



The OASE project: Object-based Analysis and Seamless prediction

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The research group on Object-based Analysis and SEamless prediction (OASE) is part of the Hans Ertel Centre for Weather Research (HErZ). The group consists of scientists at the Meteorological Institute, University of Bonn, the Leibniz-Institute for Tropospheric Research in Leipzig and the German Weather Service.

One of the goals of the project is a near real-time radar and satellite remote sensing-driven 3D observation-microphysics composite covering Germany. It contains gridded observations and estimated microphysical quantities. Observations and microphysics are intertwined via forward operators and estimated inverse relations, which also provide uncertainties for model ensemble initialisations. The lifetime evolution of dynamics and microphysics of (severe) convective storms is analysed based on 3D scale-space tracking, which will eventually evolve into a novel nowcasting framework. An object-based analysis condenses the information contained in the dynamic 3D distributions of observables and related microphysics into descriptors, which will allow identifying governing processes leading to the formation and evolution of severe weather events. The object-based approach efficiently characterises and quantifies the process structure and life cycles of severe weather events, and facilitates nowcasting and the generation and initialisation of model prediction ensembles. The object-based perspective also offers a promising strategy for the validation of atmospheric models with observations. The poster gives an overview of the OASE project.