

Estimation of the Parameters of Muskingum Methods for the Prediction of the Flood Depth in the Moudjar River Catchment

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Abstract : The objective of the study was based on the hydrological routing modelling for the continuous monitoring of the hydrological situation in the Moudjar river catchment, especially during floods with Hydrologic Engineering Center–Hydrologic Modelling Systems (HEC-HMS). The HEC-GeoHMS was used to transform data from geographic information system (GIS) to HEC-HMS for delineating and modelling the catchment river in order to estimate the runoff volume, which is used as inputs to the hydrological routing model. Two hydrological routing models were used, namely Muskingum and Muskingum routing models, for conducting this study. In this study, a comparison between the parameters of the Muskingum and Muskingum-Cunge routing models in HEC-HMS was used for modelling flood routing in the Moudjar river catchment and determining the relationship between these parameters and the physical characteristics of the river. The results indicate that the effects of input parameters such as the weighting factor "X" and travel time "K" on the output results are more significant, where the Muskingum routing model was more sensitive to input parameters than the Muskingum-Cunge routing model. This study can contribute to understand and improve the knowledge of the mechanisms of river floods, especially in ungauged river catchments.

Keywords : HEC-HMS, hydrological modelling, Muskingum routing model, Muskingum-Cunge routing model

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