



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

**Edited by:** J-L REDELSPERGER, C THORNCROFT, A. DIEDHIOU, T. LEBEL, D. PARKER, J. POLCHER (ISSC-EC) and E. vd AKKER (PO)

The purpose of the International AMMA newsletters is to keep the international research community interested in AMMA well-informed of how the AMMA project is progressing, through highlighting important activities, meetings and research opportunities. These letters are available on the AMMA-international website <http://www.amma-international.org/documents> which is the central website of AMMA.

Included in this newsletter:

- 1) Report on the 1<sup>st</sup> International AMMA Conference, Dakar, Nov 28 – Dec 2
- 2) Implementation highlights
- 3) 1<sup>st</sup> meeting of the International Governing Board, Dec 20
- 4) News from AMMA-EU
- 5) International AMMA meetings
- 6) Any other business

### **1. Report on the 1<sup>st</sup> International AMMA Conference, Dakar, Nov 28 – Dec 2**

#### **Conference Objectives**

The conference aimed to bring together researchers from around the world working on the WAM and its impacts, to review ongoing research activities and to discuss future contributions and directions within the AMMA research programme. It also provided the first real opportunity for establishing and coordinating collaborations at the international level and in particular with African scientists.

Substantial efforts were made to ensure good attendance at the conference, particularly from Africans in the region. In the end we significantly exceeded our expectations. We received more than 300 abstracts and in the end had 255 participants from 23 countries including near 100 Africans from the region. This enthusiasm for AMMA is a strong endorsement for what AMMA is working to achieve.

#### **Conference Programme**

The programme was organised around the 5 international Working Groups (see below) and included a mixture of plenary sessions, poster sessions and parallel working sessions. The plenary sessions included invited and contributed oral presentations. The working sessions were designed to provide an opportunity to discuss future research directions in AMMA as well as to coordinate and promote international collaboration. A workshop, organised by WG4 (Prediction of Climate Impacts), dedicated to climate impacts took place on the Saturday and Sunday after the conference. A training workshop on monitoring and forecasting the African monsoon impacts on agriculture and vegetation was also organized the following week in Thies.



## **International AMMA Newsletter No 3 January 27<sup>th</sup> 2006**

We would like to thank the international and local organizing committees which hugely contributed to the success of the meeting and in particular Elisabeth van den Akker and Jim McQuaid who had to face many logistical issues.

For those who were not able to attend to the conference, most of the presentations of the plenary sessions have been put on the AMMA web site.

<http://amma-international.org/meetings/internationalConferences/dakar2005/index>

A book of extended abstracts is currently in preparation. A CD-Rom will also be prepared and distributed. It will contain: the book of extended abstracts, presentations of the plenary sessions, parallel session summaries, the International Science Plan, the International Implementation Plan and the PIAF.

### **Highlights of Parallel Working Sessions**

#### **WG1: West African Monsoon and Global Climate**

##### **(i) WG1 discussion**

Participation in the sessions that relate to WG1 was very strong with 94 contributions from Africa, Europe and the US. Key topics discussed in the parallel session included: Synoptic and Mesoscale weather systems, Climate Change uncertainties and Regional Climate Modeling.

Key Activities that were agreed in the short term included:

- Work with modeling community to agree international modeling strategy (see below).
- Promote special session at AMS January 2007 on West African Monsoon
- Establish international e-mail list for WG1, make contributions to AMMA International Newsletter, and develop international web pages for WG1.
- A proposal for the core-group was made that included expertise from modeling, aerosol, chemistry and ocean subject areas as well as links to the two impacts WGs (WG4 and WG5). It will also include appropriate representation from national and pan-national projects to aid the coordination and avoid duplication of efforts (true for all WGs).

##### **(ii) Aerosol-Chemistry**

Key topics discussed in the parallel session included: Dust aerosols, Anthropogenic aerosols biomass burning and aerosols mixing and Field observations.

