



Airborne measurements in the lower atmosphere for the study of small scales processes involved in the West African Monsoon system

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During AMMA experiment, the French ATR aircraft flew intensively in the lower troposphere in the vicinity of Niamey area, with instruments that allow fast measurements of wind, temperature and humidity. Stacked legs within and above the atmospheric boundary layer (ABL), both into the moist South-westerly Monsoon flow and the dry North-easterly Harmattan flow, enable us to study the interaction between these two opposite flows and the role of the ABL in the transfers between them. Our objective is to analyse the impacts of these transfers on the initiation of local convection and larger scales processes. High values of entrainment rate were observed during June and July before the monsoon onset, with evidence of dry tongues penetrating into the ABL. ATR flights made all along the four months of the SOPs from early June to the end of August also enable us to study the recovering of the ABL after a convective system has passed by and its role in initiating and supplying the convection. Very different behaviours can be noticed from before the onset when the ABL is very reactive until the heart of the wet season, when it is saturated with moisture.