

Regionalization of flood hydrograph parameters in the Kolubara River Basin

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The Kolubara River basin is located in the western part of Serbia. There are several hydrological and rainfall gauging stations in the basin, while a large part of the basin is ungauged. In recent years in this area floods have been a common occurrence, so it is necessary to improve the system of flood protection. The research that is presented in this study represents a hydrological aspect to strengthening flood protection.

This study presents the procedure of regionalization of basic flood hydrograph parameters in the Kolubara river basin. All significant observed flood waves in the basin over the past 50 years were collected, assimilated and analyzed. In this research, the method applied was based on the separation of flood hydrograph parameters, for each hydrological station: time to peak (time from the beginning of the hydrograph to its peak) (T_p), time of recession (time from the peak to the end of the recession limb) (T_r), retention time of rainfall in the catchment (t_p) and time of concentration (T_c). Using these parameters and morphological characteristics of the basin, such as catchment area, the distance weighted channel slope, length of the main stream, the distance of the center of basin to the profile of each hydrological stations, regional dependencies were established.

Parameters of flood hydrograph were analyzed as dependent variables, while the morphological characteristics of the basin represent independent variables. The final goal of this work is to use the obtained regional dependence for flood hydrograph parameter estimation at ungauged locations, with the end goal of improving flood protection in the Kolubara river basin.