Dear Reviewer #2,

We highly appreciated your review and positive comments for our manuscript. We provide our responses to your queries below.

Kind regards, all authors

Comment #1: *The article is well prepared and I personally believe that the result of the study is valuable for hydrological modeling related engagements, particularly in countries with poor gauging stations. In this regard, the paper can be accepted for publication. However, the authors are supposed to take care of the following points.*

Response:

We appreciate the reviewer for taking the time to review our paper and for the positive comments. We have improved the manuscript based on your suggestions.

Comment #2: *Polish the document in terms of the English language use. For instance, in the abstract, replace "the objective of this study is…. " with " the objective of this study was.. ". In Line 149, too.*

Response:

Thank you for your comments. The language of the revised manuscript will be improved by a native speaker.

Comment #3: *Please, add the implications of the result of the study in terms of future uses and hydrological modelling in a sentence or two in the abstract if there are no limitations of words*

Response:

Thank you for your comments. The added sentences are given below.

"The TDUH-MC method can be well used for the watersheds with poor gauging stations and limited observed rainfall-runoff data."

Comment #4: *I do not see the need for Paragraph 1 in the introduction part. You could justify your study in terms of the absence of observed unit hydrographs of gauging stations and the non-reliability of existing UH development methods.*

Response:

Thank you for your comments. Paragraphs 1and 2 have been substituted by

Flow routing is an important component in a hydrological model, whose accuracy directly affects runoff forecasting. There are different types of routing techniques available for the generation of runoff hydrograph, such as hydraulic, hydrologic methods and so on (Akram et al., 2014). Since the hydraulic methods are usually computationally intensive, and the hydrologic methods are widely used all over the world. The Unit Hydrograph (UH), proposed by Sherman (1932), is one of the methods most widely used in the development of flood prediction and warning systems for gauged basins with observed rainfall and runoff data (Singh et al., 2014). However, there are some inherent problems associated with the UH method, such as areal lumping of catchment and rainfall characteristics as well as the utilization of linear system theory (James and Johanson, 1999). Moreover, current routing methods usually depends on numerous rainfall and runoff data. For watersheds with poor gauging stations, it is difficult to develop an adequate relationship between physical watershed parameters and the unit hydrograph shape. The unit hydrograph estimation in small and ungauged basins is still a critical issue in hydrological studies (Petroselli and Grimaldi, 2015).

References:

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Singh, P. K., Mishra, S. K. and Jain, M. K.: A review of the synthetic unit hydrograph: from the empirical UH to advanced geomorphological methods. International Association of Scientific Hydrology Bulletin, 59(2):239-261, https://doi.org/10.1080/02626667.2013.870664, 2014.