



Wind and Snow risk in Norwegian forest – From field data to statistical risk models

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Norway is covered by forests for around one third of its mainland surface (around 120 000 km²), therefore they represent a very important ecosystem to be preserved and managed. Despite their environmental and economic importance, forest represents also a source of potential risks. During last decades, several cases of treefall driven by wind storms and/or snow have been recorded over all Norway. Treefall can have consequences not only for the environment, but also for local communities, causing interruption of infrastructures such as power lines or transport infrastructures (i.e., road and railways). It is therefore important to understand the causes of these events in order to estimate their risk and take effective measures to prevent further negative consequences.

Several datasets are available providing information on trees and climate condition in Norway. In particular, the Norwegian Forest Inventory can provide information about forest plots and the presence of wind/snow damages at regular time steps, while some additional datasets have been collected for single trees for all Norway with a higher time frequency or for specific regions where particularly relevant events occurred. At the same time climate models outputs have been used to retrieve the climate condition of the areas under investigation.

An analysis has been conducted over South Norway integrating National Forest Inventories data (e.g., tree species, diameter, height) with climate simulation (e.g., wind speed, wind direction, soil wetness) and local condition (e.g. the TOPEX indicator, based on elevation and exposure). Preliminary results showed that the main risk factors are represented by the tree species (being pine the species with lower risk and birch the one with higher risk), height (taller trees have higher risk) and diameter (slender trees have higher risk). The presence of edges, and new edges in particular, can also increase the risk of treefall caused by wind. The condition of the soil, which can affect the anchorage of trees, and the presence of wet snow can also represent important climate related risk factors that are under investigation. Other factors also contribute to the treefall risk, but plays a minor role. The dataset, the used analytical methods and the obtained results will be presented in the poster.