Long term climate reconstruction and analyses in Ljubljana

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EARS is a partner in FORALPS, an INTERREG project with full name *Meteo-Hydrological Forecast and Observations for improved water Resource management in the ALPS*. Within working group 5, Dataset: assessment of climatic trends at regional scale, EARS wants to improve the quality of climatological database with long, homogenous data series. Meteorological data for Ljubljana were first in process.

In this task several steps were done. Firstly history of measurements in Ljubljana and related metadata were reconstructed as detailed as it was possible. Secondly digitalisation of meteorological data from first years of measurements on meteorological station Ljubljana and neighbour stations was made. First two steps were the basis for homogenisation of meteorological data. Afterwards some climate analyses for Ljubljana were done.

Instrumental measurements in Ljubljana have begun in March 1850. From the beginning till year 1948 the main problems were:

- several locations of meteorological station (from 1850 till 1948 meteorological station changed seven locations),

- non-standard observation time,

- non-standard measurement units (Paris line for precipitation),

- insufficient documentation of metadata,

From 1948 on the meteorological station in Ljubljana has been on the same location, the problem is changing the surrounding of station (growth of the city of Ljubljana).

Homogenisation has been done on average monthly temperature and monthly sum of precipitation. Craddock homogeneity test was used and its results were downscaled to daily adjustments. Several inhomogeneities were found and adjusted. On such data series climate indices were computed and compared with nonhomogenised data. Results were quite different.