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# Wind gusts parametrization methods for winter storms in Switzerland with the Canadian Regional Climate Model

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Extreme winds occurring during a number of windstorms that affected Switzerland from 1990 to 2011 have been investigated using different approaches to evaluate wind gusts in the Canadian Regional Climate Model (CRCM). In order to simulate winds at very high resolution we operate an optimal self-nesting within the CRCM in order to increase the vertical, horizontal and temporal resolution of the simulated flow fields. The simulation starts with downscaling NCEP-NCAR reanalyses at 60-km resolution, followed by intermediate 20-km and 5-km simulations. The 5-km output is in a final phase used for initial and lateral conditions for a range of 2-km simulations in which several wind gust parametrizations have been tested. The 2-km resolution simulations allow to capture fine-scale features of the topography over the complex terrain of Switzerland and to assess the performance of simple and more sophisticated wind gust formulations in the CRCM.