

Interactive comment on “Hidden Hazards: the conditions that potentially enabled the mudflow disaster at Villa Santa Lucía in Chilean Patagonia” by Marcelo A. Somos-Valenzuela et al.

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Catastrophic landslide and debris flow is an important topic in the fields of geology, geomorphology and civil engineering. This paper deals with an example of the catastrophic landslide and debris flow event in Chile. Therefore, the reviewer thinks the present paper valuable. The referee comments are as follows:

1. Pages 2 to 20: There are various technical terms expressing ‘sediment-related disaster’, such as rockslide, landslide, avalanche, hyper-concentrated flow, hyper-concentrated sediment flow, mudflow, debris flow, debris and mud flow, detritus flow, avalanche flow, mass flow, two-phase flow, non-Newtonian flow, and water-sediment

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mixture. These similar technical terms make us confused. In order to avoid the confusion, the authors should unify these similar words and then describe the definition of each term.

2. Pages 7 to 10: Slope of land along the flow trajectory is one of important factors for the mechanism of the landslide and debris flow. The more detailed information of the slope is needed. Therefore, the cross sectional profile of the land along the flow is helpful for the discussion. Using the figure of the cross sectional profile, the authors should discuss the landslide and debris flow event.

3. Pages 10 and 19 The budget of sediment and water during this event is important for understanding the process of the landslide and debris flow. A schematic figure of this budget is helpful for the discussion.

4. Line 217, Page 10 Sernageomin (2018 c) found flow velocity 20 m/s at the Burritos River canyon. The authors should explain the method of estimating the velocity.

5. Line 331, pages 15 There are various factors in the basic equations describing the numerical simulation of the event, such as drag coefficient, basal friction angle, environmental resistant coefficient and fluid friction coefficient. Because the definition of these factors is not clear, it should be described in this paper.

6. ‘pressures’, line 342, page 16 and line 357, page 17 Generally speaking, the word ‘pressure’ is not used for open-channel flow but for pipe flow. Therefore, this word is incorrect.

7. ‘a mudflow with a volume of water of 30%’, line 346, Page 17 Does this mean the mudflow with sediment concentration of 70 %?.

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