Decadal variability of flood triggering extreme precipitation events

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Floods are one of the main natural hazards affecting Central Europe and may lead to widespread damage, disruption and loss of life. In terms of atmospheric processes floods are mainly caused by enduring heavy precipitation events and by raising temperature in early spring leading to strong snow melt. The objective of this project is thus to produce realistic highly resolved historical precipitation and temperature time series to assess flood triggering precipitation events. The meteorological time series are planned to be used at a later stage as boundary conditions for a hydrological discharge model to investigate flood risks in Central Europe. The analysis focuses on the Danube, Rhine, Elbe, Oder, and Vistula catchments. The precipitation and temperature time series required for the analysis and for the discharge model will be simulated with the regional climate model COSMO-CLM (CCLM) using reanalysis data as boundary condition. The resulting time series are validated against observations, and different bias correction methods are employed. This will permit an estimation of the decadal variability of flood producing heavy precipitation events for Central Europe and their implications to the hydrological conditions in the different river catchments.