



Conclusions International AMMA Meeting Nice, 10-11 April 2003

1) International Science Plan

The participants broadly endorsed the preliminary draft of the International Science Plan as presented during the meeting. Weaknesses were identified and need to be corrected before a wider distribution.

Actions:

- The aerosol part needs to be developed in close coordination between different researchers. The possibility of combining some parts concerning aerosols with chemistry should be explored (in Section 3). *Action: D. Tanré, J. Prospero, C. Liousse, J. Haywood*
- The ocean part including the ocean-atmosphere interactions is currently being discussed and developed by scientists from the USA, France, Germany and S Africa. Coordination between all these researchers is necessary. The plans coming from these discussions should be included in section 3 (key questions and strategy/implementation) and section 2 should be checked and updated if necessary. *Action: J. Carton, B. Bourles, S. Garzolli, G. Caniaux, C. Reason, F. Schott*
- A table listing participating investigators and institutions (including those working on applications) should be included in an Appendix including an indication of the area they will contribute to. *Action: Th. Lebel, JL Redelsperger, C. Thorncroft + participants*
- The environmental and socio-economic impacts should be written and included as an appendix. *Action : Th Lebel*
- Applications: Need to develop key questions related to downscaling which are currently mentioned in 3.4.3; Add linkages with WMO (CLIPS, ...) and IRI *Action: Th Lebel*
- The chemistry part should be reviewed by a chemistry group; Need to add text and key question in “local scale/vegetation” part. Need to ensure that newly created chemistry and aerosol sections are OK. *Action K.Law, R. Delmas, D. Jakobs, C. Reeves, G. Ancellet*
- Improve the text concerning modelling and joint activities between weather and climate forecast centers as discussed during the meeting. *Action: JL Redelsperger, C. Thorncroft and these centers*
- Add Satellite Appendix and references to it in the main text. *Action: JL Redelsperger will ask to L.Eymard*
- Remarks on rewording of some key questions have been noticed and will be taken in account; Add GOOS, GTOS, in section 4 on linkages. *Action T.Lebel, JL Redelsperger, C. Thorncroft*

- Having incorporated these inputs (**deadline: beginning of May 2003**), a distribution to a larger group of people who have declared their interest in participating in AMMA will be made to endorse the ISP.

2) Applications : Water resources, agriculture, health

This issue was felt as being very important for AMMA by the participants especially the two African scientists that were present (C. Diop and L. Oyebandé). There was a concern, however, that the application component of AMMA could be wishful thinking rather than a real thing. Existing links with agencies involved in water resources management were cited as an example of actions already taking place in this area of applications. A critical point was mentioned: money is already invested in projects aiming at developing adaptation strategies to climate change (for instance a Canadian-funded project is ongoing at AGRHYMET). The methods used to link climate scenarios to application models are often based on little science and AMMA should contribute to the elaboration of more appropriate tools. A few actions were recommended to progress in this direction:

Actions:

- Create a working group on applications in AMMA. *Initial Action T.Lebel*
- Need to find someone to lead this group with the first task of making an inventory of ongoing actions in West Africa and institutions involved. *Initial Action T.Lebel*
- Systematic participation of AMMA scientists to the fora organized in Africa around application-related topics (seasonal forecast and hydrological / Health impacts). . *Action WG*
- Develop links with centres focusing on applications of climate research (IRI for instance) and with ongoing projects in international institutions (WMO, UNEP, WHO, ..). *Action WG*

3) Links with prediction centers and climate modelling centres/groups?

Weather and Climate Prediction

Participants broadly supported the presentation made during the meeting. Results of discussions will be included in the ISP. Several NWP and climate centers have already declared their interest to participate (ECMWF, NCEP, Météo-France, UK Met Office).

The following potential joint activities with weather and climate prediction centers were listed:

- Evaluation of Analyses/Reanalyses/Forecasts (various aspects on assimilated data, focus on key aspects); Focussing on key aspects of the Monsoon, evaluation and improvement of parameterisations (GCSS/GMPP Approach, linkages between NWP groups & other modelling groups, CEOP & the production of MOLTS ?)
- Recommendation for a Long-Term Sustained Observing System (Possible tests on GATE, FGGE, JET 2000 periods before the SOP in 2006)

Modelling Groups

Joint activities with climate modelling centers need to be established (LMD/IPSL, MPI, Univ Reading, Meteo-France). These activities should include:

- Impact of global change on WAM (Analysis of 1950-2050 runs, Evaluation on 1950-2006 period) (Some activities are undergoing involving partnership between African and climate modelling centers)
- Impact of regional changes (e.g. forest cover, land use, ...)
- Evaluation & Improvement of model parameterisations (Action similar to NWP) in focussing on Water cycle, Soil moisture, Vegetation, Monsoon Dynamics.
- Development and tests of coupling with hydrological models

It was emphasized the necessity to establish contacts with key scientists carrying out data sensitivity experiments in order to aid designing of sustained observing systems (e.g. ECMWF). As a first step to coordinate the efforts at international level, it was suggested to set up a unique working group on modelling and prediction.

