



Streamflow origins in a Soudanian crystalline bedrock catchment. Quantification of the different terms and variability. Implications for future modelling and new field investigations.

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In contrast to Sahelian zone where streamflow is only governed by Hortonian runoff, in Soudanian zone, the water paths from rainfall to river are complex. The Donga catchment (586 km²), the intensive site of the Soudanian meso-scale site of the Amma-Catch observatory has been specifically instrumented to study hydrological processes. Since 2000, raingauge, streamgauge and traditionnal well networks have been set up to quantify the surface components of the water cycle. Hydrochemistry of these different compartments is scanned. To understand the groundwater dynamic, a multi-level piezometers device has been drilled along transects. We present the hydrological functioning scheme deduced from observations. A two-end members hydrograph decomposition show than the subsurface flow provides the majority of the annual streamflow, the rest comes from direct runoff. From the decomposition of the 4 last years, annual variability is discussed. Recent field investigations (2006) seem to show that subsurface flows take its origin in a specific landform of tropical crystalline bedrock catchments called "bas-fonds" in west Africa (or Dombo in southern Africa) and located at the headwaters of the rivers. Due to their large number and in despite of their small size, these ubiquitous local hydrological objects could have a high influence on

surface water resources at the meso-scale, particularly if these lands today cultivated traditionally will be exploited with regulation structures in a next future. According to the main hydrological processes detected, next modelling developments will be presented.