



Linking the Weather Generator with Regional Climate Model

Martin Dubrovsky (1,3), Ales Farda (2), Petr Skalak (3), Radan Huth (1,4)

(1) Institute of Atmospheric Physics, Prague, Czech Republic (dub@ufa.cas.cz), (2) Czech Hydrometeorological Institute, Prague, Czech Republic, (3) CzechGlobe - Center for Global Climate Change Impacts Studies, Brno, Czech Republic, (4) Dept. of Physical Geography and Geoeconomy, Faculty of Science, Charles University, Prague, Czech Republic

One of the downscaling approaches, which transform the raw outputs from the climate models (GCMs or RCMs) into data with more realistic structure, is based on linking the stochastic weather generator with the climate model output. The present contribution, in which the parametric daily surface weather generator (WG) M&Rfi is linked to the RCM output, follows two aims: (1) Validation of the new simulations of the present climate (1961-1990) made by the ALADIN-Climate Regional Climate Model at 25 km resolution. The WG parameters are derived from the RCM-simulated surface weather series and compared to those derived from weather series observed in 125 Czech meteorological stations. The set of WG parameters will include statistics of the surface temperature and precipitation series (including probability of wet day occurrence). (2) Presenting a methodology for linking the WG with RCM output. This methodology, which is based on merging information from observations and RCM, may be interpreted as a downscaling procedure, whose product is a gridded WG capable of producing realistic synthetic multivariate weather series for weather-ungauged locations. In this procedure, WG is calibrated with RCM-simulated multi-variate weather series in the first step, and the grid specific WG parameters are then de-biased by spatially interpolated correction factors based on comparison of WG parameters calibrated with gridded RCM weather series and spatially scarcer observations. The quality of the weather series produced by the resultant gridded WG will be assessed in terms of selected climatic characteristics (focusing on characteristics related to variability and extremes of surface temperature and precipitation).

Acknowledgements: The present experiment is made within the frame of projects ALARO-Climate (project P209/11/2405 sponsored by the Czech Science Foundation), WG4VALUE (project LD12029 sponsored by the Ministry of Education, Youth and Sports of CR) and VALUE (COST ES 1102 action).