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New Perspectives on Land-Atmosphere Feedbacks from the African Monsoon Multidisciplinary Analysis

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Globally speaking, the West African Monsoon region is considered a "hotspot" of land-atmosphere coupling, with interactions occurring on many scales. Land-atmosphere feedbacks therefore provided an important focus of research within the African Monsoon Multidisciplinary Analysis (AMMA). This poster summarises the key results from the programme, covering feedbacks on time scales from hours to years and space scales from kilometres to the entire West African region.

In situ observations provided new datasets to quantify the response of the land surface to weather and climate, and its sensitivity to land cover. In turn, radio soundings and aircraft flights were used to evaluate the response of the Planetary Boundary Layer to the land surface, and satellite imagery revealed the impact of the land on moist convection. At the same time, numerical and theoretical models were developed to better understand the mechanisms determining the atmospheric response to the land. The results demonstrate strong short-term impacts of soil moisture on rainfall in the Sahel, and marked sensitivities of the atmosphere on longer time scales to the substantial climate-induced variations in the land surface.