

## **Overview**

This reviewed paper is quasi-ready for publication. Main deficiencies below:

- 1) The part of the seismic signal analysis and computation should be better and wider explained (see specific comments).
- 2) The references belonging to groups (see line 7 of page 4 and others) should be listed in chronological order.
- 3) There are a lot of oversight errors: the writer suggests a careful rereading of the work.

## **Specific comments**

### Title

Perhaps “Fast” is better than “Rapid”

### Introduction

At line 10 of page 3 (and in other points) Burtin et al. (2013) is cited but it is not present in the references.

### 3 Seismic data

At line 15 of page 7, please substitute “and” with “while”.

### 4 Detection and Location Scheme

The writer suggests some more explanations about the use of equation (3). The quantity VR is computed for each pixel of the grid where data is  $A(i)$  and fit is the second member of equation (1) computed by varying  $A_0$  and  $\alpha$  in the range 500-1500 times the..... and 0.0-0.001 respectively ( $r_i$  is the distance between the pixel and the seismometer location). The summation,  $\sum$  is carried out for the  $n$  seismometers. Did the writer understand the computation of VR?

Moreover, the writer suggests to anticipate that the computed source location could be not in the channel (see the following section at lines 24-25 of page 11) and the position of debris flow along the channel is determined by projecting the locations on the channel (as written at following section, line 11 of page 11).

#### 5 Results: Seismic Noise....

About the sentence at lines 18-19 of page 11, the reason of bias could be due to the arrival of other solid-liquid waves?

#### 5 Debris Flow Detection....

Why this section and the previous one have the same numbering (5)?

At line 10 of page 16, it should be Figure 13b instead of Figure 10.

#### 6 Discussion: Suitability for early warning

The discussion about the influence of rainfall on the triggering mechanism is not clear and confused. The sentence at line 4 of page 18 “These observations could be explained...” is not reasonably linked to the previous period. Authors should write something like: “notwithstanding the two rainfalls are comparable because of nearly the same maximum intensity over 10 minutes (data.....), occurred phenomena are different because in the case of 13<sup>th</sup> of July, previous precipitation (please write the total depth and interval time, as for the that previous the 19<sup>th</sup> of July event). Then, they can add the explanation of the effect of previous precipitation.

#### Figures

Figure 1: please reduce the size of the triangles.

Figure 5: plot of panel c of Figure 4 and of panel b of Figure 5 should be the same but they do not seem. Moreover, the ordinate of panels a and b of Figure 5 is missing.

Figure 10: panels a and b are inverted in the caption.