

Surface temperature and precipitation in the near future climate over Europe: changes in mean and extreme events

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The Regional climate model (RegCM) simulations were performed over Europe to investigate climate change in the near future. Simulations of present (1961-1990) and near future (2011-2040) climate are carried out for three ensemble members defined by the global coupled climate model ECHAM5-MPIOM. Future climate projection is done under the IPCC A2 emission scenario. Regional model domain covers a large part of Europe and northern Africa at 35 km horizontal resolution.

Climate change of surface temperature and precipitation is analysed in terms of mean, interannual variability and extremes. The results indicate an increase in surface temperature over the entire integration domain in all seasons, while precipitation change signal is spatially inconsistent. For daily precipitation further analysis is done by calculating changes in number of days with moderate (above 75th percentile) and heavy (above 90th percentile) precipitation. The largest number of consecutive dry days and the number of dry periods of more than 5 days are used to determine the changes in dry conditions. Similar to precipitation, changes in temperature extremes are analysed in terms of number of days when daily mean temperature is below 10th percentile (cold days) and number of days when daily mean temperature is above 90th percentile (warm days).