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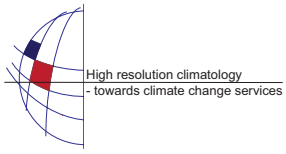

Temperature and precipitation extremes in Piedmont (North-West Italy) from 1937 to 2008

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This work analyzes the maximum and minimum temperature and precipitation series from some meteorological series in Piedmont. The meteorological stations have been chosen because they have been meteorological observatories operating continuously since 1937 for 72 years.
Firstly an historical research on each station has been carried out. In this way, the potential breaks in the series, either due to changes of location or instruments, have been determined. The Hydrographic Annals, where the geographical coordinates of each station (latitude, longitude and elevations) were recorded every year, and the paper registers, where the observers recorded any changes or malfunctioning of the instruments, have been consulted.
On the daily series the quality control has been effectuated using RClimDex program (Zhang et al., 2004). The software allows to identify the outliers caused by an incorrect reading or by a wrong transcription of the original paper.
Finally the PRODIGE program (Mestre et al. 2004) for the monthly series homogenization has been applied to evaluate the homogeneity of each series. In this way we have selected the homogeneous series on which climate indexes have been computed.
We have selected 12 climate extremes indexes: 8 temperature indexes and 6 precipitation indexes. The temperature indexes describe cold and warm extremes while the precipitation indexes describe wet extremes. They are defined crossing a percentile thresholds because the value of the thresholds is site specific and allow for spatial comparison. The trends on the extreme indices have been computed.
In order to better understand the consequences of climate variations on our environment and society, we have calculated over the analyzed period, from 1937 to 2008, and over the reference period, from 1961 to 1990, the pluviometric regimes and polygons of Balseinte for precipitation series and the seven temperature curves and thermogram for the temperature. In order to correlate the two variables we have applied the ombrothermal curves (Gaussen, 1955) and climographs by using the Péguy grid (Péguy, 1970).
The series also allowed to begin the climatic analysis to define the main local climates in Piedmont and to identify the principal variations in the two periods.