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Geoscientific Model Development Discussions

Interactive comment on "The Explicit Wake Parametrisation V1.0: a wind farm parametrisation in the mesoscale model WRF" *by* P. J. H. Volker et al.

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Some brief comments regarding prior work and the parameterization of Fitch et al. (2012):

1. Page 3482 lines 21-22: citations regarding high resolution simulations of the impact of wind turbines on boundary layer flow are missing, including Calaf et al. (2010), Porte-Agel et al. (2011), Lu and Porte-Agel (2011), Fitch et al. (2012, 2013a). Further observational studies include Smith et al. (2013) and Rajewski et al. (2013). Also of relevance are wind tunnel studies e.g. Zhang et al. (2013).

2. Page 3483 lines 27-28: here you might like to mention Fitch et al. (2013b) who

compare the roughness and elevated drag approaches.

3. Page 3484 lines 12-13: the name WRF-WF has not been used in prior work, this should be re-worded e.g. "here denoted as WRF-WF". Similarly with page 3496 lines 1-3. Also, Fitch et al. (2012) describe the parameterization and model formulation whereas Jimenez et al. (2014) compare the parameterization with observations.

4. Page 3496 line 2: it was introduced in WRF version 3.3.

5. Page 3496 lines 20-23: Fitch et al. (2012, 2013a,b) use both turbine thrust and power coefficients from a real wind turbine, and it is stated in the WRF model instructions that the idealized data included in the model should be replaced with actual coefficients for the particular turbine of interest (obtained from the turbine manufacturer). The formulation of the parameterization is not based on an empirical relationship. The reason real data was not included in the model was due to legal considerations with turbine manufacturers who do not release this data into the public domain. Idealized thrust and power coefficients are included in the model instead as an example, with the caveat that they are for testing purposes only, not for scientific work. A note regarding this issue in more detail will appear in the journal Wind Energy.

6. Page 3502 lines 10-13: wind acceleration at low levels has been observed by Rajewski et al. (2013).

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