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# ***Interactive comment on “High resolution observations of the near-surface wind field over an isolated mountain and in a steep river canyon” by B. W. Butler et al.***

## **Anonymous Referee #1**

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## **General Comments**

The manuscript presents results from field measurements obtained from two structurally different terrain: Big Southern Butte which is about 800 m tall, and a steep river canyon in Idaho. I commend the authors for undertaking this work as there is a need for observational data for complex terrain wind models. These two cases significantly differ from existing complex terrain studies. Based on their observations, authors also make a valid point regarding the use of numerical weather models with insufficient resolution for complex terrain regions. The manuscript is written clearly and data is presented in a way that can be used for model evaluation. Therefore, I am in favor of its publication

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in this journal after the authors address the following issues in a revised version.

### Specific Comments

- 1) Line 5 on page 16823: mention wind forecasting and resource assessment in addition to wind turbine siting.
- 2) Line 15 on page 16824: Askervein Hill study should be cited and mentioned.
- 3) Although the information is available in the main text, figure captions should convey more information.
- 4) Provide a table for measurement coordinates. Abbreviations for sensor locations need to be spelled out in a table (R, TSW, etc) It gets confusing after a while.
- 5) Some of the figures are too small in the printer friendly version of the manuscript. Fig 1b-d, Figs 4,6,7,8,9, 10, 12
- 6) Authors collected wind profiles upstream of the BSB. Those vertical profiles should be presented and discussed for each of the regimes in light of theoretically expected profiles.
- 7) Provide information on the limitations of the instrumentation (e.g. threshold speeds)
- 8) As the authors state in the Instrumentation section, they have collected data to quantify turbulence, friction velocity, sensible heat flux, temperature and relative humidity. These quantities need to be presented, and discussed in a way that can help modelers.
- 9) Figure 3. I understand that the threshold was chosen after a visual inspection. However authors can still provide a percentile for this threshold (What percentage of data is below this value?)

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 16821, 2014.

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