



## **Towards an extreme value analysis of observed wind speed in the complex terrain of Iceland**

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Due to its location adjacent to the North Atlantic Storm track, Iceland is a fairly windy country. The orography of Iceland, with in general increased elevation from the coast to the highlands and numerous steep mountains in the lowlands, impacts the synoptic winds resulting in a wind pattern where winds may be enhanced locally, and regions where gustiness can be problematic.

Extreme winds in Iceland are a problem for built up environments, transportation and infrastructure, and must to be taken into consideration for planning purposes when constructing roads, buildings and other structures such as wind turbines. Lately, through the Nordic project Icewind, a wind atlas has been constructed for Iceland, mapping the wind resource from simulations of mean winds. Here we present the first step towards an extreme value analysis of the observed wind speed in Iceland, based on 61 automatic weather station, that will complement the wind atlas. The time series include at least 10 years of data that has been quality checked, both automatically and manually. We apply the Peak Over Threshold technique to the maximum daily mean wind speed and the maximum daily wind gust, with the threshold chosen as the 0.9 quantile of wind speed or gust at each stations and a declustering period of 5 days to ensure independent events. For each station a General Pareto Distribution function is fitted and the scale and shape parameters found. The results can then be visualised for all stations on a map giving a good picture of spatial differences. One interesting result is the different behaviour of the wind gust in comparison to the mean wind speed that clearly emphasises how local orography affects the gust component of the wind speed more than the mean component.