



Reanalysis forced RCM hindcast simulations: quality in quality out?

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Since reanalysis data, such as the European Centre for Medium Range Weather Forecasting's ERA-40 and The National Center for Environmental Prediction's NCEP/NCAR have became available, the regional climate modelling community has been using these as lateral boundary conditions (LBC) for their regional climate model (RCM) experiments. To assess model performance over a given domain these reanalysis LBCs are used preferentially over LBCs generated by an atmosphere only General Circulation Model (AGCM) as the reanalysis are thought to be more a realistic representation of atmospheric state.

The hypothesis, 'A reanalysis driven RCM is a better estimator of observed climate than an AGCM driven RCM' is tested for the U.K. Hadley Centre RCM, HadRM3. This is done by considering two RCM experiments over a domain containing Europe and North America as estimators of the Climatic Research Unit (CRU) climatology for 1957-2002. One RCM experiment is driven by ERA-40 at its lateral boundary, the other by an AGCM, both have HadISST sea surface temperatures and sea ice as surface boundary conditions.

We find that errors in 2m temperature caused by a bias in the driving AGCM are removed when ERA-40 are used as LBCs. However there is overall, a larger mean square error in the seasonal and annual mean temperature climate when compared to observations. This leads us to reject our hypothesis. Temporal variability will also be examined.