

**EMBRACE Kick Off meeting**  
22-23 November 2011 – Nörrköping (Sweden)

**Minutes for WP1-Atmosphere**

“Improving atmospheric moist convections and tropical climate”  
*coordinated by Jean Philippe Lafore and Steve Derbyshire*

**Attendees:**

CEH	Chris Taylor
CNRM-GAME	Gilles Bellon, Fleur Couvreur, Frédéric Ferry, Françoise Guichard, Jean Philippe Lafore, Philippe Peyrillé
CNRS/IPSL	Jean Yves Grandpeix, Catherine Rio, Romain Roehrig
ECMWF	Peter Bechtold
SMHI	Colin Jones, Mihaela Caian, Klaus Wyser
UKMET	Steve Derbyshire

After an overview of the WP1 by Jean Philippe Lafore and Steve Derbyshire during the 1<sup>st</sup> plenary session, the WP1 met in a 2h30 break session to discuss in details its goals, work-plan, organization and interactions with other WPs and outside EMBRACE.

About 18 persons participated to this break session allowing treating almost all issues covering the 10 tasks defined in the DoW. Our work-plan can be separated in 3 periods:

**Year 1:** with the following major objectives

- Launching of all Tasks groups
- First SCMs experiments and intercomparisons involving all partners for AMMA case I (T1.1.1) and ideal RCE cases (T1.2.1)
- In collaboration with WP4, implantation of metrics needed in WP1 to assess the atmospheric biases of ESM in the Tropics.

**Years 2-3:** dedicated to the assessment and improvement of the physical realism of the parameterizations of moist atmospheric convection used in ESMs and to understand how it affects the simulation of large-scale circulation regimes in the tropics. Strong interactions between tasks will be necessary to reach those challenging objectives. A major goal is to propose by the end of year 3 a set of improved or new parameterizations to run new AMIP5 type simulations to be evaluated in WP4 and to address the abrupt change issue in WP5.

**Year 4:** to finalize the previous studies and to understand how errors at the process level translate into systematic errors in ESMs in collaboration with WP3 but also with WP2 and WP3 to analyze errors in relation with the coupling with the oceanic and the continental surfaces.

The main comments and conclusions are:

- As many SCMs experiments will be run on different cases (real and idealized), we must standardize setups, diagnostics and input/output files format. A specific WG has been setup for that aim.
- Need to perform the 1<sup>st</sup> SCM experiments asap with the implication of all ESMs (Task1.1.1). The priority is on the setup I (prescribed fluxes) of the AMMA diurnal cycle case. The setup II will be delayed.
- For Task1.1.2, the set-up of the 2500 cases of convection initiation in West Africa will be ready around month 18.
- If confirmed (LES and observations) the role played by surface heterogeneities will have to be considered. Nevertheless this variability being not accounted by most SCMs, developments will be necessary to address this new issue during the project.
- The wind forcing used for the RCE cases (WTG or not) should be discussed among participants (fixed wind or geostrophic wind).

- A simple surface scheme (conduction and storage of heat with fixed beta) will be distributed with the continental RCE cases.
- The assessment of the ESMs atmospheric biases in the Tropics is a starting point for WP1 before trying to improve SCMs. This question will be treated in WP4 in close collaboration with WP1 as we will use the same metrics all during the project. A specific WG has been setup for that aim.
- Q1 and Q2 extraction from AGCM runs is a key need to characterize the link between parameterized diabatic heating profiles and the dynamics of monsoon circulations. Nevertheless we need to define Q1 and Q2 precisely. We pointed that the impact of momentum transport (Q3) is still an open question. We propose to also extract Q3 and to test its impact if possible contrary to the present DoW.
- We didn't fully discuss the Task1.5 (Convectively forced Gravity waves and their impact on the upper troposphere and stratosphere), as participants didn't attend the meeting. This already well-organized task involves only 2 partners (IPSL, UKMET) to develop new parameterizations and is quite independent from others at least for the first two years of the project. It is to be noticed that Hi-res simulations (1-2km) over India will be performed with the CASCADE model. Such simulation can be used within EMBRACE for other issues than the gravity waves one.
- Need to have a meeting before 2012 summer.

**Decided Actions:** for the 6 first months

1. Collect name and email of all participants to WP1 by task → *J. Philippe and Steve (M2)*
2. Setup of a WG to define "setup and outputs of all SCMs experiments" (formats...). Participants: F. Couvreux, F. Guichard, J-Y Grandpeix, G. Bellon, C. Rio, S. Derbyshire, M. Caian → *Fleur (M2)*
3. SCM setup of the 1<sup>st</sup> AMMA case to be provided asap → *Fleur (~M3)*
4. Setup of a WG to define metrics to be shared with WP4 and adequate contacts. Four topics are defined:
  - a. Diurnal Cycle and triggering versus surface moisture → *Catherine*
  - b. Tropical ISV/MJO → *Gilles, J Philippe D. and Romain*
  - c. Monsoon (Indian and West African) → *Gill and Romain*
  - d. Clouds: link with EUCLIPSE → *Pier Siebesma*
5. Precisely define Q1, Q2 computation → *Gill Martin*