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A sensitivity analysis on the TCIF model

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Recent developments on theoretically derived distributions have highlighted the role of dominant runoff generation mechanisms as key signatures for providing insights in hydrologic similarity. Gioia et al (2008) introduced a novel distribution of flood peak annual maxima, named TCIF, based on two different threshold mechanisms, associated respectively to ordinary and extraordinary events. Indeed, ordinary floods are mostly due to rainfall events exceeding a threshold infiltration rate in a small source area, while the so-called outlier events, responsible of the high skewness of flood distributions, are triggered when severe rainfalls exceed a threshold storage in a large portion of the basin. Within this scheme, a sensitivity analysis is performed in order to provide insights in catchment classification and process conceptualization.

Gioia, A., V. Iacobellis, S. Manfreda, M. Fiorentino, Runoff thresholds in derived flood frequency distributions, Hydrol. Earth Syst. Sci., 12, 1295–1307, 2008.