

**“Spatial and Temporal Scales and Mechanisms of Extreme Precipitation Events over Central Europe (STAMMEX)”**

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**Summary**

This project is focused on the quantitative estimation and mechanisms of variability of extreme precipitation. Our main task is to estimate long-term variability of extreme precipitation over Central Europe from high quality observations and to identify the major mechanisms of the observed changes. In particular, we will use the unique high density rain gauge daily observations of the DWD network covering Germany for the period from 1880 onwards. Using these data we will design homogenized gridded daily data set with spatial resolutions of 0.05-0.2 degree for 1880-2007. On that basis we will develop an ensemble of extreme precipitation statistics using known and newly developed statistical techniques based on the analysis of probability distributions of daily precipitation. This will allow us to obtain estimates of long-term variability of seasonal and possibly monthly extreme precipitation over Central Europe. These estimates will then be associated with cyclone activity, cyclone life cycle parameters, atmospheric moisture transport and regional moisture recycling. We will quantify the role of large-scale circulation conditions and local processes in long-term variability of extreme precipitation in order to establish predictability limits of extreme precipitation for different seasons over Germany. The project results will contribute to the improvement of seasonal and longer scale prediction of extreme weather to enable a more effective risk assessment and water management in Central Europe.