

## ***Interactive comment on “***

# **Experimental validation of some basic assumptions used in physically based soil erosion models” by S. Wirtz et al.**

### **Anonymous Referee #1**

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This paper presents valuable experimental results concerning rill erosion processes. It also explores some key issues concerning rill erosion modelling. I think that the structure of the paper could be improved. The introduction could be more concise and more focused on presenting the motivations and the structure of the following sections of the paper. The part of the introduction titled “Short history of shear stress, critical shear stress and transport capacity” seems poorly connected with the rest of the paper. It is very detailed in illustrating some equations employed in “physically-based models” but none of these models are employed and verified by the authors (see section 2.4 “De-

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scriptors for soil detachment”). I suggest removing this part from the introduction and reporting a review of the rill erosion models in a separate section after the introduction, if this review can help in understanding the study presented in this paper. I think that some of the inconsistencies between the experimental results and the physically based model employed could also be the effect of uncertainty in experimental measurements, in model structure and in model parameters. I would appreciate to read the opinion of the authors about these potential sources of uncertainty.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 1247, 2011.

**HESSD**

8, C759–C760, 2011

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