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Hydrology and Earth System Sciences Discussions



# *Interactive comment on* "Process-based distributed modeling approach for analysis of sediment dynamics in a river basin" *by* M. A. Kabir et al.

**M. A. Kabir et al.**

Aynul.Kabir@sci.monash.edu.au

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(C = comment; R = response) C 1: Several equations were used; however parameters in the equations were not defined. A list of symbols is required to be appended with the text. R 1: A list of symbols is appended at the end of this paper. Few symbols have been modified to make them unique as a whole. After a thorough review, some typo mistakes are removed. Please find attached ZIP file.

C 2: In Table 2, two parameters 'A' and 'As' were used, however not defined. My understanding, these would be same, as in a sediment laden flow, area of the flow



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of water and area of the flow of sediment will be same, unless a stratified model is used (which is not in this case). R 2: 'A' and 'As' in Table 2 were defined by the equations. As per the previous comment, now the meaning of these two parameters is further defined in the list parameters which are in "Notation" section. In this modelling approach, 'A' and 'As' are different. 'A' is cross-section area of water flow (Q) while "As" is the cross-section of sediment flow (Qs). Please find attached ZIP file.

C 3: Sediment flow (Qs) was defined as m3/s. This is not a correct unit for sediment flow; it should be defined as Kg/s or some similar unit. R 3: The two units of sediment flows (Qs) (Kg/s or m3/s) just differ from each other by sediment density (Kg/m3). However, many researchers e.g., Chen et dal.(2006), Kazama et al. (2005), etc. are reasonably defined sediment flow (Qs) by m3/s. It is worth noting here, a constant sediment density is considered at the whole study area.

Chen, C.-N., Tsai, C.-H., & Tsai, C.-T. (2006). Simulation of sediment yield from watershed by physiographic soil erosion-deposition model. [doi: DOI: 10.1016/j.jhydrol.2005.11.031]. Journal of Hydrology, 327(3-4), 293-303. Kazama, S., Suzuki, K., & Sawamoto, M. (2005). Estimation of rating-curve parameters for sedimentation using a physical model. Hydrological Processes, 19(19), 3863-3871.

C 3a: Figure 4 contains lots of clumsy parameters, which are ineligible. It should be presented in clearer format. R 3a: Please find attached ZIP file.

C 3b: In Figure 18, simulated peak 'Q' value is out of the range of the graph. It should be fitted within the graph range. R 3b: Please find attached ZIP file.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/7/C3087/2010/hessd-7-C3087-2010-supplement.zip

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 5685, 2010.