

Interactive comment on “Numerical investigation on the kinetic characteristics of the Yigong landslide in Tibet, China” by Zili Dai et al.

Anonymous Referee #2

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This paper analyzed the run-out process of an interesting catastrophic rockslide occurred in Tibet, China through field investigation and numerical simulation. The 2D and 3D SPH models were adopted to simulate the dynamic process of this landslide, and the Bingham model was used to describe the rheology. Then the simulated velocity and depositional characteristics were compared with field observations and measured data, and generally good results were obtained. This paper is well-written. The structure is clear, and the conclusions are reliable. The topic of this paper, which is pretty important for the mitigation of huge landslide induced disaster chain (landslide-landslide surge waves-landslide dam lake-dam break-flood chain), is definitely of interest to the readership of this Journal. Therefore, the reviewer suggests a minor revision before acceptance. The following comments are for the authors' reference.

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Line 14, how do you consider the effect of collision in the SPH model? Collision may contribute to the disintegration of the rock mass, and in addition, the plastic deformation caused by collision may also dissipate part of the energy. Are your models capable of depicting these effects?

There are some minor grammatical mistakes in the manuscript. Please check them carefully. For instance, in Line 27, “feathers” should be “features”? and in Line 35, “in predominantly” should be “predominantly in”. In Line 250, “the results is shown” should be “the results are shown”.

Line 90-95, how do you know the volume and velocities of the landslide?

Line 100, “estimated original slope surface”, but how to estimate?

Line 155, are you sure the fluid is incompressible? The continuity equation is compressible, because density changes with time. And Eq. 3 is the state equation showing the relationship between density and pressure. So the fluid should be (at least) weak compressible.

Eq.3, please specify the way how you determine the parameters in this equation. And also please specify the values of these parameters in the 2D and 3D simulations.

Line 195, how do the number of particles and the kernel diameter influence the simulation results?

According to Figure 14, the maximum simulated thickness could be around 350-400m, but in Line 136, the description indicates that “the dam height is 60-120 m”. Please check this inconsistency.

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