# CECILIA - EC FP6 Project on the Assessment of Climate Change Impacts in Central and Eastern Europe

**T. Halenka**

Charles University in Prague, Fac. of Mathem. and Physics, Dept. of Meteorology and Environment Protection (tomas.halenka@mff.cuni.cz)

Global Circulation Models (GCMs) can reproduce climate features on large scales, but their accuracy decrease when proceeding from continental to regional and local scales because of the lack of resolution. This is especially true for surface fields, such as precipitation, surface air temperature and their extremes, which are critically affected by topography and land use. However, in many applications, particularly related to the assessment of climate-change impacts, the information on surface climate change at regional to local scale is fundamental. To bridge the gap between the climate information provided by GCMs and that needed in impact studies, several approaches have been developed. The presented project is based on the principles of dynamical downscaling, i.e., nesting of a fine scale limited area model (or Regional Climate Model, RCM) within the GCM. This approach is more correct from a physical point of view, but much more demanding on computer resources, than statistical downscaling using statistical relationships between large-scale fields and local surface climate elements.

In the region of central and eastern Europe the need for high resolution studies is particularly important. This region is characterized by small scale topographical patterns that significantly affect the local climate conditions. A resolution sufficient to capture the effects of these topographical and associated land-use features is necessary, that is why 10 km resolution has been introduced in new project CECILIA proposed for the 4th call of EC FP6. Based on regional climate modelling studies in targeted areas of Central and Eastern Europe at a resolution of 10 km local impact studies are planned in key sectors of the region like hydrology, water quality, and water management, air quality issues, agriculture and forestry. 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 regions 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.