



The European Storm Kyrill in January 2007

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Hurricane-force winds from "Kyrill", Europe's most severe winter storm since 1999, produced widespread disruption across Europe. According to the German Insurance Association (GDV), storm "Kyrill" has caused circa EUR 2bn of insured losses in Germany. The correspondent value for Europe is currently estimated between EUR 4bn and EUR 6bn. Unlike previous storms, the numerical forecasts were able to predict the extent and intensity of Storm Kyrill about five days in advance. On 12.01.2007 the German Weather Service (DWD) issued the first severe storm warning for the following week. At the same time, the European Centre for Medium-Range Weather Forecasts (ECMWF) was already showing remarkable anomaly relative to the climatologically mean for the 24 hour period of 18.01.2007 00 UTC to 19.01.2007 00 UTC. Due to the stable forecasts the public was warned in advance of storm Kyrill via the media. DWD warned for maximum wind gusts exceeding 12 Bft, hence enabling a timely warning of public authorities which avoided even worse consequences.

The windfield associated with Kyrill affected an unusual large area, extending into Eastern Europe. A comparison with other historical events revealed that, while they may have been more intense, the areas affected are typically smaller. A brief synoptic analysis will be presented that focuses on the meteorological conditions that lead to the unusual strength and wide swath of the storm. In the context of climate change many GCMs show evidence of a change in cyclone activity under enhanced greenhouse-gas forcing. While the number of cyclones decreases, there is a significant increase in cyclone intensity of extreme cyclones combined to an enhancement of loss potential for Europe in some GCMs. The analysis of RCMs reveals consistent patterns, with increasing surface wind speed with up to 20% at the end of the 21st century over

Central Europe. In particular, the changes in terms of extreme surface winds will be largest for Eastern Europe. Physical arguments will be provided that “Kyrill” may serve as a proxy for future extreme European storm events.