Most of the reviewers required additional information on the case study area. In this supplement we present additional relevant information, that we consider to include in a revised MS.

Landslide events occurred in the area In the paper there are typing errors in the dates of historical landslides at page 2774 lines 9-10. We apologize for that. The correct ones are as follows: 15 September 2006, 25 October 2007, 24 September 2009, 1 October 2009, 1 March 2011 and 23 November 2011. Reviewers may consult the newspaper archive http://gazzettadelsud.virtualnewspaper.it/gdsstorico/ for evidences of landslides on these dates. Other information are given by Civil Protection event bulletins, videos on the web, etc. From the newspaper archive we have collected the lists of municipalities in which landslides were triggered. In the following we indicate within brackets the areas mainly hit by widespread landsliding for each event (see Figure 1):

- 15 September 2006 (Altolia, Mandanici, Castelmola, Areas $\#4$, $\#5$, $\#6$ and $\#7$)
- 25 October 2007 (Giampilieri, Alì Terme, Scaletta, Area $\#7$)
- 24 September 2009 (Letojanni, Roccalumera, Areas $\#1$, $\#2$, $\#3$, $\#4$, $\#5$)
- 01 October 2009 (Giampilieri, Area $\#7$)
- 01 March 2011 (Mili S. Marco - South Messina area, Area $\#7$) see also http://www.milisanmarco.it/galleria/thumbnails.php?album=114
- 23 November 2011 (Saponara, Tirrenian area) see also https://www.youtube.com/watch?v=UsvPFoZD6Tk

In fact the 23 November 2011 event occurred in an area that is exposed differently to storms, and hence it is maybe the case to remove it from the list, because the Fiumedinisi raingauge may not be representative in this case. We think that it is reasonable to say that the raingauge of Fiumedinisi can collect rainfall data representative of the area bounded by the watersheds depicted in Figure 1 below - hence this defines better the area under investigation.

Significance of the use of $\delta = 40^\circ$ and $A/B = 10$ m, as representative for the derivation of a threshold valid for the Peloritani area This was based on investigation of these properties for the landslides occurred on 1 October 2009. The map of the landslides, derived from occurred interpretation of orthophotos is available from website

http://www.regione.sicilia.it/presidenza/protezionecivile/documenti/rischi/r_idrogeologico/documenti/20091001_CartaDissesti.jpg

This map presents in red the slide/erosion areas and in orange the propagation/deposition areas. Figure 2 shows the slides derived from "red areas" of that map.

The use of an hillslope of $\delta = 40^\circ$ and $A/B = 10$ m as representative of the area derives from analysis of these properties within the slided areas shown in Figure 2, computed on the basis of a 5×5 pre-event DTM.

In particular, for the given values of $\phi' = 37^\circ$, $c' = 5.7$ kPa, $\gamma_s = 19000$ N/m^3 and a soil depth d_{LZ} =2 m, the unconditionally stable slope (FS> 1 even when water table is at ground level, see Montgomery and Dietrich, 1994) results of about $\delta_{us} = 29^\circ$ and unconditionally unstable slope (i.e. bedrock outcropping) results of about $\delta_{br} = 47^\circ$. The distribution within the range $\delta_{us} \leq \delta \leq \delta_{br}$ is shown in Figure 3 and the mean value results of $\delta = 38^\circ.2$. We have assumed a value of $\delta = 40^\circ$ to be slightly conservative. Regarding the value of the A/B ratio, its distribution is shown in Figure 4. It can be seen that the class centered on $A/B = 10$ m is the one most populated. Hence the use of this value.

It is worthwhile to say also that the maximum $\varepsilon = d_{LZ}/\sqrt{A}$ results to be of $2/\sqrt{25} = 0.4$. To note that Baum et al. (2010) applied TRIGRS model to an area where higher values of the ε ratio were considered as acceptable (cfr. Figure 7c of Baum et al., 2010).

Soil type Core sample data are available for the area. Generally there is a debris strata of about 2 m that covers a fractured metamorphic rock strata of about 4 m. The debris strata is composed by a

sandy loam with a significant proportion of gravel (up to 50 %), i.e. a gravelly sandy loam, according to USDA soil classification. The assumption of a leaking basal boundary is hence consistent with soil stratification in the area.

