



Decay Functions of Soil Moisture: Implications for Land Cover Controls on Actual Evapotranspiration During the Wet Season of a West-African Savanna

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The West-African savanna experiences extreme seasonal climate. The role of vegetation and the impact of agriculture on the regional hydrology of these areas are not well understood. A better understanding of such phenomena is crucial, as water resources are becoming unstable and populations dependent on rain-fed agriculture are more vulnerable. This study examines soil moisture dynamics during the 2010 rainy season in the Singou River Basin, Burkina Faso.

Volumetric soil water content and meteorological data are collected from seven stations of a wireless sensor network. This network covers representative types of land cover in the watershed including riverbank, wetland, open savanna, agricultural parkland, and forested upland savanna. Vegetation was also surveyed throughout the season. Here, we present parameterizations and exploratory analysis of soil moisture decay functions at each station considered. Results are compared to the seasonal evolution of soil moisture storage, potential evapotranspiration and vegetation density.

Preliminary results suggest these soil moisture measurements may be essential to understanding actual evapotranspiration and the hydrological influence of the types of land cover in the watershed over time. These findings contribute to improved modeling of the ecohydrological behavior of the Singou River Basin and up-scaling of the sensor network data for regional water management purposes as part of an integrated research and development project, Info4Dourou.