



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.

The work was undertaken within the project “Climate Change Impacts on Hydrological Extremes (CHIHE)”, which is supported by the Norway-Poland Grants Program administered by the Norwegian Research Council. The observed time series were provided by the Institute of Meteorology and Water Management (IMGW), Poland.

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>