



Comparison of E-OBS and CARPATCLIM gridded datasets by Analysis of Variance (ANOVA) method

Monika Lakatos, Tamas Szentimrey, Beatrix Izsak, and Lilla Hoffmann
Hungarian Meteorological Service, Climate Division, Budapest, Hungary (lakatos.m@met.hu)

Various observational datasets are available to provide background for climate studies and for derivation of climate information for a specific area.

Gridded data sets derived through interpolation of station data. A high-resolution gridded data set of daily climate data over Europe E-OBS is based on the largest available pan-European data set. The E-OBS gridded data set was derived through interpolation of the ECA&D (European Climate Assessment and Data) station data. One of the source of uncertainty of a gridded data is related to the available station data and the other is the interpolation method were used for estimation of the grid values from the underlying station network.

Beside the pan European datasets a high resolution climate dataset is available for the Carpathian Region. The CARPATCLIM dataset consists of a 0.1° spatial resolution homogenized (MASH, Szentimrey), harmonized and gridded (MISH, Szentimrey and Bihari) dataset on daily scale for basic meteorological variables and several climate indicators, 37 in total, on different time scales from 1961 to 2010. The area of CARPATCLIM partly includes the territory of the Czech Republic, Slovakia, Poland, Ukraine, Romania, Serbia, Croatia, Austria and Hungary. 415 climate stations and 904 precipitation stations were homogenized and interpolated to a grid covering the Carpathian Region.

For the comparison of E-OBS and CARPATCLIM datasets we applied the general statistical methodology of Analysis of Variance (ANOVA). This methodology can be used and developed effectively for the characterization of the statistical properties of several spatiotemporal datasets like CARPATCLIM and E-OBS. Station data or gridded datasets with different spatial resolution can be compared by analysing the spatiotemporal means and variances. This methodology also has been built in the modelling part of method MISH in order to evaluate the modelling results.

In this paper the statistical properties of the CARPATCLIM and E-OBS gridded datasets are compared for the Carpathian Region on different time scales. Seasonal, annual average maximum temperatures, minimum temperatures and precipitation sums are examined for the overlapping regions of E-OBS and CARPATCLIM in the period of 1961-2010.