

Responses to Reviewers' Comments for Manuscript  
WES-2024-119

**Tall Wind Profile Validation Using Lidar  
Observations and Hindcast Data**

Addressed Comments for Publication to  
Wind Energy Science (ISSN 2045-2322)

by  
Cheynet et al.

# 1 Authors' Response to Reviewer 3

We thank the reviewer for their additional valuable feedbacks on our manuscript. We have read carefully the annotated pdf and updated the manuscript. Changes are visible in the marked-up manuscript. We have also detailed our answer to some key feedbacks below.

## Comment 1

Some sections of the paper are written in very careful / vague language: could improve, might perform better... I think you could write well known and generally accepted facts in a straight forward way without needing to add additional references.

### **Response:**

We acknowledge that we frequently use the conditional form. This is intentional, as many statements involve hypotheses, and using the indicative form without definitive proof could be misleading. Additionally, widely accepted facts sometimes evolve as new evidence emerges. For instance, our statement that "CFD models could help capture complex phenomena in complex terrain" reflects this cautious approach. It is often stated that CFD methods, including RANS and LES, can model wind conditions in complex terrain. However, in-situ comparisons have revealed significant limitations. This is also one reason why high-resolution wind tunnel studies of flow in complex terrain are still used nowadays as complementary tool. By using the conditional form, we aim to encourage careful interpretation of our statements.

## Comment 2

Many sentences would benefit from active voice rephrasing.

### **Response:**

We have revised the manuscript to replace passive constructions with active voice wherever appropriate.

### Comment 3

One thing to keep in mind with LiDAR measurements is that the devices should be verified against met mast measurements, which is of course impossible for devices that measure 500m+.

#### **Response:**

We agree with the reviewer. Fortunately, the use of ground-based remote sensing devices, including LiDAR, for wind resource assessment is increasingly being standardized, at least for profiler lidar. We have added the following lines in the conclusion:

*Finally, it should be noted that wind speed profiles established by DWLs are typically validated against anemometers mounted on met masts. However, such comparisons become impractical at altitudes above 200 m. Consequently, the accuracy of wind speed profiles at these heights, as measured by profiler lidar or scanning lidar in profiler mode, requires further evaluation.*

### Comment 4

Please double check your references. For example, many reference do not include any DOI where there are DOI readily available online.

#### **Response:**

Thank you for pointing this out. We have reviewed all references and added DOIs where available. Additionally, we corrected capitalization inconsistencies.

### Comment 5

Double check the spell for the use of British spelling and American spelling, e.g. metre vs meter, analyse VS analyze

#### **Response:**

Good point! We have proofread the manuscript to ensure consistency with British English. However, we have retained "levelized" with a z, as the spelling with s appears to be uncommon.

#### Comment 6

Page 6, Lines 145: "as reflected in the database status at the end of 2024.":  
what does this mean

#### **Response:**

The database is continuously updated and at the end of 2024, the database extended from 1961 onward. In the future, this may not be the case any longer and the database could start in the 1940s, as done for the ERA5 database.