



## **Design hydrograph estimation based on regional analyses**

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The possibility of correctly design flood control reservoirs or to assess the flood-related hazard in urban and industrial areas is strictly connected to the availability of the data of flood hydrographs at the river sections of interest. This information is generally not available, because of the scarcity of streamgauge stations with long-term statistics and the lack of data for most of sections of effective interest. Because of the flood data scarcity, regionalization techniques are requested to overcome the problem. A quite efficient methodology for describing the flood volumes is that based on the concept of flood duration-frequency reduction curves, extensively adopted by NERC since 1975. This methodology was investigated in depth during the end of the past century and also developed till now. With regards to the temporal distribution of discharges, the concept of design hydrograph is recently adopted by some authors. The paper presents the results of an extensive research aimed to a regional estimation, based on geomorphological parameters, of a flood reduction curve model previously proposed by Bacchi et al.(1992), jointly with a design hydrograph construction procedure proposed by Majone et al. (2003), similar to the one generally adopted for the design storm. Some applications of this methodology show its usefulness for many cases of practical interest.