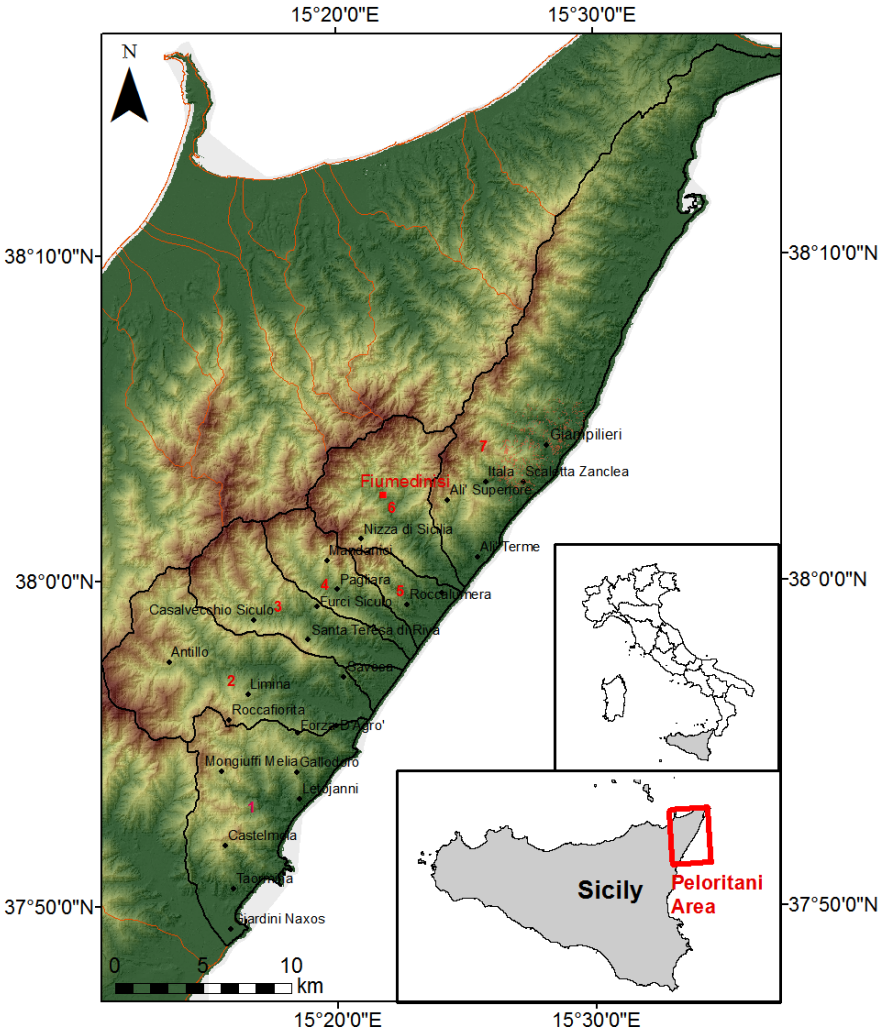

Fig. 1. Map highlighting the investigated area (catchments bounded by a black line).

