



Analysis of short-term rainfall time structure by concentration indexes

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We suggest a methodology which enables to design storm hyetographs in several variants with respect to the time structure of rainfall episodes. Reference episodes are extracted from radar-derived precipitation time series with time resolution of 10 minutes, adjusted by daily data from rain gauges. Six clusters are distinguished by means of three indexes which quantify precipitation concentration within time steps from six to one hour. For individual clusters, the average course of precipitation intensity is expressed with synthetic hyetographs called camel hyetographs because of their typical shapes. One determined cluster represents steady precipitation intensity during the whole episode, three others distinguish variants of more concentrated episodes; two remaining clusters collect altogether 20 % of episodes which are characterized by a substantial temporary decrease of precipitation intensity or even its interruption during the episode. Next, the episodes are disaggregated with respect to the precipitation intensity into main 30-minute sections and adjacent side sections. Averaging of characteristics of the sections provides the means for designing a storm hyetograph for each of the clusters separately. Future research on frequencies of the clusters among maximum precipitation totals in various regions will enable to improve design hydrographs of small streams where runoff is basically influenced by the rainfall time structure.