

Title:

“Verification” can be misleading since the paper does not contain any comparison with experimental data. Consider adding a plot including the validation in Lillgrund for a flow case in the results chapter. In that case, consider change ‘Verification’ by ‘validation’

Abstract – line 10: add reference to any report including validation

Page 1 – line 16: describe further ‘single turbine wake model’, what implies

Page 2 – line 37: this sentence is hard to understand. Better use: “... and later Crespo et. al. (1994) developed an extension for wind farms called UPMPARK”

Page 2 – line 54: change ‘verification’ by validation. Verification implies ensures that a model is working properly (equations solved as expected, no bugs), validation implies agreement with experimental data (reality physics)

Page 2 – line 57 – suggestion: Change title of chapter 2 by “Theoretical background”?

Page 3 – line 59: unsteady terms or fluctuation term of velocity vector?

Page 3 – line 63: Avoid “We”, use instead: “Cartesian 3D vectors are used for displacement...”

Page 3 – line 65: use streamwise and transversal components, instead of mean and lateral

Page 3 – line 70: add mass conservation equation as well at this point

Page 3 – line 74: at the pressure assumption, needs “=0” at the end

Page 4 – avoid mass conservation equation here if listed in 2.1

Page 4 – line 89 – add a new chapter here on Grid resolution and boundary conditions, there are no references except in chapter 3.1 which can be here. Also justify here why a rotor disk is composed by 80 cells as specified in the abstract, should not this value depend on rotor area?

Page 4 – line 101: specify the distance at which the near wake is placed (where the momentum deficit is injected)

Page 4 – line 103: using  $\alpha$  for turbulence intensity can be misleading (same sign to refer to shear). To avoid mistakes, use TI instead

Page 5 – line 117: use transversal instead of lateral

Page 5 – line 128: remove 'a'

Page 6: general comment to chapter 2.4: since turbulence viscosity estimation (and consequently WakeBlaster) depends on those 5 parameters, a general recommendation or comment should be included (if feasible) about their range values, do they depend on the wind farm layout or scenario? (very close turbines, interaction of wakes with ground, etc.)

Page 6 – line 158: “scalar velocity” to be changed by “turbulence viscosity”

Page 6 – line 162: “...is solely based on..”

Page 8 – line 199: this sentence is hard to understand, please re-write

Page 9 – line 209: Chapter 3 should be dedicated to apply WakeBlaster to a particular flow case in a particular wind farm (Lillgrund). Please include a first sub section on describing Lillgrund wind farm in detail (layout, rotor diameter, etc.) and also include another section (if data were available) comparing wakeblaster and experimental efficiency values in a particular flow case.

Page 10 – line 211: Chapter on computational performance should be included on the numerical solution. This is not something inherent to the Lillgrund simulation

Page 10 – line 231: specify if the case corresponds to neutral atmosphere

Page 12 – line 250: make some reference to limitations on complex terrain. Additionally, it could be mentioned the possibility to include RSF or WRG files in order to take into account the effect of orography on the free stream flow