

Identification and visualization of (high-impact) vortices on different scales

Wednesday, 5 May 2021 16:00 (1h 45m)

In this work, we will present a vortex identification method that is able to identify vortices in different data sets of various grid spacings from global reanalysis data to convection-permitting small scale simulations. The method is based on a kinematic analysis of the flow field using the dimensionless kinematic vorticity number W_k . W_k identifies and extracts vortex areas or vortex tubes from the continuous flow field. An advantage of this method is that there is no need to adjust thresholds for different data sets. Additional knowledge of the vortex size allows to determine different vortex intensity measures such as the circulation or an averaged vorticity within the vortex boundaries. We will show for a winter storm (Kyrill) that vortex visualization based on the proposed intensity measures can help to pinpoint high-impact situations.

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Session Classification: Modelling and Parameterising Deep Convective Organisation

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