

Improving our understanding of the atmospheric weak-wind boundary layer using spatially explicit observations near the ground surface

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For my thesis I investigated the near-surface boundary layer using a novel measurement technique called fiber-optic distributed sensing (FODS). FODS provides spatially continuous measurements of temperature and wind speed every 0.25m along a fiber-optic cable with a temporal resolution up to 1 Hz. To provide mostly flat, homogeneous terrain, the Great Plains in North-Eastern Colorado were chosen as field site. At this location the Shallow Cold Pool experiment (SCP) was conducted in 2012 which featured FODS and a big network of measurements. With this data set we were able to detect and characterize a submeso-scale motion, which we call Thermal Submeso-Front (TSF). In my talk I will show the characteristics of TSFs, their relation to topography, and their implications for our understanding of the atmospheric boundary layer.

[1] <https://www.uibk.ac.at/acinn/graduate-seminar/index.html.en>