



Damage caused by hydrological extremes in a region of southern Italy: comparison between the period 2002-2012 and the past century

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The concept of extreme hydrological event should be seen in a relative way, depending on the region for which it is defined, the parameters and the type of data utilized to assess it, and mainly taking into account the length of the period basing on which it is assessed. Measured data concerning rainfall and river flow, which allow statistical analysis of numerical values and assessment of events frequency, can be available for different periods, according to both the study area and the country; nevertheless, the length of the measurement series rarely exceeds 100 years. Thus, the extrapolation to the future of events trend, frequency, seasonality are based on a relatively short and recent period and even the “magnitude” and the classification of “extreme events” can be biased by the length of the observation period. Thus these characteristics may substantially change if their assessment is based on a wider temporal window. Especially in un-gauged basins and concerning severest events, historical data cannot provide systematically measured parameters but they can supply proxy data which allow enlarging the observation period, permitting a better weighing of both recent and old events.

The present research is based on the use of a wide historical database concerning phenomena as floods, flash floods and landslides triggered by extreme meteorological events in Calabria (Southern Italy) since 19th century. This database is made of approximately 11,000 records and it includes data coming from different sources as newspapers, archives of national and regional agencies, scientific and technical reports, on-site surveys reports and information collected by interviewing both people involved and local administrators. The recent uploading of data concerning the effects caused in Calabria by these phenomena during the decade 2002-2012 allowed us to analyse a long and updated historical series of events. The aim is to compare -both in terms triggering rainfall and their effects- events magnitude and frequency characterising the last decade to those observed during past decades, even taking into account the lower data availability characterising older epochs. Using the huge amount of available data, an attempt to individuate the typical damage scenario for the study region is carried out, trying to highlight the trend of modifications affecting these events thorough the study period, in an evolutive perspective that can be useful to forecast tendencies of the hydrological risk on a regional basis.