



The impact of clustering of extreme European windstorm events on (re)insurance market portfolios

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Traditionally the occurrence of windstorm loss events in Europe has been considered as independent. However, a number of significant losses close in space and time indicates that this assumption may need to be revised. Under particular atmospheric conditions multiple loss-causing cyclones can occur in succession, affecting similar geographic regions and, therefore, insurance markets. A notable example is of Lothar and Martin in France in December 1999.

Although the existence of cyclone families is well-known by meteorologists, there has been limited research into occurrence of serial windstorms. However, climate modelling research is now providing the ability to explore the physical drivers of clustering, and to improve understanding of the hazard aspect of catastrophe modelling. While analytics tools, including catastrophe models, may incorporate assumptions regarding the influence of dependency through statistical means, the most recent research outputs provide a new strand of information with the potential to re-assess the probabilistic loss potential in light of clustering and to provide an additional view on probable maximum losses to windstorm-exposed portfolios across regions such as Northwest Europe.

There is however, a need for the testing of these new techniques within operational (re)insurance applications, and this paper provide an overview of the most current clustering research, including the 2009 paper by Vitolo et. al., in relation to reinsurance risk modelling, and to assess the potential impact of such additional information on the overall risk assessment process.

We examine the consequences of the serial clustering of extra-tropical cyclones demonstrated by Vitolo et al. (2009) from the perspective of a large European reinsurer, examining potential implications for:

- Pricing
 - Accumulation
- And
- Capital adequacy