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25 Years of Evaporation Observations at the Cabauw Experimental Site for Atmospheric Research (CESAR).

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We present 25 years of evaporation data gathered at the well-watered grassland site of Cabauw in the Netherlands. The first 11 years of the data set has been measured in a slightly different way as the last period. Homogeneity of the dataset is tested by comparing the two measurement techniques during a period that both techniques were available. The data are gap-filled by using a model for the surface energy budget. We focus on trend and variation in the yearly evaporation totals. We apply a hierarchy of evaporation models to explain the observed variation and trend. These models are: (1) reference evaporation according to Makkink, (2) the Priestley-Taylor equation, (3) the Penman-Monteith equation with fixed surface resistance for evaporation, and (4) the Penman-Monteith equation with a Jarvis-Stewart formulation of the surface resistance. Positive trends in evaporation, both observed and modelled, can be related to positive trends in both 2-m temperature and global radiation. Although the water table is managed at the site, preventing the soil from drying, a clear relation between summer-time rainfall and yearly evaporation is observed.