Key Activities that were agreed in the short term included:

- Develop modeling strategy (based on multi-scales)
- Establish linkages with AMMA Satellite database



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

- Run special session at IGAC conference in September, 2006 (Cape Town)
- Funding of African scientists: continue discussions with IGAC & interact with ILEAPS & ST4 regarding the various training opportunities.
- Use and Develop international webpages; make contributions to AMMA International Newsletter

### **(iii) Ocean**

Key topics discussed in the parallel session included: Field observations, SSTs and the West African Monsoon (large-scale), Air sea fluxes, Ocean circulation in the Eastern Tropical Atlantic, Air-sea coupling, African programs and databases and satellite data.

The Dakar conference was the 1<sup>st</sup> opportunity to gather African oceanographers working in the region. A meeting took place for the 1<sup>st</sup> time ever between African oceanographers from Nigeria, Benin, Togo, Ivory Coast and Senegal.

Key Activities that were agreed in the short term included:

- Produce a document that summarises the following : African programs and their potential link with AMMA; their data needs, national datasets (description and availability); similar information from France. The ultimate goal of this is to produce a regional ocean dataset.
- Produce a scientific document that describes the linkages between the climate studies in AMMA and the coastal and impact studies of interest in the region (e.g. coastal erosion, fisheries).
- Work towards establishing a free-access web-based database to provide ocean and air-sea interaction products.
- Communicate through an established e-mail list.

### **(iv) Evaluation and improvement of GCMs**

This parallel session was established in recognition of the substantial interest that exists in the international community to contribute to this activity. In addition to the existing activities in Europe, other groups wish to contribute and collaborate (e.g. proposal from Y. Xue and B. Lau under the auspices of CEOP). There was general agreement to coordinate these activities under two main headings:

- Activity 1: Evaluation of Models (MIP)
- Activity 2: Improvement of Processes and Feedbacks

There is a recommendation that these activities should be linked to the relevant interested international bodies: COPES, CLIVAR (including VACS), GEWEX, (including CEOP) and GMPP, THORPEX and IGBP.

An international coordinating group was proposed to develop and continue these discussions.



## **International AMMA Newsletter No 3 January 27<sup>th</sup> 2006**

### **WG2 : The Water Cycle**

Understanding the water cycle and its change due to natural and anthropogenic factors is critically important: availability of water is one of the most limiting parameters for life, agriculture and economic development in the Sahel (WG4); water has a central role in monsoon dynamics and variability (WG1) and it has an important role in high impact weather forecasts (WG5). A major focus of this WG is to consider the water cycle at a range of scales, from regional to local.

Key activities that were agreed in the short term included:

- At regional scale, to improve knowledge of constraints used in water budget, specially precipitation (PRECIPAMMA group is dedicated to this issue) and surface flux observations and to produce a paper on state of (un)knowledge of water budget.
- To decrease uncertainties in how processes are represented in global/regional models through mesoscale studies.
- At the mesoscale, the main activity in the coming year will be to carry out a case study analysis on the 28 Aug – 1 Sep 05 case in the “dry forecast run”; using observations and models (hydrological and atmospheric) and interacting with the AMMA satellite database.
- At the local scale, accurate hydrological budgets are currently carried out on the AMMA super-sites. Following up to this will be an evaluation of parametrisations and mesoscale models for supporting the water budget assessments.
- An e-mail list will be established and the WG2 webpage will be developed.

### **WG3 : Land-Surface-Atmosphere Feedbacks**

The meeting took place under the assumption that the problematic of the surface atmosphere interaction within AMMA needs to be dealt with first at the fine spatial and short time scale before the knowledge is integrate towards the large scale. The strategy proposed for WG3 is to work progressively from the small scales (or high resolution information over the region) to the broader scales (low resolution representation of the processes). This will allow the study of processes at the small scales and devise methods or conceptual models to represent theses processes at a larger scale or lower resolution. The following key topics were discussed: Surface states, Planetary Boundary Layer, Genesis and evolution of convection, Large scale analysis.

Key Activities that were agreed in the short term included:

- To organize a workshop bringing together the land-surface remote sensing community and the land-surface modelling community involved in ALDAS.
- The potential contribution of AMMA to progress on known issues in the surface/PBL interactions and diurnal cycle in large scale models (GCMs and RCMs) need to be made known. The proposed solution is to apply simple diagnostics on GCM output available in inter-comparison projects (the IPCC data base has a 3 hourly sampled year for all GCMs) and show how poorly these models perform.



