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Comment on wes-2021-13

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Community comment on "Application of the Townsend–George theory for free shear flows to single and double wind turbine wakes – a wind tunnel study" by Ingrid Neunaber et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-13-CC1>, 2021

The manuscript by Neunaber et al. investigates the wakes of one and two turbines in a wind tunnel study. Unfortunately, the title and the abstract tell a completely different story. The wind tunnel is not mentioned at all in the abstract. In this title and abstract are completely misleading.

This is a pity, because the idea conveyed in the abstract is interesting as well. There exists a large body of literature on turbulent wakes behind flow obstacles since decades. To use part of this information for today's wind turbine wake research is desirable and also challenging. But, unfortunately, this does not seem to be the major topic of this manuscript. It only presents a comparison of one of these older wake theories with a wind tunnel study.

Sentence number 4 of the abstract reads " However, although wind turbine wakes have been subject to various studies, they are still not fully understood." But no references are given. There have been large field experiments in recent years in order to learn about wakes behind larger offshore wind turbine arrays (the title of this manuscript says that this is a study on wakes of wind turbine arrays!). E.g., Platis et al. (2000) give an overview on what was achieved in the offshore wind farm wake experiment WIPAFF in the North Sea where aircraft conducted in situ measurements within the farm wakes. A general overview on onshore and offshore wind turbine wake experiments could be obtained from Sun et al. (2020).

Also not mentioned are modelling studies, e.g., those by Fitch et al. (2012) or Volker et al. (2015). The experiments mentioned before and the model simulations fit together in many aspects. I.e., quite a lot has been learned about wind turbine wakes in recent years.

I therefore would like to suggest a major revision of this manuscript. It could turn out to become a highly interesting paper in the end covering a highly up-to-date subject in renewable energy research.

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