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Thermometric and pluviometric trend on homogeneous series in Piedmont and definition of local climates

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The study of the temperature and precipitations deserves great attention because being part of a recent past, they allow us to analyze in detail the variations which have occurred and their causes.

In order to correctly study these variations we must have at our disposal some homogeneous series (MAUGERI ET AL., 2006; PETERSON ET AL., 1998). In this report, we have studied the daily thermo - pluviometric series of 21 meteorological stations in Piedmont. The meteorological stations, belonging to ex-SIMN (Hydrographic and Marigraphic National Service), have been operating with continuity during 53 years, from 1951 to 2003.

Then we have reconstructed the monthly series and we have applied the homogeneity test SNHT (ALEXANDERSSON ET AL., 1997). This method allows to estimate and individuate the gradual or sudden change of the average value of a particular series comparing it to the reference series which has been obtained by evaluating the result of the adjacent series and which is considered homogeneous.

We have reconstructed some monthly amounts for creating a serially complete (no missing data). We have chosen four different methods of spatial interpolation (EISCHEID ET AL., 1995; EISCHEID ET AL., 2000). These are defined as the 1) normal ratio method (NR), 2) simple inverse distance weighting (IDW), 3) multiple regression (MR) and 4) median of the previous tree method (MED).

We have enforced the homogeneity test (SNHT) to climate data set and have detected and adjusted several inhomogeneities that correspondents to the factor that make these

data unrepresentative of the actual climate variation occurring over time.

These method have afforded to estimate the real trend on every series. The non-parametric Mann-Kendall (MK) statistical test has been used to assess the significance of trend on thermo-pluviometric time series.