Responses to Referee #2

We would like to thank the referee for the accurate review of our manuscript. We considered all the comments in our revisited version of the work. Below we list our replies to the specific comments.

1. P.5144, L.7: Reichenbach et al. (1998) was not found in the references.

We inserted the following reference: "Reichenbach, P., Cardinali, M., De Vita, P., Guzzetti, F.: Hydrological thresholds for landslides and floods in the Tiber River Basin (central Italy), Environ. Geol., 35(2-3), 146-159, 1998".

2. Section 5.2 Role of environmental factors. The authors repeated that the number of events in each subdivision was insufficient to determine reliable thresholds. The reviewer was concerned that the reason was not mentioned until P. 5158. The reviewer would recommend that the authors explain the minimum number of empirical data points necessary to determine reliable rainfall thresholds in this section.

We attributed here a different meaning to the word "uncertainty". In order to avoid misunderstanding, we modified the last sentence in section 5.2 as follows: "The selection was adopted to assign the prevalent environmental factor to a single landslide (Peruccacci et al. 2012)*." In this section, we present the procedure to attribute an environmental factor (e.g., a lithological domain, a soil region, etc.) to a landslide. We prefer to introduce the requirements for the definition of reliable thresholds in the Discussion.*

3. Section 5.2.1 Lithological domains. The authors showed two different lithological maps in Figs. 1b and 6a. It would be better to describe the difference.

The lithological map in Fig. 1b is unnecessary for the purpose of lithological analysis, and we decided to remove it.

4. Section 5.2.3 Rainfall regions. It would be better to describe a brief explanation of characteristics of three rainfall regions.

The suggestion of the reviewer was accepted, by adding the following sentence at P5154 L4:
"They found that the Tyrrhenian rainfall region is characterized by more frequent and less severe rainfall events than the Ionian rainfall region, whereas the Central rainfall region has events with intermediate characteristics. Short and very intense events are more frequent in the Ionian side of the Calabria region (Terranova and Iaquinta, 2011).".

5. P.5154, L.6: Is it Fig. 6c?

Yes, it is. We corrected it.

6. Section 5.2.4 Dry and wet season period: "The majority of rainfall events with landslides in the A–O period are characterized by durations D < 10 h, while in the N–M period in most of the triggering conditions D > 10 h." The authors defined the "start time" of the rainfall event based on a dry period of two days between April and October, and of four days between November and March. Did this definition influence the rainfall duration for each season?

The seasonal dependence of the "start time" is based heuristically on the clime of the Calabria. We adopted different values for the dry period in the A-O (warm) and N-M (cold) seasons to consider the different

influence of climatic conditions on soil moisture. In the A-O period the rainfall events are characterized by durations D < 10 h that are typical of convective events. Long duration frontal precipitation (D > 10 h) is instead more common in the N-M period.

7. P.5156, L.23: Is it Fig. 7d?

The text "For cumulated event rainfall exceeding about E > 30 mm, a larger amount of rainfall is necessary to trigger landslides in the Ionian region than in the Tyrrhenian alert region. The result was manifest in the subdivision shown in Fig. 7C." *was related to a previous version of Fig. 7 and are now inappropriate. We removed this text.*