'approach'.

General comment: Is the LUT assumed to apply to all turbines, or was it recalculated for each turbine used in the various comparisons? If it's considered general, how do you scale the loads for different turbine sizes / rotor speeds / rated powers (power densities) etc.? How would you account for turbines with or without individual pitch control, tower and drive-train damping algorithms, and the position of the tower frequency (and other frequencies) with respect to rotational frequency and its multiples? These effects can significantly affect loads. So can the detail of the control design.

Page 10 Line 11: spelling of 'from'.

Section 4.1 - Mexico experiment, Page 11, Line 3: "LUT loads modeling seems a viable approach for predict" (typo "predicting") Why not strengthen this conclusion by running comparative BEM calculations without wind shear for these conditions?

Page 11, Line 9: plural of 'vortex' is 'vortices'

Section 5 Validation by full-scale measurements: For the tower, agreement on magnitude is actually poor, especially in low winds, and especially in the waked sectors. This is perhaps not so surprising at 90 deg since T2 is then in a multiple-wake situation - this might also explain the discrepancies in the blade loads. Can any other explanations be suggested for the tower load discrepancies?

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Interactive comment on Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2019-34, 2019.