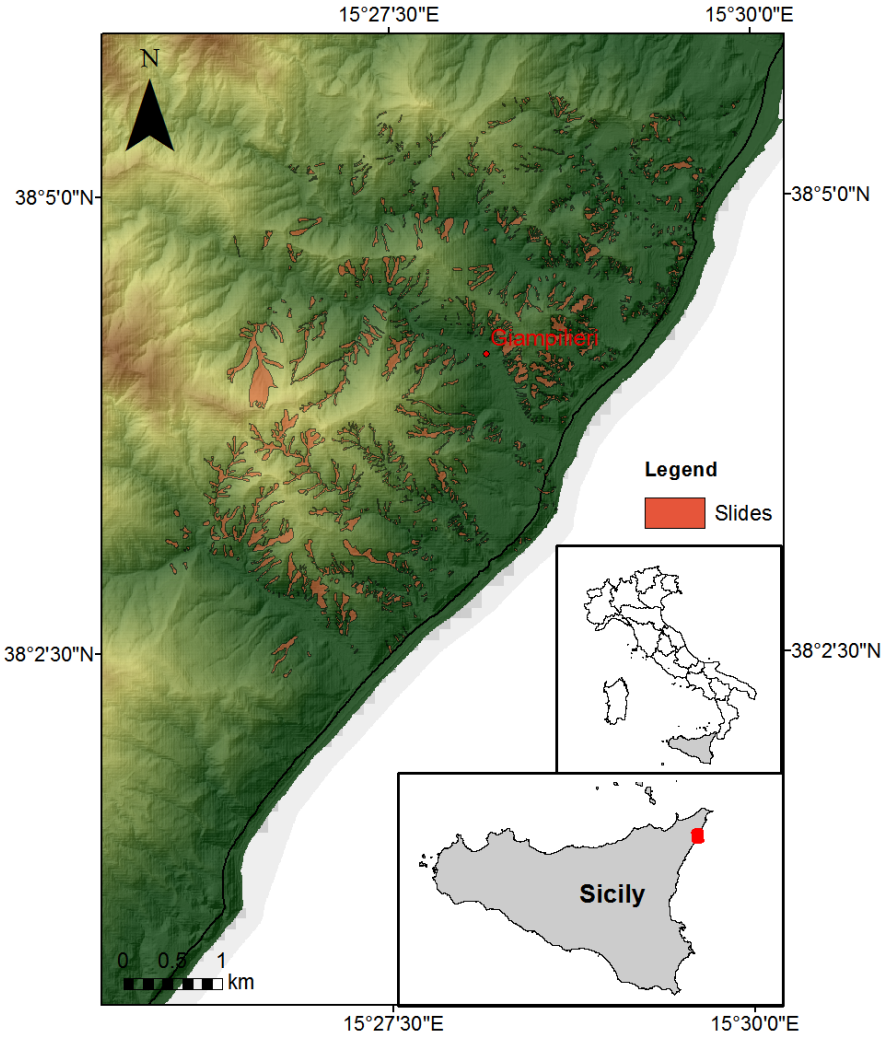

Fig. 2. Observed landslides on 1 October 2009 event.

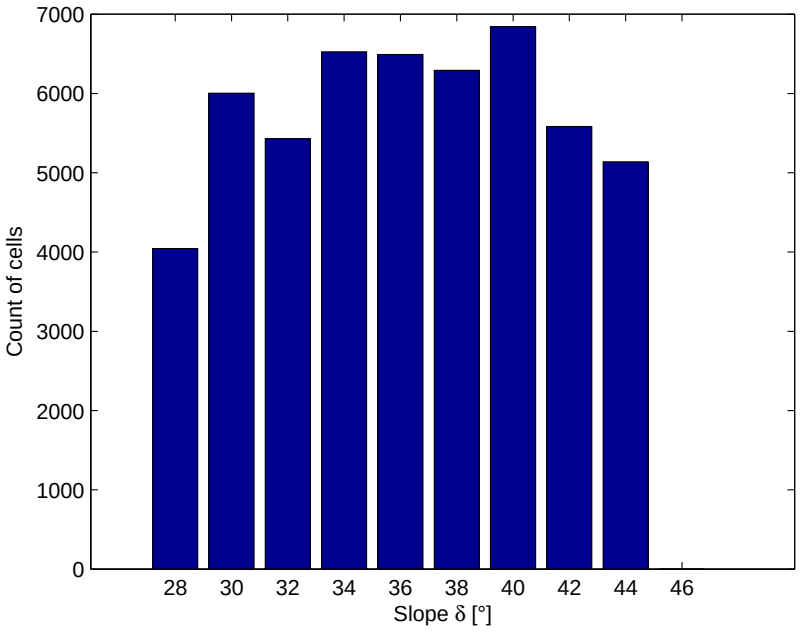

Fig. 3. Distribution of slope within observed landslides on 1 October 2009

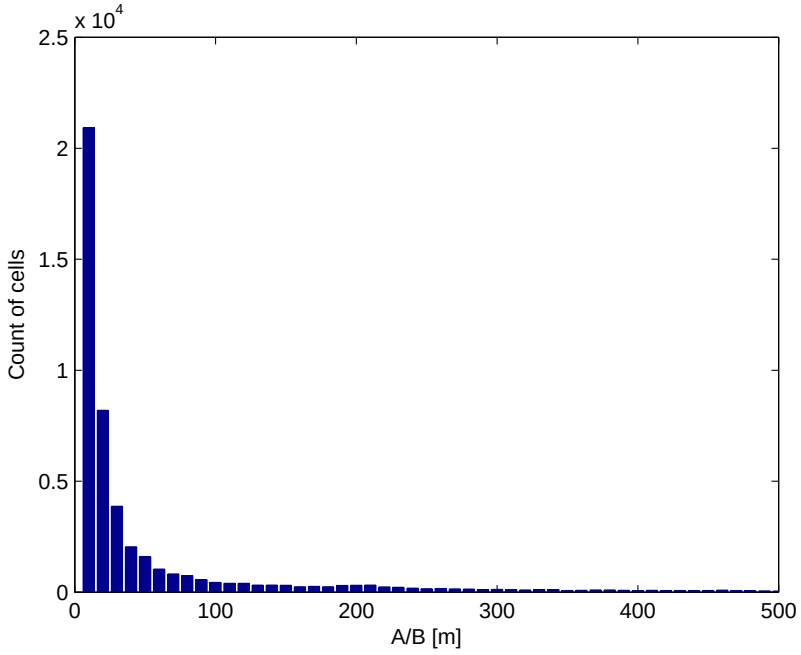

Fig. 4. Distribution of the A/B ratio within observed landslides on 1 October 2009