Temperature dependence of water content reflectometer measurements. (S01-ellsworth155500-Poster)

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Abstract:

The influence of soil temperature on soil water content reflectometer measurements was quantified in laboratory and field studies. In the laboratory, the water content probes were inserted vertically in soil monoliths and brought to equilibrium at various temperatures. In the field, naturally occuring temperature variations were exploited by combining measurements from horizontally-installed water content reflectometers and soil temperature probes at four depths with concurrent sampling for gravimetric water content determination. In one set of gravimetric determinations, the vertical soil sampling resolution ranged from 10 to 50 mm, and the horizontal extent of sampling was designed to approximate the volume sampled by the water content reflectometers. In another set of gravimetric determinations a coarser (76 to 127 mm) vertical resolution was used, and a plot-average measurement was sought by compositing four cores from within a 7.7m by 13m plot. Finally, differences in the effect of temperature changes on readings from water content reflectometers installed horizontally and vertically were explored.

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