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

- To use the same case study than WG2 to study the surface atmosphere interactions after evaluation the potential to study surface/atmosphere interactions in this case. Once the potential of this case is ascertained experimental designs should be proposed.

### **WG4 : Prediction of Climate Impacts**

The plenary session in the main conference included 16 talks covering a wide range of subjects relevant to this WG. In place of a parallel discussion session in the main conference, this WG organised a 2-day workshop on the Saturday and Sunday that followed. The aim of this workshop was to start discussions aimed at “bridging the gap” between climate researchers and users. This was attended by 60 people. The first plenary session included talks on river basin management, Senegal malaria control and Senegalese Food security. This was followed by talks on space time uncertainty. There were then breakout working groups covering agriculture, water and health topics. We will shortly receive reports from these groups which will include recommendations on the best way to advance impacts within AMMA.

### **WG5 : High Impact Weather Prediction and Predictability**

This WG is concerned with improving our knowledge and understanding of high impact weather over the West African continent, downstream tropical Atlantic and the extratropics. Those attending the conference were mainly concerned with the West African region and most of the discussion reflected this. In the plenary session many talks were provided by West African forecasters on current forecasting techniques. The parallel discussion session was organized along 4 themes important for WG5 (i) Tailoring and evaluation of forecast products for users in tropical regions; (ii) Impact of additional observations and especially radiosoundings over West Africa in analysis/forecasting systems for (a) West Africa, (b) Atlantic and USA and (c) Europe; (iii) Targeted observations in tropical regions and (iv) Societal impacts.

Strong contributions to the WG5 activity are being made by the AMMA forecasting group ; in particular through the dry run that is concerned with evaluating forecasting methods and products for 2 weeks in 2005 (22<sup>nd</sup> August – 2<sup>nd</sup> September). Also, we have received enthusiasm from several NWP centers to interact with and contribute to the operational activities in WG5 (e.g. (ECMWF), Meteo-France, NCEP, NRL, UK Met Office).

Key Activities that were agreed in the short term included :

- Continue to evaluate the forecasts during the dry run period and to provide documentation on the various activities related to this on the WG5 webpages.
- To continue discussions with WG4 on the utility of the ensemble prediction system (EPS) in the West African region and to consider establishing training courses to support their use.



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

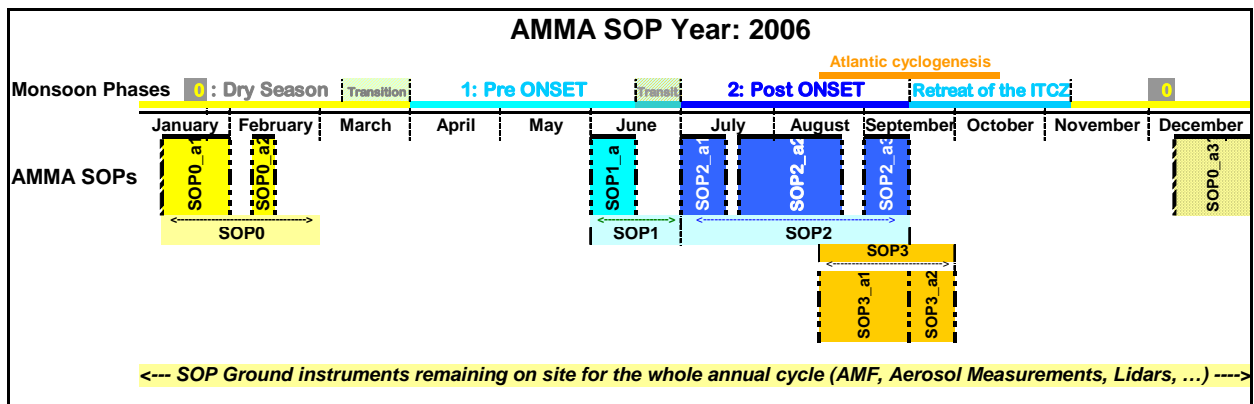
- Establish and coordinate what the various NWP centers will contribute to regarding observing system experiments in AMMA (including the dry run).
- Establish and coordinate the contributions to work on targeting observations.
- An e-mail list will be established to help with communication between interested parties. Also, an WG5 newsletter will be produced and the WG5 webpages developed. A contribution will be made for the AMMA-International Newsletter.
- A workshop in 2007 is under consideration.

