



Ecosystem water fluxes across Sub-Saharan savanna ecosystems

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In this study we report on water fluxes, measured using eddy covariance (EC) technology, in eleven different ecosystems in Sub-Saharan Africa. These ecosystems ranged in mean annual rainfall from 320mm (Sudan) to 1150mm (Republic of Congo) and included a spectrum of land cover types. Data were analysed to understand driving factors of evapotranspiration across spatial and temporal scales.

Based on a previous study, focusing on the carbon exchange in these ecosystem, we expected large daily and seasonal variations in evapotranspiration rates. The seasonal pattern was primarily driven by changes in phenology, precipitation events and soil water content. The ecosystems studies switched radically in evapotranspiration rates, latent- and sensible heat fluxes after the first rainfall event. Canopy conductance and photosynthesis were closely related and therefore not only driving the carbon, but also (evapo)transpirative exchange at the ecosystem level. Thus, the most constant factor was water use efficiency (WUE).

General climate variability showed a larger influence than stand structure on the water fluxes in the various savanna ecosystems.