

Mattia Marchio - History and analysis of the precipitation series of Trento (1919-1993)

Abstract

In climate research it is important to have access to reliable data which are free from artificial changes. One way of checking the reliability of a climate series consists in comparing it with surrounding stations by using homogeneity tests. The homogenisation is needed in order to remove possible discontinuities arising from non climatic factors, such as changes in the observer, instruments, observing times and in methods of observations. The reconstruction and the analysis of a long series of precipitation data measured in Trento is presented. The data was collected from the archive of the San Bernardino's friary, which has a dataset covering the period 1919-1993. For the data validation observations from the station of Laste (also located in Trento) were used as reference series. By application of the Craddock Homogeneity Test discontinuities were detected. Moreover, the correlation between the test series (San Bernardino) and the reference series (Laste) was calculated, in order to fill the data gaps of San Bernardino. Finally, an accurate analysis of annual and seasonal evolution of precipitation patterns was carried out, also by using the so called climate index of precipitation, to individuate any significant trend. Trends were found in the Intensity of the rain index (SDII), with a slight increment with a slope $p \leq 0.03$, and in the Maximum daily precipitation (RX1day), with a slope of $p \leq 0.1$.