

## ***Interactive comment on “Wind farm power production assessment: a comparative analysis of two actuator disc methods and two analytical wake models” by Nikolaos Simisiroglou et al.***

**Anonymous Referee #1**

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The submitted manuscript is quite interesting and well written but I think that must be improved in some key point of the discussion. The main outcome of the paper spreads from the comparison of different wake models: two of them are empirical/engineering models with a quite different approach while the other two actuator disc models seems quite similar and the reader is not able to understand the main reasons for such different results. To improve the “scientific soundness” of the paper a deeper discussion on the differences between the new and old ACD model is strongly recommended. About the new ACD two things need to be better explained: 1. If the equation for the thrust is really different from the old version and how 2. How it is performed the estimation of the power output (please explain

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equation 5) and why you used an average induction to obtain a local undisturbed wind. Beside this I think that there is also a mistake in the text: in the old version of the ACD there was also already the possibility to have different force distributions and not only the uniform one (this is quite clear from the WindSim web site in the section of the presentation, see the slides from G. Crasto at the usermeeting 2011 [http://windsim.com/documentation/UM2011pres/1106\\_WindSim UM WS\\_Crasto.pdf](http://windsim.com/documentation/UM2011pres/1106_WindSim UM WS_Crasto.pdf)).

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