Comment on amt-2020-511

Anonymous Referee #3

Referee comment on "The COTUR project: remote sensing of offshore turbulence for wind energy application" by Etienne Cheynet et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2020-511-RC1, 2021

This article gives an overview of a unique measurement campaign that uses cutting-edge instrumentation with the intent of answering difficult and important questions for wind engineering. The dataset seems promising and the authors seem to have put a lot of thought into instrument choice, placement, analysis, etc. I have specific comments on the attached PDF. An overview of key comments is below:

Technical -- I would like to request a little more on (i) coastal internal boundary layers, including previous work/measurements where appropriate; (ii) the validity of assuming $v_r ==$ wind speed; (iii) acknowledgment of other coherence models in addition to davenport; (iv) can these data potentially be used to improve the way we model coherence rather than rely on axisting model for coherence for their very analysis?; (v) if/how/when can any of these data be shared with other groups for collaborative research; (vi) a discussion on where we need to go in instrumentation development so you could get more and better data next time (your dataset is great in comparison to past efforts but obviously we have a long way to go); (vii) how do you anticipate modeling studies being able to complement this dataset?; (viii) at the end, please provide some big-picture take-aways of how far this dataset can take us -- for technology development in the context of wind plants, offshore turbine design and operation, coastal infrastructure, etc; (ix) why wasn't the lidar data validated against the sonics at the beginning, just at the end?

Other minor -- while the article is well written and relatively easy to follow, it could benefit substantially from editing by a professional communications specialist (several sentences are a bit strange or have small mistakes); clean up on nomenclature, variable definition, figure improvements, etc are noted in the pdf.

Please also note the supplement to this comment:
https://amt.copernicus.org/preprints/amt-2020-511/amt-2020-511-RC1-supplement.pdf