



Calibration of different soil moisture sensors for a long-term field experiment

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In the framework of the ICOS RI network, a field site in Lonzée, Belgium, is equipped to provide long-term data on greenhouse gas emissions from an agricultural field and the associated environmental variables. Soil moisture is one of the state variables which are monitored with high temporal resolution and with several repetitions in the field to take into account soil heterogeneity. In order to facilitate field installation in combination with agricultural practices, Sentek Enviroscan sensors, a collection of FDR sensors at different depths on a stick, were chosen to measure soil moisture. In this contribution, we will discuss the results of a detailed calibration experiment we performed for this sensor type and compare it to the results we got from a different FDR sensor: the ML3 Thetaprobe. We calibrated the probes for the different soil horizons at 3 different locations in the field using big reconstructed soil columns which were brought to defined soil moisture levels in the lab. The results showed that the universal calibration relationship of the sensors gave quite similar results as the soil-specific calibration up till a moisture content of 40%. We also observed that the higher the soil moisture content becomes, the more difficult it is to obtain a homogeneous distribution of the water in the calibration column which might have an impact on the sensor readings.