### 2. Implementation Highlights

One can refer to the two implementation letters published in June and August to get information on the 2005 EOP deployment. These letters are available on the AMMA international implementation web site.

<http://www.amma-international.org/implementation/index>

We have now entered into the SOP year and an update of the SOP periods is given below.



### 2.1 International Implementation Plan

A complete but still preliminary version 2.0 of the IIP will be available at the end of January. All TT documents will be edited for format and a cover chapter is added to version 1.0. Version 2.0 is likely to include preliminary versions of TT9 and ARM. We will thus need to aim at a definite version 3.0 for April 2006, including all the details on instrument deployment that are still in discussion (especially the new US instruments funded recently or whose funding is still in discussion).

### 2.2 SOP0

The first SOP aircraft operation started in early January. The SOP0 (dry phase) is indeed underway covering 15 January to 15 February 2006. Eight flights with the UK BaE were performed from Niamey as per 26 January (<http://www.faam.ac.uk/>). The weather/dust



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

conditions were overall very satisfying and the four major types of flights have all been carried out already at least once. The Niamey location appeared especially interesting, since there are not many places in the world where an aircraft can observe separately heavy loadings of mineral dusts on the one hand, biomass burning aerosols on the other hand as well as, in addition, their mixing.

SOP ground instruments are running nominally over the 4 sites (M'Bour in Senegal, Cinzana in Mali, Banizoumbou in Niger and Djougou in Bénin), which is something never done at that level before anywhere else in Africa. Considering the large spectrum of instruments deployed on each site (Nephelometers, Aethelometers, Impactors, Filters, TEOM, lidars, radiation measurements), it may even be considered that such a deployment rarely occurred previously anywhere else in the world. The ARM mobile facility, completing this ground deployment, started its deployment at the 1<sup>st</sup> of January, and is foreseen until 31<sup>st</sup> of December 2006 (<http://www.arm.gov/sites/amf/nimdataplots.stm>).

### **2.3 Recently supported platforms**

Good news were received in January concerning two important US instruments.

#### ***(a) MIT C-band radar Doppler radar***

NASA anticipates supporting the MIT C-band Doppler radar in Niamey. The expected deployment will be for a minimum of 75 days starting in June 2006. Efforts are ongoing to deploy it for four months and, possibly, for an additional year (2007) in order to sample two consecutive summers. The radar is a key component of the AMMA observing strategy and will support analysis of (i) convection including intense MCSs in this region, key for a better understanding of the water cycle as well as the weather systems themselves; and (ii) hydrology and land-surface interactions.

#### ***(b) NOAA R/V RONALD H. BROWN and related observations***

The NOAA R/V RONALD BROWN will perform two transects during the 2006 AMMA field campaign. The first leg (28 May-22 June, SOP 1) will be along 23W from 20N-5S ending with a 3 day in Recife, Brazil. A main objective of this first leg will be to service a French TAO currently deployed at the equator and to deploy two additional TAO Moorings along the transect ( $\sim 5^{\circ}\text{N}$  and  $\sim 12.5^{\circ}\text{N}$ ). In addition, oceanic (e.g. surface and subsurface temperature, salinity and current observations) and atmospheric (e.g. rawinsondes and in situ thermodynamics) measurements will be made along this initial leg to support regional analysis of the West African monsoon. The second leg (25 June – 21 July, SOP-2) will also be along 23<sup>o</sup>W from 20<sup>o</sup>N to 5<sup>o</sup>S collecting ocean and atmospheric observations similar to those obtained during the first leg.

### **3. First meeting of the International Governing Board (IGB), Dec 20**

The IGB had its first meeting on December 20<sup>th</sup> 2005. The meeting took place using video and telephone with video sites in Paris, Swindon, Brussels and Washington. The first four items discussed were concerned with protocols for working and collaborating at



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

the international level. These items were: (i) A Memorandum of Understanding (MOU), (ii) Resource commitments of funding agencies, (iii) Communication policy, and (iv) Data policy. General agreement was reached by the IGB on these items and new versions of these documents are being prepared for formal agreement at the next videoconference that will take place in February 1<sup>st</sup> 2006. In addition there was some discussion on: (v) Funding of African participation in AMMA and (v) Dakar conference summary.

