



Analysis of precipitable water vapour from GPS data in West Africa: first results from the AMMA project

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Atmospheric water vapour is one of the key components of the water cycle in the West African Monsoon. A dedicated GPS network is being installed in West Africa, as part of the AMMA (African Monsoon Multidisciplinary Analysis) observing system, from which precipitable water (PW) data are retrieved. The aim of this network is to provide new observations that will allow for the study of the monsoon system and its coupling with atmospheric/land/ocean processes at different spatial and temporal scales. This GPS network is installed in two steps, covering the two main observing periods of AMMA: the enhanced observing period (EOP), which started by mid 2005, and the special observing period (SOP) covering the 2006 rainy season. Both EOP and SOP networks are composed of three stations each, located at 9°N, 13°N, and 16°N, and 0-2°E (EOP) and 2-0°W (SOP). Preliminary results will be presented that use the EOP GPS data, in complement to satellite data, radiosondes, sun photometers and numerical weather prediction (NWP) models. First, GPS PW is compared to the other observations and to the NWP data. Special emphasis is made on the verification of short-term (sub-daily to 10 days) variability predicted by the NWP model (ECMWF). Then, the main monsoon characteristics (diurnal cycle, intra-seasonal variability and seasonal cycle) are analysed in terms of PW variability. Differences are expected between the three stations, which are representative of different land surface/atmosphere processes arising in tropical forest (9°N), savanna (13°N) and semi-arid regions (16°N).