

Continuously on-going regional climate hindcast simulations for impact applications

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Observational data for e.g. temperature, precipitation, radiation, or wind are often used as meteorological forcing for different impact models, like e.g. crop models, urban models, economic models and energy system models. To assess a climate signal, the time period covered by the observation is often too short, they have gaps in between, and are inhomogeneous over time, due to changes in the measurements itself or in the near surrounding. Thus output from global and regional climate models can close the gap and provide homogeneous and physically consistent time series of meteorological parameters.

CORDEX evaluation runs performed for the IPCC-AR5 provide a good base for the regional scale. However, with respect to climate services, continuously on-going hindcast simulations are required for regularly updated applications.

The Climate Research group at the national Austrian weather service, ZAMG, is focusing on high mountain regions and, especially on the Alps. The hindcast-simulation performed with the regional climate model COSMO-CLM is forced by ERAinterim and optimized for the Alpine Region. The simulation available for the period of 1979-2015 in a spatial resolution of about 10km is prolonged ongoing and fulfills the customer's needs with respect of output variables, levels, intervals and statistical measures.

One of the main tasks is to capture strong precipitation events which often occur during summer when low pressure systems develop over the Golf of Genoa, moving to the Northeast. This leads to floods and landslide events in Austria, Czech Republic and Germany. Such events are not sufficiently represented in the CORDEX-evaluation runs.

ZAMG use high quality gridded precipitation and temperature data for the Alpine Region (1-6km) to evaluate the model performance. Data is provided e.g. to hydrological modellers (high water, low water), but also to assess icing capability of infrastructure or the calculation the separation distances between livestock farming and residential area.