

Interactive comment on “EDDA: integrated simulation of debris flow erosion, deposition and property changes” by H. X. Chen and L. M. Zhang

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A very interesting model, named EDDA, was presented to simulate debris flow erosion and deposition in this paper. The model is able to consider clear water flow, hyper-concentrated flow and fully developed debris flow. Moreover, the model was verified with four different cases and applied to a large-scale debris flow case study. Indeed, the paper was unique for doing all those things above in one model. However, there are some problems related to the model. 1. The model combined many empirical equations, like Eq. (21) from Takahashi et al. (1992), Eq. (32) from Chang et al. (2011) and so on. However, most of the empirical equations have their limitation due to incomplete or local data sets. Thus, the application of each empirical equation may bring some degree of uncertainty. The combination of so many empirical equations,

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however, may bring an amount of uncertainties. For example, The K_e in Equation (32) is very sensitive to the parameter of void ratio. While the debris flow in real case varies largely in void ratio. 2. The debris flow may not flow to only one of the eight directions in real case. Some may flow to two or more directions at the same time. Errors may increase when the cells become larger, for example, the Xiaojiagou case with limited number of cells. 3. Is that model able to consider landslide dam breach with variety of soil particles? For instance, the dams with both large particles (rocks) and small particles.

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