



Leading edge erosion of wind turbine blades: Need for raindrop-size measurements

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6th International Conference Energy & Meteorology: Abstract Submission

Days	Leading edge erosion of wind turbine blades: Need for raindrop-size measurements (754)	^
Tuesday, 25th J...	Anna-Maria Tilg ¹ , Charlotte Hasager ¹ , Flemming Vejen ² , Morten Nielsen ¹ , Jakob Bech ¹	∨
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Thursday, 27th ...	2. Danish Meteorological Institute, Copenhagen, Denmark	
Search	Leading edge erosion (LEE) of wind turbine blades is the degradation of material at the leading edge of the turbine blades. It causes a loss of the annual energy production and can lead to structure failure of the blade material. In northern Europe LEE appears to be faster and more frequent at wind farms located offshore than at onshore wind farms. First results show that rainfall events at high tip speeds seem to have a high influence on the LEE beside precipitation events with hail (Bech et al. 2018). To improve our understanding of the influence of rain on the LEE process, it is important to analyze the spatio-temporal variation of raindrop-size distributions (DSD).	
Speakers (/spea...	Five years DSD measurements from a disdrometer at an up-country side in Denmark provided by the Danish Meteorological Institute (DMI) show in general a higher number of raindrops in summer and autumn than in winter and spring. Raindrops with a diameter larger than 1 mm are more frequent in the same time of the year. However, the concentration of drops with different diameters varies like the total amount of precipitation from year to year.	
	Although wind measurements are available over ocean, no longer time series of DSD over ocean exist. Therefore, disdrometers to measure the raindrop size have been installed recently at the west coast of Denmark in cooperation with DMI to get an impression of the conditions offshore. These measurements will be compared with the DSD data from the up-country side. With this comparison, we try to understand more about the more pronounced LEE process at offshore wind farms.	
	Overall, an option for reducing LEE of wind turbine blades could be forecasting severe precipitation events. Therefore, precipitation measurements and forecasts, especially offshore, will become important for wind industry.	