



Impact of regional station density on different versions of the E-OBS gridded dataset

Petr Skalak (1,2), Jan Meitner (1), Petr Štěpánek (1,2), Pavel Zahradníček (1,2)

(1) Global Change Research Institute AS CR, Brno, Czech Republic (skalak.p@czechglobe.cz), (2) Czech Hydrometeorological Institute, Praha, Czech Republic

The E-OBS gridded dataset of station observations is considered as the best dataset of gridded station measurements of air temperature and precipitation on the continental European scale. The quality of the dataset is closely related to the quality and availability of underlying stations observation taken from the ECA&D database and provided by various data owners, mainly European national meteorological services. The past studies of Kyselý and Plavcová (2010) or Beranová et al. (2010) showed that E-OBS may suffer from insufficient density of stations in the correct description of extreme rainfall and temperatures. At the time of these studies, E-OBS was based on 17 stations in the Czech Republic, the region where both studies were focused on. Since then the number of Czech stations in ECA&D was firstly increased to 38 and later again to 89, respectively 103 for precipitation. There were also major station extensions in Germany and Poland.

The goal of the presented study is to compare several E-OBS versions released before and after two ECA&D data extensions by Czech Hydrometeorological Institute (CHMI) with a gridded dataset based on total 268 (787) CHMI stations recording air temperature (precipitation) to illustrate what is the impact of ECA&D station density on the quality of E-OBS. Unlike the E-OBS dataset, CHMI dataset is based on quality controlled, homogenized and gap filled station records. The comparison is performed in three regions / altitude belts (lowlands of Central Bohemia, the Bohemian-Moravian Highlands and mountains of Bohemian Forest) covering the period 1961-1990. Furthermore we also compare selected stations with the nearest E-OBS grid point. The main attention of the comparison is devoted to extreme values in both datasets.