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Video**Author(s):**

Leutwyler, David; Fuhrer, Oliver; Lapillonne, Xavier; Lüthi, Daniel; Schär, Christoph Joseph

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Winter storm Kyrill in a Continental-Scale Convection-Resolving Climate Simulation

David Leutwyler¹, Oliver Fuhrer³, Xavier Lapillone^{2,3}, Daniel Lüthi¹, Christoph Schär¹

¹ Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland

² Center for Climate Systems Modeling C2SM, ETH Zurich, Switzerland

³ Federal Office of Meteorology and Climatology, MeteoSwiss, Zurich, Switzerland

Correspondence to: David Leutwyler (david.leutwyler@env.ethz.ch)

Animation of a continental-scale, cloud-resolving simulation of the Kyrill storm. This winter storm swept over Europe in January 2007 with record high wind speeds affecting Northern Europe. On display are clouds using a custom visualization in gray, the precipitation rate in colored shading and the 500hPa geopotential height contours. The simulation has a grid-spacing of 2km so that deep convection is treated explicitly by the equations of state and no deep convection parameterization is used. Note the generally high level of detail and the convection embedded in the atmospheric fronts of the low-pressure systems.

The simulations use a version of the Consortium for Small-Scale Modeling (COSMO v4.19) weather and climate model capable of running on heterogeneous hardware architectures. The simulations have been computed at the Swiss National Supercomputing Centre (CSCS) on 144 nodes of the Piz Daint supercomputer. Currently each node in this machine is equipped with an Intel SandyBridge CPU and a NVIDIA Tesla K20X GPU. The computational mesh employed here uses 1536x1536x60 grid points.