

**Review of the manuscript wes-2021-159, entitled “Offshore wind farm cluster wakes as observed by a long-range scanning wind lidar”, by B. Canadillas, M. Beckenbauer, J.J. Trujillo, M. Dorenkamper, R. Foreman, T. Neumann, A. Lampert.**

This manuscript focuses on the analysis of the wind velocity field evolving among various offshore wind farms over the German Bight. This study is performed using data collected with a scanning lidar, airborne measurements, and WRF simulations.

After an introduction, which seems not to have a sharp focus and rather reviewing general offshore wind farm work, the site of the field experiment is described. The section I prefer the most of this work is Sect. 2.1, where the collection of the lidar data is described with a very good level of detail. Subsequently, the WRF simulations are described, in my opinion not providing all the details needed to reproduce this case study, followed by a brief non-technical description of the airborne measurements. The analysis of the data is reported in Sect. 3, starting from a general comparison between the three data sets (Fig. 8), then followed by a more detailed comparison between lidar and WRF data (Figs. 12-15).

I commend the great work done by the authors, especially for the collection of lidar and airborne data. In my opinion, the title of this manuscript is misleading, indeed the reader is going to expect a detailed analysis of state-of-the-art lidar scans to investigate the wind field between wind turbine arrays, while the main focus of the work is an intercomparison between lidar and WRF wind speed at hub height for different wind directions and atmospheric stability regimes, which of course has a more limited scientific interest. Therefore, I am a bit confused about the main insight that this manuscript would convey. At this stage, this manuscript reads more as a technical report rather than a scientific paper. The novelty of this work, if any, should be better emphasized in the manuscript, and discussed in detail. Some other comments are reported below:

1. L 110-115 - How the various atmospheric stability classes are defined based on the lapse rate? Please provide references as well.
2. Fig. 8a - I am not sure it makes sense to generate a color map from the linear interpolation of the data collected over the transects. I think it would more informative to show the map with the transect locations and overlap the wind data with linear plots.
3. Fig. 10 b - I would plot the experimental probability density functions of the wind data, then overlap the respective Weibull distribution and/or the Weibull factors, as reported in the legend.
4. L 318 – “*The strong fluctuations in the wind speed of the lidar data in region R1 are due to the very small amount of data in neutral stratification*” Can you try to quantify the accuracy of the data through any statistical approach, e.g. error on the mean or percentiles obtained through bootstrapping?