Action: C.Thorncroft, JL Redelsperger, Modelling centers (ECMWF,): To initiate a working group on modelling and prediction in AMMA –see below)

4) LOP

The general plan was presented by Thierry Lebel and included an assessment of funded equipment.

The AMMA LOP component is active since 2001. Presently it is mostly built around four French observing systems (Observatoires de Recherche sur l'Environnement – ORE): CATCH (hydro-meteorology), IDAF (atmospheric chemistry and aerosols), PHOTONS (aerosols) and PIRATA (buoy arrays in collaboration with other countries). The annual cost of operation of the three first ORE's is about 160 K€, including spare parts and retooling but not personnel costs. A commitment exists from the French ministry of research to maintain the funding until 2005 included. An additional 35 K€/ year would be necessary to implement soil moisture and flux measurements at least on some key “supersites”. The funding of this action remains to be found (link to build with proposed UK bid). The program of equipment for the years 2003 and 2004 is estimated at 500 K€ for the 3 ORE's (however all this equipment is not first priority). 60% of this is already funded. An additional 180 K€ would be necessary for monitoring the soil-vegetation-atmosphere fluxes. The equipment already onsite represents an investment of more than 1.5 M€, made since the mid 1990's for the oldest sites.

The German project IMPETUS is collaborating with CATCH on the Ouémé catchment since 2001. It was initially funded for three years. After evaluation of the first stage of the project, new funds have been recently allocated to maintain the IMPETUS network until April 2006, adding a surface flux station (but sounding in Parakou is not funded any longer).

UK: As mentioned below, UK will explore the possibility of implementing surface flux stations for the LOP

USA: Lightning global network (10km resolution, only cloud-ground lightning) funded by NSF

Actions:

- There is a need to include mention of XBTs and GODAE (Provor, Palices,...) in the ISP. Action: T. Lebel and B. Bourles

- IMPETUS part of ISP should be updated in regard to the new funding obtained (including a surface flux station). Action: T. Lebel and A. Fink
- Besides the problem of atmospheric sounding problem (see below), the most important missing part is a continuous recording of the surface fluxes. C. Lloyd (CEH, UK) noticed that the UK flux stations planned for EOP could remain for a longer period, providing an African scientific partnership. This proposal was considered very important for AMMA and particularly the LOP. Action: CEH (C. Loyd, C. Taylor) together with LOP people (T. Lebel)
- The potential involvement of the ARM project in AMMA should be explored. Action C. Thormcroft, P Lamb

5) EOP

The general plan of EOP was presented by Serge Janicot. The following points were noted:

- A. Fink outlined problems of missing synoptic data. In particular the synoptic stations in Benin has relatively old instrumentation; this could be the same in other countries; this problem has to be considered. He stressed also the good quality of the pibal profiles which have to be taken into account in the atmospheric network. It was decided to extend the group working on soundings to synoptic data.
- We have to know quickly what could be done at the station of Minna (Nigeria) to decide if we can maintain a quadrilateral around Parakou to support the SOP or if we must move to the north. As said above, the Parakou radiosounding is not funded anymore.
- The radar of Ouagadougou is a new one but not in the ASECNA network. It could be one of the radar priorities for the EOP. A visit is necessary to get more information.
- A flux station (Bowen ratio) is funded by IMPETUS for 3 years (up to April 2006).
- NCAR is proposing a new service to the scientific radar community. It consists in packing an antenna and acquisition to be deployed around an existing emitter / receiver radar system in order to enhance its capabilities. This could be useful to AMMA in order to upgrade operational C – Band weather radar and organise multi-radar measurement campaigns.

Funding: The EOP part appears the most difficult observational one to be funded.

