



## **Regional Climate Modeling at ZAMG and climate impact assessment for European ecosystems**

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The Austrian society, policy, economy and environment request information on changes in the climate during the last years and especially for the near and remote future. Floodings, landslides, snow avalanches and storms belong to the natural hazards that highly impact Austria's socio-economic and environmental systems.

In addition to already applied empirical regional modeling at ZAMG there was started dynamical regional climate modeling (RCM) with the COSMOS-CLM (CCLM, <http://www.clm-community.eu/>) at ZAMG in 2009.

The main objective of the Austrian national project "reclip:century" (in cooperation with other Austrian Institutes) is to provide high resolved data sets of climate simulations for the GAR. A one-way double nesting approach is used. The domain used in the first step is Europe with a spatial resolution of  $0.44^\circ$  (50km). Within this simulation the GAR domain is nested having a resolution of  $0.09^\circ$  (10km). The output of these simulations will be evaluated within the project EVACLIM. This is to be done by comparing the output with a variety of regional scale observational datasets. The results of the simulations will be made available to the impact community.

Within the international based project HABIT-CHANGE 10km-resolution climate scenarios will be generated. The data sets produced for two different regions the GAR and the Danube Delta – shall be used as a basis for the work of hydrology modelers and for the development of strategies for adaptation and mitigation

Based on the CCLM simulations at ZAMG of about  $0.03^\circ$  (4km) spatial resolution for the Northeast of Austria, the project DISTURBANCE aims to develop integrated models for temperate Alpine forest ecosystems. Important tasks for the forest modeling are not only the assessment of changes in temperature, drought and windstorms but also the interactions between wind damages and bark beetle development which might impact the forest structure and its composition of species.

In the project DATAPHEN, CCLM is nested into several GCM hindcast runs covering Central Europe. The GCM simulations are driven by various combinations of natural and anthropogenic forcings. The results from the RCM simulations are used by a phenological model that helps to quantify the anthropogenic impact on the phenological development within Central Europe. The output will be compared to long-term observational data sets from e.g. phenological gardens distributed all over Europe

In the presentation we will give an overview of the regional climate model simulations carried out at ZAMG and the connections to the end users and impact researchers.