



Synoptic variability in the nudged version of LMDZ over the West African monsoon region during the AMMA campaign.

M. LY (1,2), R ROCA (1), and F HOURDIN (1)

(1) Laboratoire de Météorologie Dynamique Université Pierre et Marie Curie, T45-55, 3eme, Boite 99, 4, place Jussieu, 75252 Paris Cedex 05, France, (2) Laboratoire de Physique de l'Atmosphère et de l'Océan Siméon Fongang, Ecole Supérieure Polytechnique, Université Cheikh Anta Diop Dakar, BP 5085 Dakar-Fann, Dakar, Sénégal

The Laboratoire de Météorologie Dynamique General circulation Model (LMDz) is ran in a nudged mode using various sets of atmospheric analysis during the wet season of 2006. The zoom capability of the model is used and reaches a mesh size of around 80km over the whole West African region. Sensitivity experiments have been performed in order to highlight the behaviour of the nudged model under a wide range of conditions: spatial and vertical resolution, zoom intensity, surface scheme formulation as well as for the forcing and driving parameters: relaxation time, type of analysis (ECMWF, NCEP/GFS, Sea Surface Temperature (climatology vs. 2006) and the nudging variables (wind, temperature, and combination). A combination of satellite data (E.g., GPCP rain estimates, METEOSAT Free tropospheric humidity,...) and in-situ observations acquired during the AMMA campaign (temperature and humidity profiles from radiosondes, GPS precipitable water,...) are all used to evaluate the simulations. The analysis is focused on the representation of the synoptic variability by the model in terms of rainfall and water vapour variability. It is shown that the model captures the free troposphere water vapour variability reasonably well with highly significant correlations between the radiosondes and the simulated fields. In the lowest levels of the atmosphere and in the upper troposphere, the agreement is less good. When the fields are filtered using a pass-band filter between 3-10 days, the correlation overall increases. Detailed of the sensitivity of these results to the simulation configuration mentioned above will be further discussed at the conference.