

**MESA Strategy Report at the 7<sup>th</sup> VAMOS Panel Meeting, Guayaquil, Ecuador, 22-24 March 2004**

**C. Vera (MESA SWG Chair)**

Dr. C. Vera provided a summary of the MESA Working Group Sessions and the MESA Strategy Report. The VPM7 charge to MESA was to address the following: i) work plan on the “core monsoon” needs reformulation; ii) work on projects on La Plata Basin (CSE, PLATEX) needs definition and new, active regional players.

Currently MESA has been organized in regional programs. It was proposed in VPM6 that MESA should start integrating the objectives of the different programs in South America (SALLJEX, PLATIN, LBA) in an unified program in order to facilitate the understanding, simulation and prediction of the different components of the South American Monsoon System (SAMS), their variations and connections with the extratropics. Integration of the objectives would also help identifying the link of SAMS with other programs such as NAME, PIRATA and others (like the CLIVAR Programs in Africa). Therefore, a new MESA structure is being discussed in order to better address the main MESA goal related to the SAMS variability and the improvement of the SAMS monthly-to-seasonal prediction. It is suggested that MESA will be organized in three main priority research areas (PRAs), PRA1: Diurnal and mesoscale variability, PRA2: Intraseasonal variability and PRA3: Interannual (and longer timescale) variability. There was some discussion about the MESA domain and the MESA Working Group members agreed in that the region of study should be extended from the Amazon Basin to the La Plata Basin. Further discussions about the extension of the MESA current region of interest to the rest of South America were also made. Areas like NE Brazil and the northern part of tropical South America, have not received any attention yet. The discussion about MESA strategy will continue in a meeting planned to be held during the CLIVAR Conference in June 2004 with the participation of a wider portion of the MESA community.

The group also agreed that in order to understand the sources and limits of seasonal predictability over South America some of the following issues should be addressed: To what extent do model systematic errors affect seasonal predictability in the region? Seasonal climate predictions: more accurate during strong ENSO years, what about normal, weak-ENSO or la Niña events (meaning, most of the time)? Will seasonal predictability change as a function of land cover changes? Can soil moisture memory help for seasonal predictions for South America? Dealing with the complexities of orography: higher resolution models and/or downscaling with regional models? Can intraseasonal oscillations be a source of short term climatic predictability? At the end, can we expect that model improvements and observational techniques will improve predictability in regions such the highly populated and economically important one in SE South America? Better seasonal climate predictions, more accurate projections of climate change scenarios for the future? Also there was agreement that some modeling issues after SALLJEX are still open: Does SALLJEX data improve the understanding of the water budget of the Plata Basin? Does the uncertainty of the LLJ moisture transport have

been reduced? Does SALLJEX research improve the numerical model skill for predicting MCSs?

Some recommendations for PLATEX and LPB CSE:

i) Numerical experiments over the basin may be used for a better experiment design of PLATEX (which it is still under planning by the PLATIN SSG). Can PLATEX contribute to understand the predictability levels of the region? Does it need specific observation systems?

ii) An enhanced monitoring could be implemented by 2007 in order to describe the diurnal cycle of precipitation over the middle portion of the basin, using LBA rain gauges and a radar over the region where MCS get their mature stage. Flux towers (4 potential 1D reference sites for CEOP) currently operating in Southern Brazil would be available too.

Finally, additional coordinated numerical experiments to be performed by the SALLJEX modeling group were discussed and planned like: Impact of improved soil moisture initializations on precipitation simulation, Impact of improved initial conditions enhanced by SALLJEX data, Data Assimilation including SALLJEX data, Intraseasonal variability during SALLJEX period, Seasonal mean representation of the SALLJEX period. The MESA Working Group members think that a VAMOS Modeling Group could help to address MESA objectives through the coordination of joint MESA-NAME-VOCALS activities.