



Validation of turbulence and convective schemes on western Africa; comparison of LAM and CRM simulations on a HAPEX-Sahel case study

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The aim of this work is to analyse the behaviour of turbulence and convective parameterizations included in the Météo-France ALADIN-CLIMAT Limited Area Model in the frame of a 24 hour simulation of a HAPEX-Sahel case study, in comparison to observations and to a CRM (Méso-NH, with a 5 km horizontal grid-mesh) simulation carried out under the same boundary forcings. This framework provides an intermediate step of parameterization validation between the Single Column Model and Global Climate Model simulation studies.

The chosen case study is the 21st August 1992 over a $12^\circ \times 12^\circ$ region centred over SW Niger. It is characterised by the life cycle of a westward propagating convective system associated to an African Easterly Wave. Both LAM and CRM simulations have been performed over the same considered domain, using the same ERA40 boundary forcings. Sensitivity tests to resolution (both horizontal and vertical) have been first carried out with ALADIN-CLIMAT. Second, the two different convection schemes used in ALADIN-CLIMAT show two kinds of response mainly due to their different formulations of triggering (no constraints in the dry layer under the convective cloud versus continuous treatment of convection including this dry layer) and closure (moisture convergence versus CAPE). Third, the impact of entrainment at the top of the PBL (included in the turbulence scheme) and of convective downdrafts will be shown. Fourth, the impact of different boundary forcing fields will also be presented.