Geophysical Research Abstracts
Vol. 13, EGU2011-10697, 2011
EGU General Assembly 2011

Numerical Simulation of Extreme European Windstorms

Christos Mitas
Risk Management Solutions Ltd., London, UK (cmitas@gmail.com)

Extreme synoptic storms present a significant economic risk in Europe mostly due to high wind gusts. This study focuses on understanding the most extreme storms that hit the European continent in terms of their dynamic and thermodynamic properties, utilizing high resolution numerical simulations of storms extracted from GCM runs.

We have performed an ensemble of GCM simulations of over 2000 years, extracted tracks of storms produced by the GCM, downscaled these storms with WRF at a relatively high resolution (50km), and finally estimated their incurred economic loss using our proprietary catastrophe model.

We choose a small set of the most extreme storms (in terms of economic loss) to analyze in more detail in the following way:
1. Identify common characteristics between extreme storms in terms of their evolution, vertical and horizontal structure, and the synoptic situation in which they are embedded.

2. Perform a series of numerical experiments with increasing WRF resolution and investigate changes in the storm intensity, size, and structure.

The overall objective of this paper is to provide a clear understanding of the nature of extreme events and the numerical means needed to investigate them.