

## **The African Monsoon Multidisciplinary Analysis: An International Research Project and Field Campaign**

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Over the past 50 years the change in West Africa from wet to much drier conditions is among the strongest interdecadal signals of the past century. This drying trend coupled with the marked interannual variations has had devastating environmental and socioeconomic consequences. Fundamental gaps in our observation, understanding, and modelling of this complex system have limited our ability to make skillful predictions of the West African Monsoon (WAM). To bridge these gaps, the African Monsoon Multidisciplinary Analysis (AMMA) project has adopted a multidisciplinary approach, involving substantial international collaboration that links observation, data analysis and modelling.

Vulnerability of West African societies to climate variability is likely to increase in the next decades as demands on resources increase in association with one of the world's most rapidly growing populations. Vulnerability may be further increased in association with the effects of climate change and other factors linked to the fast growing population such as land degradation and water pollution. Motivated by this and recognising the important need to develop strategies to reduce the socioeconomic impacts of climate variability in West Africa, the AMMA project has three overarching aims:

- (1) To improve our understanding of the WAM and its influence on the physical, chemical and biological environment regionally and globally.
- (2) To provide the underpinning science that relates variability of the WAM to issues of health, water resources, food security and demography for West African nations and defining and implementing relevant monitoring and prediction strategies.
- (3) To ensure that the multidisciplinary research carried out in AMMA is effectively integrated with prediction and decision making activity.

The processes that couple the land, ocean and atmosphere take place in association with multiple interacting space and time scales. To address this AMMA is structured around four interacting spatial scales: global, regional, mesoscale and local (see figure). AMMA is also a multi-year project with three nested observation periods, LOP (2002-2010), EOP (2005-2007), and SOP (2006), which stand for long-term, enhanced and special observing periods, respectively.

Scientists from more than 30 countries, representing more than 130 institutes are now involved in AMMA. AMMA received funding from the European Union, France and the United Kingdom, as well as the United States and pan-African projects.

AMMA has been carefully conceived to improve our fundamental understanding of the West African monsoon and its societal impacts, and to make sustainable improvements to

monitoring and predicting the West African environment. Our activities are embedded within a “long-term observing period” (“LOP”) structure, which will ensure that our intensive activities are directed toward systematic improvements in monitoring and predicting over the coming decades.

#### ACKNOWLEDGEMENTS

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