EMS Annual Meeting Abstracts
Vol. 9, EMS2012-308, 2012
12th EMS / 9th ECAC

Lateral boundary conditions and forecast errors in the mid-latitudes

L. Honzak (1) and N. Žagar (2)
(1) Center of Excellence SPACE-SI (luka.honzak@space.si), (2) University of Ljubljana, Center of Excellence SPACE-SI

The impact of lateral boundaries on the magnitude of forecast errors inside the limited-area model domain in mid-latitudes has been studied by using realistic simulations with the WRF-ARW model coupled into the operational ECMWF analyses over an extended time period.
Two ensembles of simulations have been carried out on the mid-latitude channel domains extending between 35°N and 70°N and between 30°N and 80°N. The WRF model is run at the same grid with resolution (0.25°x0.25°) as the coupling ECMWF analyses to allow an easier comparison. The results are verified against the ECMWF analyses in terms of the conventional statistical parameters. The mid-latitude channel results are compared with same simulations on two smaller domains, the half-channel experiment covering the half of the globe (100°W-60°E) and the quarter-channel simulation extending between 45°W and 35°E.
Internal variability of the model on various domains has been studied and intercompared. The meridional and zonal error structure is studied as a function of the domain size in the meridional and zonal directions. It is shown that the model behaviour in the quarter-channel simulation, that is still larger than the majority of limited-area domains used for the regional climate modelling in Europe, is completely governed by the lateral boundary conditions.