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Interactive comment on "Technical notes: Rainfall threshold calculation for debris flow early warning in areas with scarcity of data" *by* Hua-li Pan et al.

C. Gregoretti

carlo.gregoretti@unipd.it

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dear authors

We will like to add a comment on this technical note, referring to the section 2.2.1 "The initiation mechanism of hydraulic-driven debris flows". In the manuscript it is adopted the formula of the sediment concentration suggested by Takahashi (1977) (reported in eq. (1) of the paper) for describing the initiation mechanism of hydraulic-driven debris flows. The Takahashi relation was determined for stony debris ïňĆows propagating over a rigid bed and, hence, with a minor effects of quasi-static actions near the bed. In order to obtain a correct estimate of the bulk concentration, the long lasting grain interactions at the boundary between the upper, grain inertial layer and the underlying

static sediment bed should be accounted for. A recently published paper Lanzoni et al. [2017], slightly modified the mentioned Takahashi formulation, and validate the proposed formulation with a wide dateset of experimental data (Takahashi [1978], Tsubaki et al. [1983], Lanzoni [1993], Armanini et al. [2005]). In particular, in the absence of an appreciable excess basal pore fluid pressure the friction coefficient (reported as alpha in the present manuscript) is replaced by the quasi-static friction angle ðÌlJŚqs associated with prolonged interparticle contacts. Adopting the formulation suggested by Lanzoni et al. [2017] the diïňÃerence between the measured values of C and those resulting from the new formulation are mostly contained in the $\pm 10\%$ range.

Laura Stancanelli and Carlo Gregoretti

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