### **4. Status of the AMMA-EU project**

The project has just completed its first year of activity. The time has come to review the progress made during 2005 and to plan for the next 18 month. The outcome will be submitted to the AMMA-EU Governing Board of the project during its meeting on the 25th of January. All work packages have started their activities and some significant results have been obtained. Progress was particularly made towards establishing an African land data assimilation system and the systematic monitoring of operational upper air observations which was put in place. These will be important tools towards achieving our goals on improving the short range to seasonal forecasting. It is important here also to stress the achievement of the work package on environmental monitoring. In 2005 the flux station network was deployed in the field. The strategy for the upgrade of the radiosounding network was set and the suppliers were selected. The upgrade of the stations is currently underway and the number of radiosoundings in the region available on the GTS should increase substantially in the coming weeks.

### **5. International AMMA Meetings**

A table listing the various recent and upcoming international AMMA meetings and workshops is included on the AMMA International website. Recently held and upcoming meetings include:

<b>Dates</b>	<b>Meeting/Conference</b>	<b>Location</b>	<b>Attendance</b>
<b>2006</b>			
Spring	Forecasting workshop (scheduled but funding not secured)	Niamey	Invitation only
3 – 6 April	SOP meeting to review SOP0 (results, logistics, problems) and discuss SOP-123	UK (to be organized by TT7/TT8 leaders)	
7 April	ICIG meeting	UK	Invitation only
6-10th Nov	SOP debriefing and preliminary results meeting	France	
<b>2007</b>			
Summer	2 <sup>nd</sup> International AMMA conference	Toulouse (France) (tbc)	



## International AMMA Newsletter No 3 January 27<sup>th</sup> 2006

### **6. Any other business**

We would like to welcome Isabelle Genau who has recently joined the Project Office in Paris, France. She will mainly work on communication and presentation of AMMA. One of the envisaged projects will be to give the AMMA International Newsletter a new shape. A lot of ideas exist but if you have any propositions, feel free to send them to [Isabelle.genau@ipsl.jussieu.fr](mailto:Isabelle.genau@ipsl.jussieu.fr) or [Elisabeth.vandenakker@ipsl.jussieu.fr](mailto:Elisabeth.vandenakker@ipsl.jussieu.fr).

### **Used acronyms**

AMMA	African Monsoon Multidisciplinary Analysis	IPCC	Intergovernmental Panel on Climate Change
AMMA-EU	AMMA Europe	MCS	Mesoscale Convective System
AMS	American Meteorological Society	MIP	Model Intercomparison Project
ARM	Atmospheric Radiation Mission	MIT	Massachusetts Institute of Technology
CEOP	Coordinated Enhanced Observing Period	NCEP	National Center for Environmental Prediction
CLIVAR	Climate Variability and Predictability	NOAA	National Oceanic and Atmospheric Administration
COPEs	Coordinated Observation and Prediction of the Earth System	NRL	National Research Laboratory
ECMWF	European Centre for Medium-Range Weather Forecasts	NWP	Numerical Weather Prediction
EPS	Ensemble Prediction System	PBL	Planetary Boundary Layer
GCM	General Circulation Model	PIAF	Plan d'implémentation AMMA Afrique
GEWEX	Global Energy and Water Cycle Experiment	RCM	Regional Climate Model
GMPP	GEWEX Modeling and Prediction Panel	SOP	Special Observing Period
GTS	Global Transmission System	SST	Sea Surface Temperature
ICIG	Implementation and Coordination Group	TAO	Tropical Atlantic Observation
IGAC	International Global Atmospheric Chemistry	THORPEX	The Observing System Research and Predictability Experiment
IGB	International Governing Board	IGBP	International Geosphere-Biosphere Program
ILEAPS	Integrated Land Ecosystem – Atmosphere Processes Study	VACS	Variability of the African Climate system
		WAM	West African Monsoon