

Storm warning—150 years of damage to Swiss forests

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Windthrown forest in central Switzerland (Rorwald forest, Canton of Obwalden). The majority of downed timber due to "Lothar" happened in the Swiss central plateau and in the Pre-Alps. Credit: Reinhard Lässig

Nidwalden, Fribourg, Aargau, Zug and Zürich. These are, in descending order, the cantons whose forests were worst hit by the winter storms that battered Switzerland between 1865 and 2014. Tilo Usbeck, a researcher, studied and compared 26 storms. "In 150 years, there have been well over 26 storms that damaged forests", he explains. "However, to ensure that I had sufficient data I took into account those storms that felled over 70,000 m³ of trees. Storms have to cause a certain amount of damage to be included in cantonal and federal records."

Stronger winds, higher temperatures, more precipitation

23 of the 26 storms selected occurring throughout the period studied caused damage to less than two million m³ of forest. The three remaining storms that caused greater damage consist of a [storm](#) that hit in 1967 (2.9 million m³), Vivian in February 1990 (5.1 million m³) and Lothar in December 1999 (14 million m³, 200 times greater than the lowest limit used in the study). The results show a gradual increase in the absolute and relative scale of the damage caused, as well as the frequency of said damage. Since 1865, several factors have combined to exacerbate the damage caused, namely the increase in wind speeds, temperatures, precipitation, and the volume of standing trees.

Research shows that after around a century of relative calm and limited damage, the latter years of the 20th century and the first years of the 21st century experienced heavier winds. The situation has calmed over the past decade. Tilo Usbeck explains that "this does not mean that there have not been any fierce storms over the past 10 years. Those storms that hit Europe broke loose further north, sparing Switzerland."

More intensive storms must still be expected

Although discussions are still ongoing regarding the links between global warming and a potential increase in the frequency of winter storms, significant damage is further expected in the future. Regardless of the strength of the storms, both the forested area and the timber volume have increased. Swiss regions on the northern slopes of the Alps, the Central Plateau and the Jura Arc will continue to bear the brunt of the storms, while the south and east of the country will still be less exposed. Mountainous areas such as the Jura and the Alps play a key role in the development of [winter storms](#), resulting in either greater damage on the Plateau or Prealps or less damage in intra-Alpine regions and those areas on the southern slopes of the Alps.

The dissertation's results have already been incorporated into forest planning in particularly vulnerable regions. Greater attention will now be paid to the choice of tree species and trees' ages to ensure that forests are better able to withstand storms.

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