

Interactive comment on “On the velocity at wind turbine and propeller actuator discs” by Gijs A. M. van Kuik

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The author thanks both reviewers for their positive as well as critical remarks. These have led to a real improvement of the paper, and to an extension with a paragraph on the radial velocity component. Here you find my reply to the comments of both reviewers. I have uploaded a new version of the manuscript including indications of the changes in text and figures (please activate the 'comments' tab).

Reviewer RC1: 1: The reviewer asks attention for the radial velocity, with suggestions for additional literature. Reply: A subsection '4.3 The radial velocity' has been added, and the radial velocity component is now shown too in Fig. 5. The reviewer mentions a specific relation between the axial and radial velocity, derived in a manuscript-for-

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discussion by him and a co-author. This relation is mentioned, analysed and confirmed in section 4.3. 2: Furthermore the reviewer likes to see clearer the link with the author's previous work, specifically w.r.t. (previous) Figure 4. Reply : This figure has been deleted. The information considered essential for the line of thoughts is now included in a new version of Figure 3. This figure shows the flow regimes and the flow cases a-e. Moreover, the caption of this figure mentions the original figure in a previous publication.

Reviewer RC2: 1: The reviewer likes a clarification of the paragraph right after eq. (17), about the propeller flow without wake expansion of contraction. Especially the word 'flow state' was confusing. Reply: the words 'flow state' are not used any more. Instead the actuator disc flows that have been analysed in detail are called 'flow cases'. The paragraph right after eq. (17) has been adapted accordingly. 2: The reviewer finds it difficult to relate (former) Figure 4 to Figure 3. Reply: Figure 4 was the map of Figure 3 when Figure 4 was looked upon along the u-axis. Former Figure 4 has been deleted, see the second reply to the first reviewer. 3: The reviewer wonders why γ_{-1} is introduced in section '3.4 Flow patterns' Reply: the paragraph in which this was mentioned has been removed. Now γ_{-1} is mentioned only where it is really used: in the paragraph explaining Figure 7, now at page 14.

Please also note the supplement to this comment:

<https://www.wind-energ-sci-discuss.net/wes-2020-51/wes-2020-51-AC1-supplement.pdf>

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2020-51>, 2020.

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