

Interactive comment on “Characterisation of Intra-hourly Wind Power Ramps at the Wind Farm Scale and Associated Processes” by Mathieu Pichault et al.

Anonymous Referee #1

Received and published: 19 July 2020

In this paper, the authors present an automated characterization of wind power ramps in wind farms using data from the Australian Mount Mercer wind farm. The methodology is based on a wavelet transform through which the amplitude and duration of the ramps are detected. The authors set up a decision tree based on which the ramps are categorized into events related to cold fronts, moist convection, turbulence, etc. As a result, the paper offers a comprehensive analysis of more than a thousand ramp events spanning measurements of almost two and a half years. The paper is very well written and appears technically sound. The results promise real-world applicability in wind farm operations. Therefore, I am happy to recommend the paper for publication in Wind Energy Science in its current form.

C1

Still, I would like to ask the authors to address the following points:

- Why do the authors refer to a dot product in eq.(1)? Do they mean the inner product of p_t and $\Psi(t)$ in some function space? Or would it be enough to call it a product?
- Eq.(1) is missing a "dt" in the integration. I would also leave out the " \cdot ".
- p5: "'Haar' Wavelet", "Wavelet" should not be capitalized.
- Please check the normalization of the PDF presented in Fig. 4.
- Instead of the scatter plot presented in Fig. 6, would it be possible to compute the joint PDF, e.g. using kernel density estimation?

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2020-81>, 2020.

C2