

Wind lidar observations in the vicinity of convective systems during Swabian MOSES

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The Swabian MOSES field campaign investigated atmospheric drivers responsible for the frequently observed initiation of severe thunderstorms between the Black Forest and the Swabian Jura. A suspected triggering mechanism is lee-side flow convergence, but detailed observational evidence of this phenomena is largely missing. To gain insight into flow characteristics, first measurements with a new airborne wind lidar system were conducted in the summer of 2021.

This contribution presents a novel combination of airborne and ground-based wind lidar measurements. The airborne wind observations contribute high spatial resolution and coverage, to which the ground-based lidars add the temporal evolution context. Overall, unique insight into meso-scale flow processes in thunderstorm environments can be obtained. The influence of orography on flow is detectable, with both local valley circulations and mountain convergence effects observed. The combination with radar and satellite observations provides further context for the thunderstorm activity associated with the flow field.

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