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Influence of time step of precipitation input data sets on simulated hydrograph shape.

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Analysis main task was to assess influence of time step of precipitation input data sets on simulated hydrograph shape. Continuous precipitation record split into set of discrete values is necessary when we perform several types of rainfall-runoff simulation. Solution targets were to define the maximal time interval length of the precipitation data sets for considerable real simulation and to evaluate possible errors of simulation. The research was done in four selected basins with different physical and geographical conditions. The HEC-1 rainfall-runoff model with CN methodology was selected as the suitable tool for solution. Three different precipitation events were applied in each basin. The precipitation events were chosen with respect to the time of flow concentration in the basins. There were considered three cases of precipitation events according to the duration of precipitation: shorter (i), nearly equal (ii), and finally longer (iii) then the time of flow concentration. The methodological approach to the solution presumes knowledge of time of flow concentration at the closing profile (t_c), knowledge of the duration of precipitation (t_d) and its time distribution and off course knowledge of basin areas. The optimal time step coefficient was determined in two different ways – the first method is based on dependence of time step coefficient on time of flow concentration, the second method is based on relation between the time step coefficient and basin area. Two boundary conditions were specified from results of the hydrographs simulations: maximal deviation from peak discharge by max. 5%,

and time shift of peak discharge not more than 1/10 of time of flow concentration. The simulation can be considered as sufficiently real when the boundary conditions are met.

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