



ANALYSIS OF ITALIAN PRECIPITATION REGIMES WITH REFERENCE TO EXTREME EVENTS.

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Global warming was suggested to be linked with the recent increases of heavy daily rainfall due to the increased atmospheric water vapour and warmer air (IPCC, 1995).

This paper describes different approaches to trends analysis and illustrates their application to the exploratory analysis of changes in precipitation extremes in Italy from 1951 to 2000. These approaches are applied to a data set consisting of 70 station records covering the Italian territory, chosen for the higher (more than 97%) data availability.

The heavy rainfall analysis project has been mainly devoted to two topics:

1. a comparison both in frequency and intensity of extreme events between two periods (1951-1975 and 1976-2000)
2. trend analysis of annual rainfall distribution into different bins, especially referred to higher ones and extreme events.

Extreme events are basically examined through a descriptive methodology, meaning as next step the use of statistics of extreme (GEV distribution).

Considering the annual or the seasonal analysis, results indicate that in the last twenty-five years, the 74% (the 71%) of stations present an increase of extreme events fre-

quency (intensity). On the whole, more than half stations present a contemporary frequency and intensity increase.

In regard to the trend analysis of annual rainfall distribution into different bins, first results seem to confirm an extreme events' increase, even though a rainfall total amount decrease on long period.

Moreover, we investigate heavy rainfalls according to 10 minutes data resolution to more fully describe how precipitation has changed or varied. By this purpose, time series data of precipitation surveyed by RAN (*Rete Agrometeorologica Nazionale*) have been used. Available data sets are from 1993 to 2003 and it is necessary to underline that the shortness of the period can't permit a rigorous statistical analysis, nevertheless it provides an important information in order to explain climatological features of Italy's precipitation framework.