

Interactive comment on “mizuRoute version 1: a river network routing tool for a continental domain water resources applications” by N. Mizukami et al.

Anonymous Referee #1

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The manuscript presents in details a new offline routing model which is flexible in that users can define which approach they would like to use for the channel routing (unit hydrograph or kinematic wave). The channel routing also uses a kinematic wave tracking in order to take into consideration the energy coming from incoming segments. The hillslope routing differs from other routing models as it uses a gamma distribution to construct the unit hydrograph instead of a used-defined unit hydrograph (Lohman et al. 96).

Overall the paper is very well written and easy to follow. The framework includes pre-processing steps that are usually obscure in order to set up a routing model, which

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provides transparence and consistence. The model is also flexible and consistent as it provides two routing approaches, tested to provide consistent flow at long time scale but more accurate flow when one would like to look at shorter time scale and extreme events at the price of increased computational cost. The routing takes advantage of recent and emerging river characteristics datasets.

Specific comments:

- 1) Some suggestions on how this model could evolve with respect to present development in current routing model would help promote the routing model in terms of flexibility for further development. In particular, recent developments based on routing model include stream temperature, water quality modeling, inundation, ecohydrology, and reservoir operations and withdrawals. How flexible is this model with respect to this type of development so that future users understand the investment they make.
- 2) Please add a reference to literature or justification of why a gamma distribution for deriving the hillslope unit hydrograph.
- 3) “The KWT start by ordering all the segments ...” How compatible is the routing model with parallel processing?

Interactive comment on Geosci. Model Dev. Discuss., 8, 9415, 2015.

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