



Impact of high-resolution boundary conditions on the quality of COSMO-LEPS forecasts

Andrea Montani, Chiara Marsigli, and Tiziana Paccagnella

ARPA-SIMC, HydroMeteoClimate Service of Emilia-Romagna Region, Bologna, Italy (amontani@arpa.emr.it, +39 051 6497501)

The ECMWF Research Department offered the LAM-EPS community data from two ensemble configurations, run with different horizontal resolutions, so as to promote research with limited-area-model ensembles. The data from the two configurations were made available for three two-week periods, characterised by high-impact weather events in 2011 and 2012, and were used by different weather centres.

In this contribution, the impact of high-resolution boundaries provided by ECMWF is investigated on the performance of COSMO-LEPS, the operational ensemble system running at ECMWF as a time-critical application.

The provision of higher resolution boundaries is found to have a limited positive effect on the performance of the system in terms of probabilistic prediction of heavy precipitation. In addition to that, the spread/skill relation in terms of 2-metre temperature slightly improves with high-resolution boundary conditions.

A larger positive impact is found to take place if COSMO-LEPS is run with both high-resolution boundaries and a newer model version.

Finally, modifications to the present clustering-selection technique are also tested, with attention to their impact on the spread/skill relation of the system for both surface and upper-air variables.