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Modifications of natural hazard impacts and hydrological extremes in previous centuries (Southern Italy)

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The present work is based on the use of a wide historical database concerning floods and landslides which occurred in Calabria, a region of southern Italy, since the seventeenth century, and including more than 11,000 records. This database has been built by collecting data coming from different information sources as newspapers, archives of regional and national agencies, scientific and technical reports, on-site surveys reports and information collected by interviewing both people involved and local administrators. This database has been continuously updated by both the results of local historical research and data coming from the daily survey of regional newspapers. Similarly, a wide archive of rainfall data for the same period and the same region has been implemented.
In this work, basing on the abovementioned archives, a comparative analysis of floods that occurred in a regional sector over a long period and the climatic data characterizing the same period has been carried out, focusing on the climate trend and aiming to investigate the potential effect of climate variation on the damaging floods trend. The aim was to assess whether the frequency of floods is changing and, if so, whether these changes can be related to either rainfall and/or anthropogenic modifications. In order to assess anthropogenic modifications, the evolution of urbanized sectors of the study area in the last centuries has been reenacted by mean of comparisons, in GIS environment, of historical maps of different epochs.
The annual variability of rainfall was discussed using an annual index. Short duration-high intensity rainfalls were characterized considering time series of annual maxima of 1, 3, 6, 12, and 24 hours and daily rainfall.
The analysis indicates that, despite a rainfall trend favorable towards a reduction in flood occurrence, floods damage has not decreased. This seems to be mainly the effect of mismanagement of land use modifications. Moreover, the long historical series analyzed allowed us to individuate both the most frequently damaged elements and the frequently damaged geographical sectors of the study area, even with a further in depth on the cases involving people in urbanized sectors.