



CoreLogic®

CATASTROPHE
RISK
MANAGEMENT

European Windstorm Model (Eurowind™)

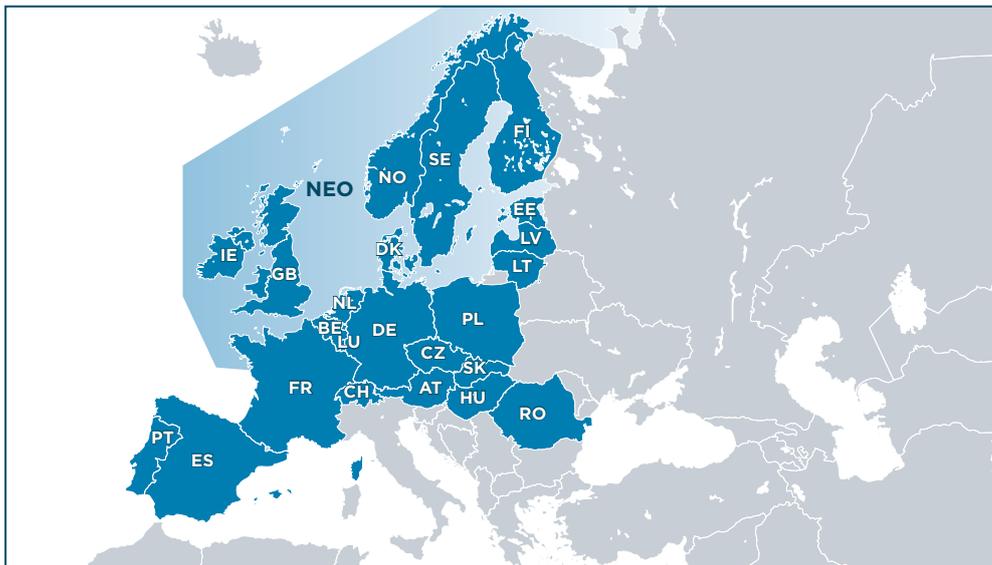
Quantify the prospective hazard from windstorms across
24 European countries

Highly Granular Risk Modeling

Extratropical windstorms pose significant risk to insured assets across the European continent. Since 1990, 11 notable severe wind events have taken place across Europe, yielding upwards of \$25 billion in estimated insured losses.* The most recent to occur were during the 2013/2014 storm season with storms, Christian, Xaver and Dirk causing substantial damage from both high winds and the resulting flooding from coastal storm surge. The European Windstorm Model (Eurowind™) from CoreLogic® provides a highly granular, up-to-date, and detailed risk model to help insurers comprehensively understand the potential losses related to windstorms in Europe. This fully probabilistic model quantifies the prospective hazard from windstorms across 24 European countries, with the inclusion of the Iberian Peninsula and the North European Offshore region, with complementary storm surge and forest modules available for selected European countries**. In addition, users have access to a new demand surge option, aimed at assessing the impact of post-disaster amplification.

Comprehensive Wind Modeling Methodology

To achieve the greatest accuracy and granularity possible, the European Windstorm Model is based on certified, measured gust wind speeds and 9 wind directions collated from over 4000 meteorological stations across Europe, from 1960 to 2016. This breadth of historical data observations, in addition to data from the National Climatic Data Center and National Centers for Environmental Protection was used to maintain consistent hazard intensity, direction, and duration. This consistency coupled with the robust historical dataset achieves an accurate historical representation of wind speed in the European region. To ensure the same accuracy and granularity of the output, the same algorithm is also applied to stochastically perturbed offsprings of historical events during the generation of a full stochastic event set.



* Loss estimates based on Munich Re NatCatSERVICE, March 2013 (Conversion rate: 1 USD = 0.73 Euro)

** Forest sub-module: Sweden and Finland, Sea surge sub-module: United Kingdom, France and Sweden



Global Earth System Model (ESM)

To truly manage risk, the stochastic event set is even further enhanced through the use of a pioneering 1,200-year long, continuous simulation of historical storm activity (800–2000 period) performed with a global Earth System Model (ESM). An ESM is a state-of-the-art representation of the interaction between the various parts of the Earth System, and fully characterizes the frequency and severity of European windstorms. Due to this hybrid methodology, insurers are now able to better quantify wind speed and hazard uncertainty at any location. The results allow transparency in modeling that translates to confidence in managing risk and meeting regulatory requirements.

