

ScaleX: multidisciplinary intensive campaigns in the TERENO-preAlpine observatory

Matthias Zeeman and the Scientific Teams of ScaleX Campaign 2015 & 2016

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Observatories with long-term monitoring approaches are fundamental for the study of land surface–atmosphere interactions. They are operated with mostly automated measurement methods at few locations. However, intensive measurement campaigns are needed to help assess the gaps in the spatial, temporal and variable scope in the observatories. The TERENO-preAlpine observatory is located in the foothills of the Alps in the south of Germany, and is part of the German Terrestrial Environmental Observatories (TERENO) network. ScaleX is a collaborative campaign concept in which observational innovation and extensibility are used to bridge across spatial and temporal scales as well as research disciplines. Both TERENO and ScaleX aim to deliver measurement and modeling of land surface–atmosphere interactions of energy, water, and greenhouse gases.

Observational research campaigns within observatories offer opportunities for innovative techniques to be developed and cross-validated. ScaleX campaigns included additional instrumentation for in situ observation in- and on the ground, by mobile and airborne platforms and remote-sensing (Wolf et al., 2017; <http://scalex.imk-ifu.kit.edu>). Transects in particular allowed the spatial assessment of gradients and three-dimensional structures of atmospheric, surface, or soil variables and processes. A first campaign took place in 2015 and was extended in 2016 to host (inter-)national cooperation partners from academia and industry. A next campaign is planned for 2019, further tailored to support the testing and technical development of mobile observation systems. The campaigns and related workshops offer a rich multidisciplinary exchange on atmospheric research topics, which we will exemplify in our presentation. ScaleX campaigns are reoccurring events during the lifetime of TERENO and researchers are invited to participate in future, and to use the available data in modelling studies.

Wolf et al. (2017) “The SCALEX Campaign: Scale-Crossing Land Surface and Boundary Layer Processes in the TERENO-preAlpine Observatory”, Bull. Am. Meteorol. Soc. DOI: 10.1175/BAMS-D-15-00277.1