42. A High Density in Situ Soil Moisture Network for the Validation of Spaceborne Soil Moisture Products Over Austria.

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The Hydrological Open Air Laboratory (HOAL) in the Seitengraben catchment was established in 2009 through funding by the Austrian Science Foundation (FWF) for multidisciplinary hydrologic research. The HOAL is located in the western part of Lower Austria approximately 100 km west of Vienna and has a size of 64 ha (Eder et al., 2010). Currently a high density soil moisture and soil temperature network is being set-up using low-cost and low-current soil water capacitance probes. Additionally, evapotranspiration, air temperature and precipitation is measured at various locations within the catchment. The goal of this network is to serve as a site for the validation of spaceborne soil moisture products, modelled soil moisture products and will be used for hydrological modelling purposes. The HOAL soil moisture network is currently being set up according to a novel soil monitoring concept developed by the Forschungszentrum Juelich (Bogena et al., 2010). Approximately 36 automated stations will be installed, which will measure soil moisture and temperature at depths of 0.05, 0.10, 0.20 and 0.50 m. 21 stations will be installed permanently and another 15 will be temporarily installed in cropland. The selection of station locations is done with a similar method as employed by (Bircher et al., 2012), where the stations are located in a way that they cover the prevailing environmental conditions in a pixel surrounding the HOAL according to their respective fractions. This method ensures statistically reliable validation via the reduction of the footprint variance and reduces the chance of sample bias (Bircher et al., 2012). An extensive site-specific calibration will be carried out. Because of high clay contents in the HOAL the CRIM-model (Roth et al., 1990) will be applied to relate permittivity to soil water content. For validation purposes samples are taken for thermo-gravimetric analyses at different sites and under different soil moisture conditions. In this presentation we will provide the first results of the site specific calibration. Furthermore, a temporal stability analysis (Vachaud et al., 1985) and a comparison to the existing soil moisture station will be carried out to assess the representativeness of the network.

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