

Report on paper “Quality aspects of the measurements of a wind profiler in a complex topography “

The paper describes a method for checking the homogeneity of the wind field sampled by the five beams of a low-tropospheric wind profiler. It is studying these topographical effects on the wind fields on a specific coastal location (Bilbao) on the quality of the wind profiler measurements and under specific weather types.

After describing the location and how a wind profiler is operated, the authors explain their methodology based on several steps (modules) before to show results from several weather types. The discussion shows the difficulties of interpreting the results as well as supplementary work to be done. The conclusions remind wind profiler users to consider possible deviation of the homogeneity assumption in the low levels especially in complex topography and during particular weather types.

The **abstract** gives an overview of the main goal of the study, but should also give some quantitative information of the effect of the topography on the quality of the data.

Introduction

- It defines the main objective of the study: deviation and evaluation of the systematic initial homogeneity assumption (lines 9-10) which could be added as metadata: great idea, but the results do not show a real quantitative usable output....

System description.

- Because the complex topography of the area is of first importance for the study, a much better description of the area is mandatory (including a better Figure 1).

Methodology.

- Module 1, database selection. I have the impression that the selection of cases was based on empirical criteria: “statistical and visual inspection” (line 8). A better explanation on how this selection was made would help.
- Testing periods. I did not get very well the connection of this paragraph with the previous one. What do you mean with “previous analysis ...” (line19). It is quite confusing to me.
- Module 3: pre-analysis and interpretation. Once again, I am confused: why do we have to proceed to a “cleaning process” .. and how (line 13) + what is the “criterion of usefulness” (line 20). It is really not easy to keep track of the various steps ...
- Module 4: homogeneity. Once again, it seems to me that we have a mix of statistical tools and of empirical methods (visual) in order to get the appropriate set of data : “The tool was supported by visual and numerical descriptive analyses” (line 22)

Results

- The explanation of Figure 16 (which are Tables!) should be better formulated: what trend means and what Results:0 – (-,0,+) means, and what are the first column’s numbers, ..)

- To me, clear quantitative results are missing: what can we gain from such a technique to check the quality of the Basque wind profiler. Things are quite confused.

Conclusions

- The fact that uncertainties are almost not described in this work (as mentioned) remains a weakness of the study.

General comments

English is not my mother language, but I think that the English wording needs substantial improvement before to have this paper accepted. Mathematical and statistical bases seem to be often used and presented in the background instead of, maybe, being explicitly described. The description of several filtering steps gives the impression to the reader that the method can only be used by the authors on their system at its location. A paragraph on the possibility of a generalization of the method to other systems would be very welcome.

I recommend **major revision** of this paper prior to be finally published.

Minor comments

- Page 5220, line 9 : E-Winprof : need a reference
- Page 5220, line 25 : the authors mention 5 modules, Figure 2 shows 4 modules!
- Page 5221, line 6 : lower layers of the atmosphere instead of lower layers atmosphere
- Page 5221, line 9 : (.spc files) → to be deleted
- Page 5221, line 26-6 : this paragraph is not clear to me
- Page 5229, line 22 : Jordan → 1995 or 1997 ?
- Page 5232, line 13 : Ralph → 2012 or 1996 ?
- Page 5232, line 28 : Wilfong et al : not found in text
- Figure 1 : should be improved with, for exemple, a E-W crosssection showing the topography (see comment above)
- Figure 3 : what are the lines + improve the legend
- Figure 4, 8, 9, 12, 15 : what are the colors on top (not seen on the plots) + improve the legend. These plots are important and must be easily readable
- Figure 5, 13 : the legend on top of right plot not clear
- Figure 7, 11 : what are the colors on top + improve the legend
- Figure 10 : what 0.1 and 0.2 mean in the plot ?
- Figure 16 : Figure or table ? + improve the legend