



Temperature and atmospheric circulation characteristics of a millennium-scale earth system model run over Central Europe.

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In this study we analyze a long term model Earth System Model integration covering the past 1000+ years in terms of general circulation characteristics as well as drought inducing weather types over Central Europe. We use the MPI-ESM and merged the CMIP5 Millennium run covering the period from 850-1850 with the historical run from 1850-2005. Furthermore we use a daily weather type reconstruction for the Alpine Region ranging from 1763-2009, precipitation and temperature observations from 1801-2010 as well as two temperature reconstructions covering the periods from 1005-2001 and 1500-2004 respectively.

The analysis is split into two parts: (i) investigating the skill of the MPI-ESM in terms of temperature and weather type evolution and (ii) assessing long term changes in weather type frequency with particular focus on drought inducing weather types. The skill assessment is carried out by trend and correlation analysis of the model against both reconstructed and observed temperatures during three different overlapping periods. Changes in weather type occurrence is investigated through frequency analysis with special focus on the evolution of anticyclonic (dry) weather type occurrence and the nexus to large scale temperature changes. Preliminary results indicate reasonable skill of the MPI-ESM regarding the temperature evolution with respect to reconstructions on multi-decadal to centennial time scales.