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Evaporation Observations at CESAR: Experience with Mini Lysimeters

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At the Cabauw experimental Site for Atmospheric Research (CESAR, The Netherlands) long-term measurements are performed to estimate actual evapotranspiration. The core of the 26-year long time series is formed by the energy budget residual method, using net radiation, soil heat flux and sensible heat flux observations. Additionally eddy-covariance observations are performed to estimate evapotranspiration. This method suffers from imbalance in the surface energy budget. Until now focus at CESAR has been on atmospheric methods to estimate evaporation. From a soil hydrological perspective two other methods are available, lysimetry and soil water budget methods. Lysimeters form a fully independent way to estimate evaporation. Currently mini-lysimeters are being developed by KWR Water Cycle Research Institute and Eijkelkamp Agrisearch Equipment. Prototypes of the instrument has been placed at the CESAR energy balance field to investigate their performance. The lysimeter observations are accompanied by surface radiation temperature measurements to monitor differences between the lysimeter vegetation and its surroundings. A preliminary intercomparison between the available methods to estimate evaporation will be presented.