

Analysis of magnitude and duration of floods and droughts in the context of climate change

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Research and scientific information are key elements of any decision-making process. There is also a strong need for tools to describe and compare in a concise way the regime of hydrological extreme events in the context of presumed climate change. To meet these demands, two complementary methods for estimating high and low-flow frequency characteristics are proposed. Both methods deal with duration and magnitude of extreme events. The first one “flow-duration-frequency” (known as QdF) has already been applied successfully to low-flow analysis, flood flows and rainfall intensity. The second one called “duration-flow-frequency” (DqF) was proposed by Strupczewski et al. in 2010 to flood frequency analysis. The two methods differ in the treatment of flow and duration. In the QdF method the duration (d-consecutive days) is a chosen fixed value and the frequency analysis concerns the annual or seasonal series of mean value of flows exceeded (in the case of floods) or non-exceeded (in the case of droughts) within d-day period. In the second method, DqF, the flows are treated as fixed thresholds and the duration of flows exceeding (floods) and non-exceeding (droughts) these thresholds are a subject of frequency analysis. The comparison of characteristics of floods and droughts in reference period and under future climate conditions for catchments studied within the CHIHE project is presented and a simple way to show the results to non-professionals and decision-makers is proposed.

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Strupczewski, W. G., Kochanek, K., Markiewicz, I., Bogdanowicz, E., Weglarczyk, S., & Singh V. P. (2010). On the Tails of Distributions of Annual Peak Flow. *Hydrology Research*, 42, 171-192. <http://dx.doi.org/10.2166/nh.2011.062>