



Understanding current and future wind and wave risks: The WINDSURFER project

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Extreme winds pose major risks to life, property and forestry, while extreme ocean waves can impact on offshore infrastructures and coastal communities. For example, the three windstorms (Anatol, Lothar, Martin) that struck in Dec 1999 inflicted 8 billion Euros of insured losses to property and infrastructure across Europe. In Jan 2005 Windstorm Gudrun inflicted substantial damage to forestry. Gudrun felled approximately 75 million cubic metres of trees in Sweden alone, which is equivalent to the annual Swedish forestry harvest. Extreme waves driven by strong winds can also have substantial impacts on the energy sector and offshore infrastructures. For example, a windstorm on 12 December 1990 generated a significant wave height of about 12 m in the central North Sea (close to the 100-year return level), causing extensive damage on the Ekofisk platforms.

WINDSURFER is a three-year project that brings together eight leading research institutions across Europe to co-develop new methods, tools and assessments of extreme wind and wave risk with a focus on the Insurance, Forestry and Energy sectors. There are major gaps in our scientific understanding of extreme wind and wave risk, namely i) Present-day risks from extreme winds and waves are poorly constrained; ii) The impact of climate change on future wind and wave risk is uncertain; and iii) Substantial improvements are required in modelling the socioeconomic impacts of wind and waves.

The presentation will describe some of the activities and first results from the WINDSURFER project to address the above knowledge gaps including the development of new methods and tools to better quantify current extreme wind and wave risk. In particular, results will be shown from i) new reanalysis and hindcast datasets of observed wind and wave extremes and ii) improved understanding of windstorm clustering for assessing insurance risk derived from high-resolution climate model simulations. WINDSURFER is one of the funded projects in the ERA4CS ERA-NET.