Geophysical Research Abstracts,
Vol. 11, EGU2009-4983, 2009
EGU General Assembly 2009

Changes in daily temperature variability over Europe from an ensemble of RCM simulations driven by several AOGCMs

G. Nikulin, E. Kjellström, and L. Bärring

Swedish Meteorological and Hydrological Institute, Rossby Centre, Norrköping, Sweden (grigory.nikulin@smhi.se)

Future climate scenarios show not only pronounced changes in the mean state but also changes in variability on different time scales. Together with the changes in the mean state, such changes in variability can modify frequency and intensity of weather extremes. In this study, applying an ensemble of regional climate model (RCA3) integrations driven by several AOGCMs, we investigate possible changes in daily temperature variability over Europe between recent (1961-1990) and future (2071-2100) climate under the SRES A1B scenario. As a measure of daily temperature variability we use the variance of daily temperature at the 2 meter level and separate the total variability into four components, namely: seasonal-cycle, interannual, intraseasonal and trend-induced variability. In winter, the total variability of temperature is significantly reduced over northern Europe and the Alps and the changes in the intraseasonal component strongly dominate, explaining about 80% of the total change. In summer, a distinct feature is an increase in the total variability over central and southern Europe where two main contributors to the total change are seasonal-cycle (50%) and intraseasonal (30%) components. Among the members of the ensemble the projected changes in the mean temperature have the same sign and similar spatial patterns but different magnitude. At the same time the projected changes in the temperature variability only in general show the same sign while both spatial patterns and magnitudes vary from model to model.