



## **Changes of temperature indices over Poland in an anthropogenic scenario for 2011-2030**

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The regional climate model RegCM3 with a local zoom over Poland is used to investigate potential future changes in temperatures indices in Poland in the period 2011-2030. Model is forced by ECHAM5/MPIOM GCM data downloaded from World Data Centre for Climate (WDCC) database in the 1970-1990 reference period and 2010-2030 projection period under SRES B1, A1B and A2 emission scenarios.

Model output statistics methods are used to transform simulated mean, minimum and maximum temperature data into realistic data. The analysis of changes is made on the basis of comparison of station data observed in the reference period 1971-1990 and averaged in 75 km radius around grid points and values projected by models for B1, A1B and A2 emission scenarios (Nakićenović et al., 2000) for the period 2011-2030 and corrected using presented MOS methodology. The averaged values are represented here by 50th percentile of appropriate PDFs, i.e. the median. For all scenarios selected indices of thermal extremes and their differences between the scenario simulations and the reference were calculated, both for the entire period and for each season.

There are significant differences between temperature projections obtained for different emission scenarios. The CO<sub>2</sub> emissions for different scenarios do not differ significantly for the period 2011-2030, so it can be assumed that differences in projections show rather the effect of initial conditions, because all other elements (GCM, RCM, domain, topography, land cover, temporal and spatial step) are the same. Basing on this assumption the ensembles consisting of three projections were made and the significance of differences between climate conditions projected for 2011-2030 and the reference climate (period 1971-1990 based on station data) was assessed. Change in climate was assumed to be significant if differences for all three simulation had the same sign. In the other case the change is treated as a manifestation of natural variability.