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Evapotranspiration and complimentarity relations in the water balance of the Volta Basin: field measurements and GIS-based regional estimates

This study concerns evapotranspiration, which accounts for 90% of the water balance in West Africa. At field level, crop and bare-soil albedo measurements were used to build simple models based on phenology, zenith angle and soil surface conditions. Interactions between tree water flux and environmental variables were examined. The complementarity Advection-Aridity (AA) relationship model adequately simulates the spatio-temporal distribution of regional ET rates. The monsoon clouds, harmattan and seasonal changes in surface albedo influence evapotranspiration processes in the Volta Basin. The good performance of the improved AA model indicates its utility for providing independent estimates of ET. These results are valuable input to eco-hydrology and climate models.