WISLINE

Wind, Ice and Snow Load Impacts on Infrastructure and the Natural Environment

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Main Objective:

To quantify climate change impact on technical infrastructure and the natural environment caused by strong winds, icing and wet snow.

Partners

The Norwegian Meteorological Institute (MET)

University of Oslo, Department of Geosciences (UiO)

National Center for Atmospheric Research (NCAR)

Kjeller Vindteknikk (KVT)

Norwegian Forest and Landscape Institute (NFLI)

Swedish University of Agricultural Sciences (SLU)

WISLINE Background

- Extensive damage caused by climate loads such as wind, atmospheric icing and heavy snowfall (forests, overhead powerlines, communication towers)

- Large investments in technical infrastructure are planned, e.g. the Norwegian main grid of power transmission lines will during the next ten years be upgraded for 50 – 70 billions of NOK.

- **More insight into climate loads, improved models and high resolution datasets are required for protection of environment and design of infrastructure in a changing climate.**

Cloud icing, Desember 2013. Photo Ole Gustav Berg, Statnett

Wind damage from the storm Dagmar. Photo Jon Eivind Vollen, Skogkurs

WISLINE method

Develop tools
Develop models and post processors for high resolution data of wind, ice and snow (mainly improvements of existing models and post processors)

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Test tools
Case studies where data from the tools are verified against observations

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Ice and wind datasets for present climate
The tools are used to produce dataset for present climate (downscaling of ERA-interim data)

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Ice and wind datasets for future climate
The tools are used to produce dataset for future climate (downscaling data from climate models)

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Risk studies (forest damage)
Combine datsets from WISLINE and forest damage data to develop a risk model for wind and snow damage to forests

Validation

Gaustatoppen 1883 m above sea level. The met station is frequently inspected despite the rough environment.
Photos: Ole Jørgen Østby, The Norwegian Meteorological Institute

- The weather prediction model AROME wil together with post processing routines provide data for atmospheric icing

- Realistic simulations of cloud micro physics are crucial

- A Thies disdrometer will measure precipitation particels at Gaustatoppen and provide valuable data for validation

- As part of the project Development of a toolbox for assessing Frost and Rime ice impact on overhead Transmission Lines (FRONTLINES) atmospheric icing will be measured at Ålvikfjellet in Hardanger and a second site. These observations will be available for validation purposes in WISLINE.