- Upper Air Soundings: It was recognised that it will be difficult to fund soundings for EOP using conventional funding methods. It is therefore crucial that we work towards enhancing the routing network through interactions with national met services and the VCP/WMO. The recent GCOS meeting in Niamey underlined the crucial needs in this area and a report is currently written to detail a possible strategy (priorities for equipment and avenues for funding). The main action here is to pursue the contacts with WMO at all levels. Contact was made with F. Hounton, now at the Technical Cooperation Department, who proposed to organise in Geneva a meeting with the various persons possibly involved in such an action.
- Denmark (I. Sandholt) have been funded up to 2003 for 4 stations measuring vegetation (NDVI and fAPAR), surface-, soil-temperature and soil moisture. Need to explore the way to extend the period and to approach DANIDA for funding

- UK have obtained the funding for one surface flux station and have applied for 10 other stations in the NERC AMMA proposal which includes SOP and EOP.
- To fund part of EOP, funding is expected to be obtained from the French Ministry of Foreign Affairs through a program called FSP, which is currently under construction and could start in 2004. Applicants will be African teams with the support of French and possibly other European teams. Need to study what would be the priorities, taking into account the other possibilities.

Actions

- Update the EOP section in the ISP, include chemistry and ocean parts. *Action: S. Janicot (JL Redelsperger)*
- WG on soundings/synoptic should formally be formed as soon as possible and should provide inputs to the presentation to be made at WMO in May. *Action: S. Janicot, A. Diedhiou*
- Contact with J. Lutz at NCAR for details on the new radar facility presented by E. Anagnostou. *Action: E. Anagnostou, (T. Lebel, C. Thorncroft);*
- Ken Gage (NOAA) should be contacted for potential interests to install a profiler together with a lidar. *Action: C. Thorncroft*
- USAID should be contacted to assess their interest in interacting with AMMA. *Action: C. Thorncroft*

6) SOP

A summary of different parts of SOP was presented by Frank Roux. Inputs were also provided by C. Thorncroft for the US. There is a consensus to shift the date of experiment to 2006 though French need to get the final answer from the inter-agency committee.

The following points were noted during discussion:

- The issue to involve a low-stratosphere aircraft in the SOP2 has been pointed out . The candidates are Geophysica, Egrett, ER2.
- The SOP4 (dry season) could involved the BAE246 (UK) and ATR42 (France). The involvement of NASA aircraft need to be explored in regard to the shift of date (a conflict of date existing before)
- The DLR have declared their interest to participate with the Falcon. More could be known following the workshop organized at DLR in May. H. Holler mentioned the difficulty to change the embarked instrumentation during the SOP (wind Doppler lidar, chemistry measurements).
- C. Flamant mentioned that there are current discussions between NSF (NCAR) and INUS/CNRS to formalize the fruitful collaborations with the DIAL lidar and ELDORA/ASTRAIA Doppler radars on the P3 (NRL).
- The ocean and ocean-atmosphere interaction parts need to be coordinated (see above).

Funding:

A rough estimation of cost has been presented. The planned UK and France contributions could be represented half of this cost. US have presented the results of the AMMA presentation to funding agencies (NSF, NOAA, NASA, DOE, ONR) and which parts of SOP could be funded. One of recommendation was to reinforce the ocean part.

Actions:

- C. Thorncroft will contact Dick Johnson (CSU) about the observation strategy to obtain accurate mesoscale budgets.
- F. Roux should develop the ocean and OA interaction part in the SOP section in the ISP, in coordination with J. Carton, B. Bourles, G. Caniaux, S. Garzoli, (see above)

7) International coordination

The following structure was broadly agreed upon but we need to get agreement of funding agencies. The structure should be in place by the end of 2003. That follows the MAP structure.

- International Governing Panel
. The International Governing Panel (IGP) will consist of representatives of the science funding agencies, Regional and National Meteorological and hydrology Services. WMO representatives could be also members of IGP. The IGP will carry the final responsibility for the implementation of the AMMA Programme. It will approve the recommendation on the structure and implementation of AMMA, particularly with respect to the necessary financial and technical support.
- Scientific Steering Committee
The responsibilities of SSC (Scientific Steering Committee) will consist of leading atmospheric scientists and will be responsible for the formulation of objectives and a scientific programme for AMMA. The SSC will ensure the integrity and consistency of the scientific objectives of MAP. The number of members should be less than 15.
- Coordination and Implementation Group
The responsibilities of CIG (Coordination and Implementation Group) will be the general planning and coordination of AMMA in accordance with the scientific goals set forth by the ISP document and in accordance with decisions of the SSC and IGP. The number of members should be less than 15.
- AMMA Data centre(s) ? The need was recognized and should be discussed by the Committees.
- AMMA Office: This need was outlined and will be explored

