



## **Towards a new wind gust climatology for Switzerland – Challenges and first insights**

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A good knowledge of extreme winds is key for the prevention of damage caused by wind. Wind extremes are often determined by applying extreme value analysis on winter storm data. Yet, summertime thunderstorms can be responsible for near-record wind gusts. In complex terrain, regional wind systems such as a flow crossing the main ridge (e.g. Föhn) or deflected flows (e.g. Mistral, Bora, or Bise) can cause near-record wind gusts. Unfortunately our overall knowledge on extreme winds is still rather limited. On the one hand, there are considerable issues with data quality for long (25+ years) wind gust series and major spatial gaps exist in the observational networks. On the other hand, numerical weather model data also suffers from limitations: wind gusts are not simulated explicitly but are parametrised, and convection resolving model runs with a horizontal resolution in the km-range are not available over several decades. Here, we present the challenges and first insights on the way to a new wind gust climatology for Switzerland. These include the identification of the different wind types causing near-record wind gusts, data quality issues in long observational series and new results of extreme value analysis at stations using a Bayesian approach. We will also show a comparison of the numerical model's abilities with respect to wind gusts in complex terrain. The models considered will include the scenario runs of the Euro-CORDEX initiative with a horizontal resolution of 11 km, regional re-analysis with a horizontal resolution of 6 and 2 km respectively, and the MeteoSwiss model COSMO-2 with a horizontal resolution of 2 km.