WIND ENERGY SCIENCE DISCUSSIONS

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Interactive comment on "Improving mid-altitude mesoscale wind speed forecasts using LiDAR-based observation nudging for AirborneWind Energy Systems" *by* Markus Sommerfeld et al.

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Discussion paper

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Dear Dr. Saraceno,

Thank you very much for your comments on our manuscript, "Improving mesoscale wind speed forecasts using LiDAR-based observation nudging for Airborne Wind Energy Systems", wes-2019-7.

Our analyses focus on wind conditions up to 1100 m and apply a simplified ground-gen AWES model to estimate maximum power output and optimal altitude for this maximum power (neglecting tether weight and drag). These findings are representative for a specific location and time period in Northern-Germany, based on mesoscale wind and weather simulations and backed by a published study on LiDAR measurements at this specific location("LiDAR based characterization of mid altitude wind conditions for airborne wind energy systems" (https://doi.org/10.1002/we.2343).

Comparing different AWES designs and concepts is beyond the scope of this paper. We do not state that designing a system for maximum power and neglecting capacity factor is desirable. On the contrary, we hope that our findings, which are to our knowledge the best representation of actual wind conditions at higher altitudes, will educate designers, manufacturers and researchers to design more efficient and reliable systems.

Sincerely,
Markus Sommerfeld