



Validation of autocorrelations and higher-order statistical moments of surface temperature simulated by statistical downscaling and regional climate models on a dense grid over central Europe

R. Huth (1), J. Mikšovský (2), J.C. Moliba (1), P. Štěpánek (3), and Z. Chládová (1)

(1) Institute of Atmospheric Physics, Dept. of Climatology, Prague 4, Czech Republic (huth@ufa.cas.cz, +420 2 72763745),

(2) Dept. of Meteorology and Environment Protection, Charles University, Prague, Czech Republic, (3) Czech Hydrometeorological Office, Regional branch, Brno, Czech Republic

Several statistical downscaling methods (both linear and non-linear) and outputs from high-resolution (~ 10 km) regional climate models (Aladin-Climate/CZ and RegCM3) are examined as to their ability to simulate temporal and spatial autocorrelations and higher-order statistical moments for daily temperature. The validation is conducted on a dense regular grid with the approximate resolution of 10 km in central Europe, as well as on the dense network of stations. We show that neither statistical downscaling nor dynamical downscaling simulate the non-trivial statistical measures correctly and that each of them has its specific drawbacks, which may affect the applicability of their outputs in climate change impact studies. We also demonstrate that the gridded datasets may not reproduce non-trivial statistical measures, such as those employed in this study, correctly.