

AMMA

African Monsoon Multidisciplinary Analyses

AMMA is an international project focused on the study of the west african monsoon (WAM), its daily to interannual variability and the links with the social and economical aspects. Based on the French initiative in 2001, AMMA today gathers more than 140 european, african and american laboratories. Many French laboratoires, including LATMOS, LMD, LOCEAN and LSCE at IPSL, take part into the project.

WAM concerns the western part of the africna continent which receives the major part of the annual rainfall during borel summer, between June and September. This rainy season is associated to winds' seasonal inversion in the lower atmosphere.



Arrivée d'un courant de densité "tracé" par les particules du sol qu'il soulève au fur et à mesure de sa progression, à Hombori au Mali. Ce phénomène, de nature convective, porte le nom de haboob. Photo prise pendant la campagne AMMA (Analyses Multidisciplinaires de la Mousson Africaine).

AMMA's objectives

- Improve the understanding of the WAM and its impacts on physical, chemical and biological environment at the regional and worldwide scales.
-

- Supply basic scientific knowledge in order to establish links between climate variability and health, water resources and food problems as well as to define appropriate survey strategies.
- Make sure that the multidisciplinary research realized by AMMA benefits to forecasting and decision making activities.

AMMA's studies articulate around 4 different spatial and temporal scales :

- global scale
- regional scale
- meso-scale
- local scale.

The AMMA field campaign involves 3 nested observation periods :

- The Long-term Observing Period (LOP) for the study of the interannual to decadal variability in order to obtain an appropriate overview of the seasonal cycles diversity. These observations concern rainfalls, hydrology and surface and sub-surface conditions.
- The Enhanced Observing Period (EOP) is designed to serve as a link between the LOP and the SOP. Its main objective is to document during 2005 and 2007 over a climatic transect the annual cycle of the surface conditions and atmosphere.
- The Special Observing Period (SOP) focused on detailed observations of specific processes and weather systems at various stages of the rainy season during the WAM in 2006 (dry season, monsoon onset, monsoon peak and late monsoon).

More than a hundred instruments and methods has been used during AMMA campaigns, like :

- research network on the ground (ARM mobile facility, Ronsard radar...)
- instruments embarked on board aircrafts and ships (Leandre 2, RALI radar- lidar, PIRATA buoys...)
- stratospheric and ozone balloons

AMMA wants to create a collaboration between all disciplines that interfere in land productivity forecast and food security prevention, in order to improve adaptation strategies, AMMA brings many different communities to work together at different levels : climatologists, agronomists to assess growth and adapt plants to the climate, human sciences to assess how sahelian producers can adapt to climatic risks and to measure the climate change impact on food security and local economy. These studies must lead to propose concrete solutions and a sustainable development for african societies.

Website of AMMA project

Laboratory :