

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

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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"

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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 $f_{\text{red}} = 1$, $n = (N-1)/WL$ in (9) and (N-1) in (11) should be used.

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