

A new approach in using Rational method through GIS framework

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Predicting the peak flood discharge for ungauged rivers has always been one of the main concerns in applied hydrology. When dealing with small drainage areas, a common procedure for determining the peak flow is the Rational method.

Throughout the years, a number of well-known researchers managed to adapt the parameters of this method to fit the runoff regime in Romanian rivers. Due to the technological restrictions of the period in which these factors have been analyzed, identifying the values for each of the parameters of this method was done by approximating the location of the drainage area on a paper map, manually calculating the drainage area, the river length, the slope of the basin a.s.o. This approach proved to be both somewhat inaccurate and, most of all, time-consuming.

Modern GIS-based software provides the necessary tools for digitizing all those parameter maps along with the characteristics of the river and its drainage area. This paper provides the necessary steps for creating the necessary parameter layers, an automated method for calculating each parameter value and an easy way to transpose them in the Rational formula.