Actions:

- Each national group in AMMA should contact their agencies to get feedback on this structure and report by end of May about the format.
- C. Thorncroft, JL. Redelsperger, T. Lebel will coordinate the establishment of the committee structure through collaborations with national and regional representatives and AMMA community.
- Explore funding possibilities for an AMMA program office. C. Thorncroft (CLIVAR/SSG Meeting) and T. Lebel or/and JL Redelsperger (WMO visit) will approach WMO representatives

The following International working groups were also discussed. The references of these groups should be discussed further by the CIG. There is nevertheless a need to set up these groups as soon as possible, in particular for the LOP, EOP, SOP.

- LOP, EOP, SOP Working groups
- EOP Sub-groups:
 - Meteorological routine observations (Sounding+Synoptic)
 - Continental surface (Ground moisture, surface fluxes)
- Modelling and Forecast group
- Data archiving group
- Satellite group
- Applications group

Actions:

- T. Lebel, J.L. Redelsperger, C. Thorncroft will coordinate the establishment of these working groups through collaborations with the whole AMMA community.

8) 6th EU framework

Two possibilities exist:

<< 1.1.6.3 *Global change & ecosystems* »: 1.3.a) Hot spots in the earth system « Focus will be on the processes responsible for climate variability regionally and on larger scales »

Only one Integrated project (~10Meuros) will be funded in this niche, so the competition will be hard. The call will be in July 2003 with a two-step procedure. A first document (20pp) should be due in Oct 2003 and the final proposal earlier 2004. So the work needs to start now. There is a need to find a main leader of a working group to prepare and to submit the project. Several names have been mentioned: K. Law, J. Slingo, C. Reeves, Molteni, T. Palmer.

Action: D. Parker will approach UK people and Molteni. J.L. Redelsperger will explore more from the French side

In « Specific measures in support of international co-operation » (INCO) for developing countries

A.2.1. Managing humid and semi-humid ecosystems & A.1.1 Health (<~1Meuros)

There is a need to explore more how to include part of AMMA. The call is open and the full proposal due in Sept 2003. Thierry Lebel agrees to coordinate.

Action: To identify partners and draft terms of reference (T. Lebel)

9) Next events

- Agreement to organize an International AMMA Conference
 - Location: S. Diop agreed to host this meeting in Dakar
 - January 2005 (in conjunction with a possible CLIVAR-Africa (VACS) panel meeting)
 - Funding to explore: NSF, EU ?, France (CNRS, IRD, MAE, ...), others
 - Need to secure a date in advance and to set up scientific and local Committee

Action: S. Diop, A.Gaye, P. Sagna, C. Thorncroft, JL. Redelsperger, T. Lebel will coordinate the establishment of local and scientific committees of conference.

- A 2-day AMMA scientific meeting is taking place in Cotonou the first week of November 2003 in conjunction with the 3rd COPROMAPH conference. It is agreed to take opportunity of a third day after to assess progress & to set up a strategy of African involvement in building international cooperation in AMMA. It was suggested to include more Africans in the scientific committee of this meeting.

- Special AMMA session in the next AMS Tropical conference in Miami

Action: C. Thorncroft

- To prepare and to distribute a AMMA brochure

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Agenda

Thursday, April 10th :

1400-1530 : General scheme and various aspects of the project (AMMA : a multiscale approach) C. Thorncroft + J.-L. Redelsperger + Feedbacks from participants

1530-1600 : Applications : Water resources, agriculture, health
T. Lebel

1600-1630 : Links with prediction centers + links with decision makers
JL Redelsperger + C. Thorncroft

1630-1700 : Break

1700-1830 : LOP including Available funding and human resources
T. Lebel + participants

Friday, April 11th :

830-1000 : EOP including Available funding and human resources
S. Janicot + participants

1000-1015 : Break

1015-1215 : SOP including Available funding and human resources
F. Roux + participants

1215-1345 : Lunch

1345-1615 : International coordination

-Preliminary presentation of the "Mesoscale Alpine Project" international structure, as an example .

-Working groups to be set up (LOP, EOP, SOP, Data archiving, Modelling, ...)

1615-1645 : Break

1645-1730 : Synthesis on funding issues including a discussion on the 6th EU Framework.

1730-1815 : Next events, meeting and actions ("International Science Plan" and "International Implementation Plan")

Conclusions from International AMMA Meeting
Nice

16/05/2003