



FESSTVaL: Field Experiment on sub-mesoscale spatio-temporal variability in Lindenberg – the campaign is at the ready

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Measuring submesoscale variability and therefore developing a hierarchical measurement strategy are the core tasks of the field campaign FESSTVaL (Field Experiment on Sub-Mesoscale Spatio-Temporal Variability in Lindenberg). During the summer months of 2020 it will take place at the Meteorological Observatory Lindenberg – Richard-Åßmann-Observatory (MOL-RAO) of the German Weather Service (DWD) near Berlin, initiated by the Hans-Ertel-Center for Weather Research (HErZ). With respect to the source of submesoscale variability, the measurement campaign focuses on three main aspects: boundary layer patterns, cold pools, and wind gusts.

In order to capture phenomena at the submesoscale (500 m – 5 km), a hierarchical measurement strategy will be realized. This includes wind profiling stations with a coordinated scanning strategy of several Doppler Lidars, two mobile profiler to measure thermodynamic properties and precipitation, more than 100 stations with near-surface measurements of air temperature and pressure, more than 20 automatic weather stations, an X-Band radar, and a number of energy balance stations. This equipment is supplemented by the extensive ground-based remote sensing array at the MOL-RAO, operated by DWD. Complementing to this, the added value of a citizen-science measurement network is investigated during the campaign with “Internet-of-things” based technology and low-cost sensors build and maintained by citizens. The measurements will be complemented by high-resolution large-eddy simulations (ICON-LES) comprising the site.

The measurements conducted with this setup will be useful to (i) improve our process understanding, (ii) validate aspects of convection-permitting Numerical Weather Prediction (NWP) simulations and (iii) compare different measurement strategies and instrument types for the development of future measurement network designs.

In this contribution, we will present the latest strategy for the measurement network setup to be realized in summer 2020. Data collected during a test campaign in summer 2019 will give a foretaste of what is to come during the main campaign.