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African Monsoon Multidisciplnary Analysis (AMMA) Land Surface Model Intercomparison Project Phase 2 (ALMIP-2)

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The main goal of the African Monsoon Multidisciplinary Analysis (AMMA) Project is to obtain a better understanding of the intra-seasonal and inter-annual variability of the West-African Monsoon (WAM). The magnitude of the north-south gradient of surface fluxes (related to soil moisture and vegetation) has an influence on the position of the tropical front and the strength of the monsoon. Therefore, a high priority of AMMA is to better understand and model the influence of the spatial and temporal variability of surface processes on the atmospheric circulation patterns and the regional scale water and energy cycles. This is being addressed through a multi-scale modeling approach using an ensemble of land surface models (LSMs) which rely on dedicated satellite-based forcing and land surface parameter products, and data from the AMMA observational field campaigns. The coordination of the land surface modeling activities in AMMA is supported by the AMMA Land surface Model Intercomparison Project (ALMIP). The now completed ALMIP Phase 1 dealt with surface processes at the regional scale, and results were used not only to obtain a better idea of surface processes, but also output data was used extensively by the atmospheric modeling community (mesoscale case studies on convection and dust transport, the impact of improved surface conditions on medium range forecasts, and regional and global climate model intercomparison projects). In ALMIP Phase 2, LSMs will be forced and evaluated using observational data from three heavily instrumented supersites from the AMMA-Couplage de l'AtmosphËre Tropicale et du Cycle Hydrologique (CATCH) observing system. The AMMA-CATCH window covers a north-south transect encompassing a large eco-climatic gradient. Two main experiments will be performed with the first one at the mesoscale for each of the three super sites. A second set of experiments will be performed at the local scale for several selected sites within each of the mesoscale squares. The simulations will encompass the 2005-2007 Intensive Observing Period with a special focus on the analysis during the Special Observing Period in 2006. In addition to evaluation using field data, LSM simulations will also be compared to results from detailed vegetation process and hydrological models that have already been extensively validated over this region. The results will be used in conjunction with those from ALMIP-1 in an effort to evaluate the effect of scale change on the representation of the most important processes from the local to the regional scale. The main goal is to improve the representation of key surface, vegetation and hydrological processes, which can then in turn benefit the forecast and regional and global climate modeling communities. In this presentation, an overview of the scientific objectives of ALMIP-2 will be given, an overview of the forcing and model evaluation data will be presented, and some preliminary results will be shown.