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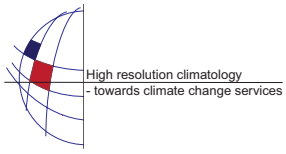


# How can RCMs reproduce the annual cycle and what we can learn from it

T. Halenka (1), P. Skalak (1,2), P. Huszar (1), and M. Belda (1)

(1) Charles University in Prague, Fac. of Math. & Physics, Dept. of Meteorology and Environment Protection, Prague, Czech Republic (halenka@mbox.troja.mff.cuni.cz), (2) 2Czech Hydrometeorological Institute, Prague, Czech Republic

The annual cycle is analyzed by means of Taylor score to assess the ability to reproduce annual cycle in 15 regional climate models (RCMs) used in EC FP6 project ENSEMBLES. The objective of this effort is to provide rather simple, but still convenient method with one figure output for further weighting of the RCMs ensemble simulations. The application of Taylor score directly to the original results averaged to monthly time series for individual so-called PRUDENCE regions can provide first guess of this annual cycle performance, especially for temperature where annual cycle is a main source of variation and correlation, although for precipitation there are clear deficiencies in this assumption. More comprehensive technique applying multiple linear regression analysis on the time series to extract a pure annual cycle is used to assess the differences in the both method of evaluation. It is shown that the results of both methods coincide reasonably well. However, as the original technique provides basically the overall performance of the model, the quality of annual cycle description in the models can be one of the important factors affecting its precision on monthly scale. Comparison to E-OBS as well as to ERA 40 data is provided and impact of driving GCMs is also analysed.