

Interactive comment on “Experimental investigation of wind turbine wake and load dynamics during yaw manoeuvres” by Stefano Macrí et al.

Anonymous Referee #2

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The paper provides an experimental study of certain aspects of yaw dynamics. The experimental approach seems fine and the writing is generally clear. My main concerns lie in the contribution of the work in terms of knowledge about what the authors call wake deviation dynamics and the loading on downstream turbines, which does not seem to be reported (discussed). The conclusions and discussion of the results lack a connection to the physics, which would potentially yield the insights that the paper aims to provide.

I was confused by the term wake deviation (dynamics) as it is not precise and was not really clarified in the paper.

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It was not clear that the balance would detect asymmetric loading on the disk, which might be important in this context. In general little discussion of the downstream turbine was affected is provided.

There are some additional yaw models not discussed in the literature review that should be included, particularly in terms of computing the behavior of the wake centerline and in capturing the yaw dynamics (which the authors claim has never been done). Given those works it is unclear that the wake deviation angle is a meaningful metric since the centerline is not a straight line due to the curled wake etc., discussed even in some of the papers cited.

I was somewhat confused by the choice of metrics in general, particularly in section 5.1. There was little discussion given as to why these are the correct metrics to consider in practice. The chosen ones for example do not provide information about what the downstream turbine might see in terms of velocity, wake or loading (although these things were alluded to in the abstract). These issues are of great importance and of far greater interest than the effect of cyclic yawing behavior, which is not clear is common in practice.

The choice of configuration was also strange since the streamwise spacing was short for all cases (in practical wind farms spacings are often at least 5-7D) and there was little justification for these choices.

The list of results in bullet form was rather superficial and were merely observations of the data rather than an analysis.

Why are equations (7) and (8) the appropriate choice; they just empirical fits to a chosen shape but the significance of this shape or choice is not mentioned.

A few minor comments

Using S for area is unnecessarily confusing

Figure 1 should be larger (there is a lot of white space so it should be easy to make it

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easier to read and see all of the detail within the sketch).

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