



Soil moisture measurement network in the Gourma meso scale site.

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This paper presents the multi-scale soil moisture monitoring activities on the Gourma meso scale site. Soil moisture measurements are conducted in the context of Enhanced Observing period of AMMA. They are part of a complete land surface processes observing and modeling strategy and associated to vegetation and meteorological field measurements as well as soil moisture remote sensing.

Soil moisture is a critical variable of land surface processes. It controls and interacts with energy and water exchanges with the atmosphere, chemical processes, soil and vegetation respiration, vegetation phenology. It is at the interface between processes that concern various temporal and spatial scales.

Accordingly, a relevant spatial sampling strategy and a coherent use of soil moisture satellite remote sensing is proposed to characterize soil moisture at different scales from local to kilometric and meso scale. In turn, soil moisture network is suitable to validate remote sensing approaches of soil moisture at different scales including SAR ENVISAT at kilometric scale and AMSR data at 50km scale. Combination of remote sensing and field measurement network allows to address multi-scale features of soil moisture, determinant for modeling activities conducted for various thematic studies of processes and integrative studies.

Existing and future (to be installed in 2005) soil moisture stations are presented. Three soil moisture profile stations are already equipped with Delta T theta probes and Campbell CS616 sensors. For each of them, soil moisture is continuously monitored with a 15 minute step, at depth ranging from 5cm to 2.5m below soil surface; soil temperature profiles are also measured. Measurements of soil moisture by the three

stations are presented and combined at different spatial scales from intensive locale site to meso scale. We present results of a 15 days validation campaign conducted in August 2004 to address the scaling problem in soil moisture measurements from local to kilometric scales.