

Interactive comment on “Detection and characterization of extreme wind speed ramps” by Ásta Hannesdóttir and Mark Kelly

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General comments The design load case ECD is part of the international design standard for wind turbines, IEC61400-1, which makes the topic of the paper of broad international interest. It is very good that the deterministic wind conditions are analysed and compared to real measurements. Especially the ECD seems to be rather arbitrarily defined in the early days. The conditions at ECD are normally not a design driver load case. Maybe that is a reason the parameters and conditions for EDC have not attended the most interest amongst wind turbine designers or manufacturers. Finding methods to validate the ECD seems also difficult, which is discussed in the paper. One method is proposed and presented, which is a good attempt to get clarification in the subject. The focus is on large-scale, high-amplitude fluctuations, which are coherent

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across the rotor of multi-megawatt wind turbines, which is relevant as the turbine sizes has increased significantly since the ECD was first proposed for wind turbine design.

Specific comments The measurements used for the characterization of the ramp-like events come from three different sites, located in a quite narrow geographical area of southern Scandinavia. What is the motivation for selecting these sites? Are there other sites with potential more complex terrain or other conditions that might lead to more severe gust events? What global wind measurement data is available for this kind of research? When the methods are specified and algorithms are coded, it seems relatively straight forward to compile a larger amount of data, to get even more reliable base for conclusions. For further discussion: It would be interesting to check if there are correlations with ECD severity and the turbulence intensity at the specific site?

Technical corrections Figure 2 should maybe be moved further down in the article, when the high pass filter has been introduced, e.g. after line 13 or before just 3.2. Page 6, line 6 “We define the rise time of the ramp from the interval where the wind speed rises from 0.025ub to 0.975ua.” 0.025ub seems very low!/? Should it be 0.025ua? No Nomenclature.

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