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Climate of the Carpathian Region - summary of the CarpatClim project

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Joint Research Centre (Ispra) published a tender call in June 2010. A consortium of 10 organisations won the service and began the work by 22 December 2010. The first message to the scientific community about the project was the EMS/ECAM 2010. Two years passed since then. During that time the tender service fulfilled. The EMS/ECAM 2013 is a good opportunity to show the results. The CarpatClim project ended 22 March 2013. The project structure, methodology and final outcomes are presented in this paper.
The main aim of the CarpatClim project is to improve a joint climate data source and data access in the Carpathian region for regional climate studies and several applications. The CarpatClim investigates fine temporal and spatial structures of the climate in the Carpathian Mountains and the Carpathian basin with unified methodology. The results are $0.1°(\sim 10 \times 10$ km) resolution gridded daily time series of various basic meteorological variables: daily mean, minimum and maximum temperature, precipitation, wind direction, wind speed, sunshine duration, cloud cover, global radiation, relative humidity, surface vapour pressure, surface air pressure and several climate indicators on different time scales from 1961 to 2010.
The target area is partly includes the territory of Czech Republic, Slovakia, Poland, Ukraine, Romania, Serbia, Croatia, Austria and Hungary. Uniform process of data homogenization was crucial due to the fact that significant differences might be occurred between the measurements and data handling of participant countries during the examined fifty-year-long period. The commonly used method for data homogenization and quality control in the project was the MASH (Multiple Analysis of Series for Homogenization; Szentimrey) procedure.
Interpolation of the homogenized time series was carried out by applying the MISH (Meteorological interpolation based on surface homogenized data basis; Szentimrey and Bihari) method. The MISH method is developed for interpolation of meteorological data, and an adequate mathematical background was also developed for the purpose of efficient use of all the valuable meteorological and auxiliary model information.
The tender service was accomplished in three modules. Module 1 focused on improving the availability and accessibility of homogeneous and spatially representative time series of climate data for the Carpathian Region through data rescue, quality control, and data homogenization. The activities in Module 2 ensured data harmonization with special emphasis on cross-border harmonization and production of gridded values for each country. A digital Climate Atlas as a basis for climate assessment and further applied climatological studies was developed in Module 3.
CarpatClim project improves the digital data basis at national meteorological services in the Carpathian region, and facilitates access to derived gridded climatological datasets by the wider scientific community.