To Editor: First of all, my expertise lays within LES and atmospheric turbulence. I'm not an expert regarding LiDAR-measurements. Please keep that in mind and select other reviewers accordingly.

General comments:

In the Paper the Authors used LES to evaluate the use of the LiDAR measurement technique to get wind fields from locations with are unreachable with meteorological mast or are more cost efficient. In the paper the authors compared many different parameters and evaluated the effect of the with regards to the potential use case. Theses effects are relevant for the future site assessment and are worth publishable.
However the authors did not proof the validity of their LES case and how good they can measure turbulence characteristics. Therefore mayor revision is needed to guarantee the statements given in the rest of the study

Specific comments (Major):

Fig.1 / Table 2.: According to Figure 1, the domain is wider than high. However, according to Table 2, the domain is higher than it is wide. Please clarify this.

Line 105: How did you generate the inlet data for case 2? Fully cyclic case of the land area. This is not clear

Line 120: How did you come up with this grid spacing? Why not uniform in x and y? For how long did you do the pre-run? How did you quantify that it is long enough/converged? Is the pope criterion achieved (How much of TKE is resolved)? What about the spectra? Which numerical scheme is used for time and space? Which solver did you used piso, pimple? How many inner and outer correcter did you used? What about dT/ CFL criterion?

Line 168: Is that you're implementation of a virtual LiDAR or not? Source?

Line 204: Turbulence intensity in %

Line 293: Where is the equation for the PSD?

Specific comments (Minor):

Line 90: Which OpenFOAM Version is used? v2206? v2212? Why not a newer one?

Line 97: Why is the WALE model used?

Please add thousend seperator to the numbers (10,000 m) and be consistent with m and km

Figure 4 and similar: Please reduce the gap between the sub-plots to make them better visable

Figure 5: Why is the velocity shown between 0 and 12 m/s? Why epsilon to 20%

Figure 8: Why is the velocity shown between 0 and 12 m/s?

Technical corrections:

Title: wind field measurements (no capital F and M)

Line 39: missing space before source

Line 51: in the wind energy community

Line 63: installed a few kilometers

Line 226: missing space before “(“