

Interactive comment on “The Kinetic Energy Budget of the Atmosphere (KEBA) model 1.0: A simple yet physical approach for estimating regional wind energy resource potentials that includes the kinetic energy removal effect by wind turbines” by Axel Kleidon and Lee M. Miller

Anonymous Referee #1

Received and published: 25 May 2020

This paper is very well written and designed. It addresses an important topic for wind industry: How to simply, yet physically model the energy budget in the atmospheric boundary layer. Perfectly achieved with KEBA ! The model is validated against much more sophisticated WRF simulations and - very important - the authors also address its shortcomings and limitations. I recommend publication after the correction of some technical mistakes. - Fig.1 and text: The figure uses different terms than in the text. The text versions should be applied, e.g., "surface friction" instead of "turbulent dissipation"

C1

[Printer-friendly version](#)

[Discussion paper](#)



and "wake turbulence" instead of "wake dissipation". - Fig. 1: the energy fluxes in the figure are no fluxes but flux densities; the correct fluxes are described in the equations on p. 6 - eq. 9 and 11 for f_{red} : since one wind turbine yields in $f_{red} = 1$, $n = (N-1)/WL$ in (9) and $(N-1)$ in (11) should be used.

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2020-77>, 2020.

Printer-friendly version

Discussion paper

