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# Closure of the energy balance equation over bare soil during the formation and evaporation of non-rainfall water inputs

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The Negev desert is characterized by an arid climate (annual mean precipitation is 90 mm) with sea breeze carrying moisture from the Mediterranean Sea during the afternoon regularly. Non-rainfall water inputs (NRWIs) are thus of great importance to the hydrometeorology and the ecological functioning of the region. The small magnitude of NRWIs challenges attempts to quantify these processes. The aim of this research was to test commonly used micrometeorological methods to quantify the energy balance components during the deposition and evaporation of NRWIs. A fully equipped micrometeorological station was set up near the Blaustein Institutes for Desert Research of the Ben-Gurion University of the Negev (30o 51' 35.6" N; 34o 46' 24.8" E) during September-October 2014. Net-radiation was measured with a 4-way net radiometer, and soil heat flux was quantified by the calorimetric method in three replicates. Latent heat was measured using an eddy-covariance (EC) and compared to a micro-lysimeter (ML); sensible heat flux was measured with an EC and a surface layer scintillometer (SLS). Sensible heat fluxes measured by the EC and the SLS showed good agreement. EC latent heat fluxes were in good agreement with those derived by the ML. Nevertheless, derivation of latent heat flux from the SLS measurements through the energy balance equation showed a relatively large deviation from the directly measured latent heat flux. This deviation is likely attributed to measurement errors of the soil heat flux.