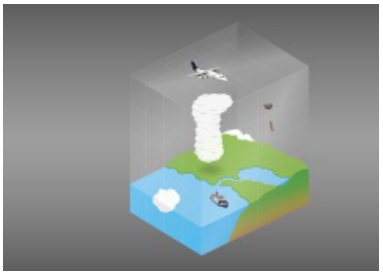

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Field Experiments for NWP: The LITFASS Experience

Tuesday, 11 June 2019 12:00 (20 minutes)

Numerical weather prediction (NWP) essentially relies on measurements of atmospheric variables for data assimilation, parameterization development and validation. Observatories and supersites nowadays provide comprehensive data sets from operational measurement programs which might be considered as a long-lasting field experiment taking into account the size and variety of measurements. These data are of special relevance for model development as they cover the full spectrum of weather situations and phenomena occurring at a given site over longer periods.
However, additional challenges to the observational capabilities are associated with the increasingly higher spatial resolution of the models and with the parameterization of increasingly complex small-scale physical processes and interactions. These call for data sets which can only be collected within the frame of field campaigns.
Deutscher Wetterdienst (DWD) at its Meteorological Observatory Lindenberg (MOL) in 1995 started the LITFASS (Lindenberg Inhomogeneous Terrain –Fluxes between Atmosphere and Surface: a longterm Study) project, a program to test and to establish a strategy for the determination of soil-vegetation-atmosphere interaction processes over a heterogeneous land surface at the scale of a grid cell of a NWP model. Three major field experiments have been organized within LITFASS around Lindenberg: LITFASS-98, LITFASS-2003, and LITFASS-2009. The basic focus of these experiments was the determination and description of momentum, sensible heat and water vapour fluxes as an area-average at the meso-☒ scale.
The presentation will give an overview on the goals and major results of the three LITFASS field experiments with a special focus on the lessons learned from these campaigns. Another aspect to be mentioned does concern the role of field experiments to test new instruments and measurement strategies which might become operational in future years thus improving the data base for NWP. Ground-based remote sensing systems or unmanned aerial vehicles are prominent examples for such a development.

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