



## **21st century climate assessment for Hungary using different future pathways**

I. Pieczka, R. Pongrácz, and J. Bartholy

Eötvös Loránd University, Department of Meteorology, Budapest, Hungary (pieczka@nimbus.elte.hu)

Regional climate models (RCMs) nested into global climate models (GCM) are expected to improve the regional details of climate change scenarios for the European subregions. The model PRECIS is a hydrostatic RCM developed at the UK Met Office, Hadley Centre, and driven by HadCM3 GCM outputs. At the Eötvös Loránd University, Budapest, Hungary the model has been adapted with 25 km horizontal resolution. In order to quantify the regional model PRECIS' advantage in predicting climatic conditions of the Central/Eastern European region compared to the HadCM3 GCM projections, a so-called Added Value Index has been computed both for temperature and precipitation. A clear improvement can be seen (especially, in case of precipitation) due to the more detailed physics of the RCM.

Validation of the model's capability to simulate extreme weather phenomena suggested that a bias correction is necessary for raw daily temperature outputs of PRECIS. For this purpose monthly-based quantile matching technique has been applied. During our research several experiments have been completed considering three different SRES emission scenarios (i.e. B2, A1B, and A2). Projected temperature and precipitation changes in Hungary and its vicinity are compared for them, which enables us to assess regional climatic effects of estimated changes in environmental, social, and economical conditions. Results of our analysis may serve as essential input for agricultural, hydrological, and human health studies.