



## **From daily to sub-daily time steps – Creating a high temporal and spatial resolution climate reference data set for hydrological modeling and bias-correction of RCM data**

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The ClimEx project (Climate change and hydrological extreme events – risks and perspectives for water management in Bavaria and Québec) focuses on the effects of climate change on hydro-meteorological extreme events and their implications for water management in Bavaria and Québec. It builds on the conjoint analysis of a large ensemble of the CRCM5, driven by 50 members of the CanESM2, and the latest information provided through the CORDEX-initiative, to better assess the influence of natural climate variability and climatic change on the dynamics of extreme events.

A critical point in the entire project is the preparation of a meteorological reference dataset with the required temporal (1-6h) and spatial (500m) resolution to be able to better evaluate hydrological extreme events in mesoscale river basins. For Bavaria a first reference data set (daily, 1km) used for bias-correction of RCM data was created by combining raster based data (E-OBS [1], HYRAS [2], MARS [3]) and interpolated station data using the meteorological interpolation schemes of the hydrological model WaSiM [4]. Apart from the coarse temporal and spatial resolution, this mosaic of different data sources is considered rather inconsistent and hence, not applicable for modeling of hydrological extreme events. Thus, the objective is to create a dataset with hourly data of temperature, precipitation, radiation, relative humidity and wind speed, which is then used for bias-correction of the RCM data being used as driver for hydrological modeling in the river basins. Therefore, daily data is disaggregated to hourly time steps using the 'Method of fragments' approach [5], based on available training stations. The disaggregation chooses fragments of daily values from observed hourly datasets, based on similarities in magnitude and behavior of previous and subsequent events. The choice of a certain reference station (hourly data, provision of fragments) for disaggregating daily station data (application of fragments) is crucial and several methods will be tested to achieve a profound spatial interpolation. This entire methodology shall be applicable for existing or newly developed datasets.

### References

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