



Wind extremes: a global analysis of the probability tail

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Extreme wind can cause extensive destruction in nature and human societies, and historically, it has been one of the deadliest hazards. Here we present a systematic analysis of high frequency wind speeds focusing on behavior of their tail. Commonly used distribution models like the Weibull, and especially when fitted using the whole dataset, may poorly quantify the heaviness of the tail. Thus, here we focus on and analyze solely empirical tail samples which offers a more robust approach. We compare the performance of three common probability tails, i.e. those of the Weibull, Lognormal and Pareto II distributions, for all months and for four different samples of extremes. The results, on a global scale, show that the best model, for most of the months, is the lognormal tail, which is heavier than the Weibull. This indicates that the traditionally used Weibull model may underestimate the frequency and magnitude of wind extremes.