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Effect of different runoff thresholds on the theoretical probability distribution of floods

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The characterization of non-linearities of the flood generation process is crucial within the study of probability distribution of flood. Different runoff generation mechanisms are triggered by threshold which are investigated with the aim of improving the understanding of flood frequency distribution. In particular, we find that the activation of different runoff thresholds by rainfall events may produce sensible increase of skewness. In this work the flood annual maximum cdf was obtained, based on the concept of variable runoff contributing area, and was used to distinguish between the probability of occurrence of flood events generated by different runoff generation mechanisms. Particular attention was paid to improve the knowledge about the relationships between physical and hydrological basin features and model structure, with the aim of improving prediction in ungauged basins. The model was applied to basins located in Southern Italy characterized by high skewness.