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African Easterly Waves during West African Monsoon rainy season: 2000 and 2003 events analysis

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In the framework of the AMMA-EU project, two UCLA AGCM experiments were performed focusing on the West African Monsoon (WAM): 2000 (dry) and 2003 (wet) years. The work was carried out with the high resolution version of the model (2.5ž longitude by 2ž latitude, and 29 vertical sigma layers), using the Reynolds ERSST as boundary conditions. The results are compared with the ERA-40 reanalysis (ECMWF) data. West Africa is known to be affected by westward propagating instabilities, the so called African Easterly Waves (AEWs). The AEWs take place during monsoon season, from june to september. The aim of this study is, in one hand, to establish a methodology to characterize the AEWs propagation, and on the other hand, evaluate the methodology for the particular events. We have used the 700 hPa vorticity fields and we have performed one-point lagged correlation maps, hovmuller diagrams and regression maps. The results confirm the skill of the applied methodology. We have found AEW period around 15 days, wavelength approximately 3500 km and critical longitude around 15E, which seems to block the westward-propagation. There are propagation differences between the two events for both, model and observations.