As a result, two alternative frequency models are now available:

- ▶ **Analytical Model** – frequency model based on the ESM simulation of a historical storm climate which represents the best estimate of the risk.
- ▶ **Empirical Model** – frequency model based solely on recorded wind speed data from over 4000 meteorological stations across Europe, covering a period from 1960–2016. The Empirical Model is provided as a baseline for pure historical reference.

North Europe Offshore (NEO) component

The Eurowind model has been extended to include an offshore modelling component to facilitate the modeling of the risk of catastrophic windstorm loss to renewal energy assets in the North Europe Offshore region. The extent of the NEO model component includes the North Sea, Irish Sea, Baltic Sea, and a significant part of the Norwegian and Barents Sea. This component is fully based on dynamically downscaled ESM storms.

A Unique View of Risk – NAO⁺ Loss Scenario

A separate module representative of the impact of the positive phase of the North Atlantic Oscillation on insured losses is also available. NAO⁺ is a unique pattern of windstorm activity, driven by the difference in pressure anomalies between the Azores High and the Icelandic Low pressure systems. This results in a pressure gradient of varying strength throughout the European continent. This pattern can result in a large influx of claims activity resulting in a significant strain on the human and capital reserves of insurance companies.

Therefore, North Atlantic Oscillation loss scenario presents a unique view of risk, allowing for a better, general understanding of the sensitivity of the Eurowind model to such drastic a change in conditions.



Why Consider CoreLogic?

Increasing exposure to catastrophic events are challenging the Property & Casualty industry to revisit existing catastrophic risk management and loss adjustment strategies by improving the overall understanding of all natural hazards. CoreLogic is dedicated to the science of natural hazard risk. The delivery of a new probabilistic risk model affirms the commitment to delivering decision support data and products to the insurance industry.

CoreLogic has the right solution for better coverage. With a staff of PH.D.-level scientists and engineers, we have taken risk assessment a step further by developing a proprietary methodology that enables a more granular level of risk management control and reporting.

Seamless Ordering and Delivery

Available as part of a suite of catastrophic risk management products, the European Windstorm Model from CoreLogic provides an unparalleled understanding of prospective hazard related from windstorms across continental Europe.

- ▶ **RQE®** – Available for install at your place of business, our global multi-peril catastrophe modeling platform brings the data and information you need in your controlled secure environment.
- ▶ **Seamless Integration** – The European Windstorm Model is designed to make your business workflow easier. Our intuitive interface is easy to use and the underlying functionality can be personally customized with seamless integration into your existing underwriting system to best support and improve your business workflow.

About CoreLogic Insurance Solutions

CoreLogic delivers unique and comprehensive data, analytics and services to property & casualty insurance companies—powerful information found at the core of smart decisions. We offer more than 180 catastrophe risk models worldwide and more than 30 natural hazard and weather peril verification reports.

KEY BENEFITS:

- ▶ Improve the evaluation of the aggregated Probable Maximum Losses (PML)
- ▶ Help define the capital requirements related to windstorms in Europe.
- ▶ Narrow damage uncertainty through different views of the risk.
- ▶ All major insurance policy structures and reinsurance treaty types are modeled.

KEY FEATURES:

- ▶ Measured gust wind speeds and wind directions from over 4000 European meteorological stations obtained via national meteorological agencies for the period 1960 to 2016.
- ▶ Millennium-long simulation of historical storm activity (800–2000 period) performed with an ESM
- ▶ Two frequency view
- ▶ 384 historical storm events
- ▶ 23,000+ stochastic storm events
- ▶ 46 vulnerability regions – rural and urban
- ▶ Largest geographical coverage through inclusion of the Iberian Peninsula
- ▶ Dynamically downscaled ESM storms
- ▶ Inclusion of the North European Offshore component
- ▶ Loss scenario module for the positive phase of the North Atlantic Oscillation
- ▶ Forest module – Sweden and Finland
- ▶ Storm surge sub-peril for the UK, France, and Sweden

For more information please call 866-774-3282
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