Project objectives

The overall aim of this project is to assess the impact of climate change at the regional to local scale for the territory of Central, Eastern and Southern Europe, with emphasis on using very high resolution in order to capture the effects of the complex terrain of the region. From the viewpoint of climate scenario production, this goal will be achieved through a strategy of multiple and combined approaches, namely variable resolution models, RCMs and statistical downscaling methodologies. The primary tools, however, will be very high resolution RCMs run locally for targeted areas. From the impact viewpoint, the most important sectors for the economies and welfare of individual countries will be selected.

Workpackages

WP1: Assessment and provision of climate change information for downscaling and impacts

WP2: Regional climate modelling experiments

WP3: Statistical downscaling, model verification and output localization

WP4: Climate change and extreme events

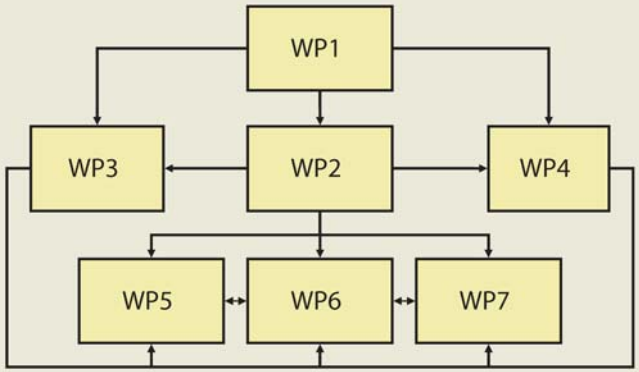
WP5: Climate change impacts in hydrology and water management

WP6: Climate change impacts on agriculture and forestry sectors

WP7: Climate change impacts on air quality and health

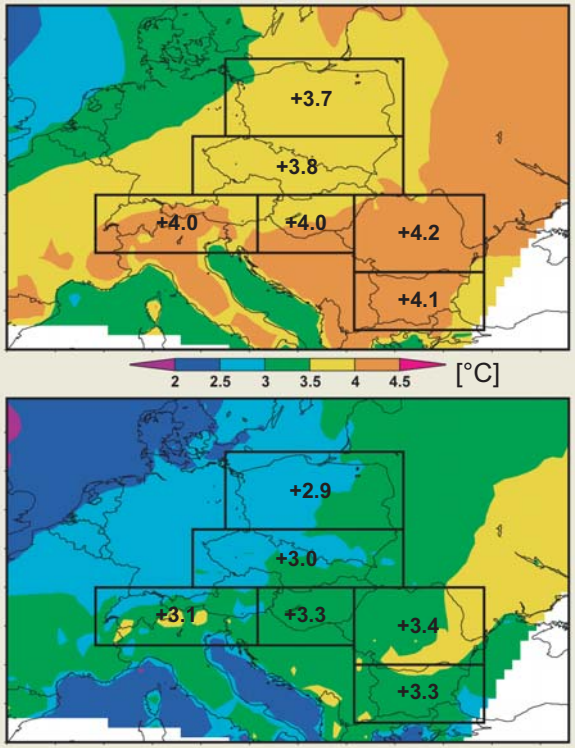
WP8: Management, data reporting and dissemination

Workpackage interaction



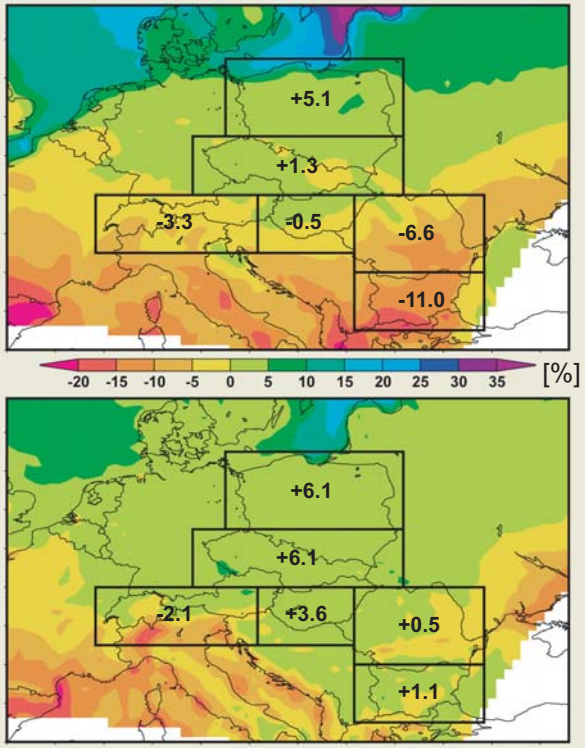
Preliminary results - temperature

PRUDENCE model ensemble-based change of temperature (°C) in 2071-2100 relative to 1961-1990 in the CECILIA target areas for emission scenarios A2 (upper panel) and B2 (lower panel).



Preliminary results - precipitation

PRUDENCE model ensemble-based change of precipitation (%) in 2071-2100 relative to 1961-1990 in the CECILIA target areas for emission scenarios A2 (upper panel) and B2 (lower panel).



Project summary

The main objective of CECILIA is to deliver a climate change impacts and vulnerability assessment in targeted areas of Central and Eastern Europe. Emphasis is given to applications of regional climate modelling studies at a resolution of 10 km for local impact studies in key sectors of the region. The project contains studies of hydrology, water quality, and water management (focusing at medium-sized river catchments and the Black Sea coast), air quality issues in urban areas (Black Triangle - a polluted region around the common borders of the Czech Republic, Poland and Germany), agriculture (crop yield, pests and diseases, carbon cycle), and forestry (management, carbon cycle). Very high resolution simulations over this region are necessary due to the presence of complex topographical and land use features. Climate change impacts on large urban and industrial areas modulated by topographical and land-use effects which can be resolved at the 10 km scale, are investigated by CECILIA. The high spatial and temporal resolution of dense national observational networks at high temporal resolution and of the CECILIA regional model experiments will uniquely feed into investigations of climate change consequences for weather extremes in the region under study. Comparison with the results based on statistical downscaling techniques will also be provided. Statistical downscaling methods for verification of the regional model results will be developed and applied, and assessments of their use in localization of model output for impact studies will be performed.