

EGU23-4675, updated on 25 Apr 2024

<https://doi.org/10.5194/egusphere-egu23-4675>

EGU General Assembly 2023

© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



Storms and associated damages in Norway

Ashbin Jaison^{1,2}, Asgeir Sorteberg^{1,2}, Clio Michel^{1,2}, and Øyvind Breivik^{1,2,3}

¹Geophysical Institute, University of Bergen, Bergen, Norway

²Bjerknes Centre for Climate Research, Bergen, Norway

³Norwegian Meteorological Institute, Norway

Extreme winds account for more than half of Norway's insurance claims related to natural hazards [1]. Quantifying windstorm-damage relations is crucial to prepare for and mitigate the effects of future wind events. However, there has never been an attempt to quantify windstorm-damage relations at the municipality level in Norway. The work in hand employs four different damage functions at the municipality level of Norway. Along with the newly proposed modified Prahll damage function [2], an ensemble means of the damage estimates are tested for 356 municipalities in Norway. We evaluate the damage functions in terms of forecast accuracy. The spatial distribution of losses suggests severe damages along the west coast of Norway. Further inland in Norway, there are seldom any losses due to Norway's unique topography and demography. The losses above the 99.7th percentile in each municipality constitute 85% of total national loss, and we focus on this extreme loss class. A significant agreement between the observed and estimated losses at the municipality and national levels indicates that the damage functions are suited for forecasting storm-induced damages. The damage functions are also able to successfully reconstruct the spatial spread and pattern of losses caused by very extreme windstorms.

References

1] Finance Norway, Natural Disaster Statistics (NASK), (2019)

[2] B.F. Prahll et al., Applying stochastic small-scale damage functions to German winter storms, Geophysical Research Letters 39, (2012)