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## Lightning to wind-turbines during snowstorm Filomena over Catalonia

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Winter storm Filomena battered the Iberian Peninsula on the 9-10<sup>th</sup> January 2021, covering the eastern half of Spain with a huge amount of snow. Apart from the historical snowfall (e.g. Madrid 40-50 cm), lightning has been recorded during this winter episode. Most of the lightning was oversea, associated with the surface low in southern Spain. Still, some scattered lightning was also recorded in other regions of the Iberian Peninsula like Galicia, Asturias, Extremadura, Valencia and Catalonia.

This study focuses on the just over a dozen of stokes that hit southern Catalonia. Interestingly, inland lightning took place on the evening of the 9<sup>th</sup> January although NWP models showed no convection conditions over land, the sounding was stable and CAPE was found only far away over sea.

A closer look at the lightning spots showed wind turbines in the close vicinity of all CG stokes. To check the veracity of these winter lightning, data has been gathered from two independent Lightning Location Systems.

By means of data from different meteorological systems from the Meteorological Service of Catalonia (weather radar, automatic weather stations), the meteorological conditions during the lightning occurrence are analysed.

Since lightning only occurred on wind turbines, the effect of rotation may be a key factor on the triggering of lightning from wind-turbines, because the rotation might enhance the electric field at the tips of the blades because they are less shielded by the space charge produced by themselves.