Comments on the new version of the paper

Characterizing the complexity of seismic signals at slow-moving clayrich debris slides: The Super-Sauze (Southeastern France) and Pechgraben (Upper Austria) case studies by Naomi Vouillamoz, et al.,

In this new version the authors have considerably improved the manuscript. The present version is much better organized and the aims have been clarified.

It is a shame that in the reorganisation of figure 14, the authors have omitted information on precipitation. I hope this will be explained in the future together with an explanation of the situation. Now, it is clear that the aim of the paper is only to classify and to catalogue the seismic signals.

As regards this, I suggest a change in the title of the paper.

The incorporation of the S value in section 5.2, as suggested by Andreas Khöler, clarifies the results. Good suggestion.

I suggest that you should include a reference or a discussion on seismic array configuration optimization. This is well known in earthquake studies, but perhaps it is worth emphasizing this here.

Further comments

Pag 1 Line 25. I am not sure that this reference must be included here.

Pag 2 Line 4. It is confusing. Perhaps: acoustic emission 10 -1,000 kHz (AE)

Pag 2 Line 15 . Please check these two references.

Pag 2 line 25. Perhaps explaining what the tripartite arrays are and method (or indicating a reference) could be informative to the reader.

Pag 3 line 2. Replace tele-earthquakes by teleseisms (I understand the context, but I think that the term tele-earthquake is not correct)

Pag 4 line 4. I would stress the difference between the sites when beginning with Pechgraben. e.g. As regards PG….

Replace PG15 seismic arrays by seismic arrays in the PG15 campaign.

Pag 5 line 8. I would include a subsection entitled “classification” . The features you indicate are not simple waveform features: **Apparent velocity of trackable wave packets** is not a single waveform. You calculate the app. velocity with more than 1 waveform. Rewrite the sentence.

Pag 5 line 13. Indicate the software or method used to obtain the app. velocities.

Pag 5 line 16. Replace **Unique versus multiple events** by Number of events, Clustering of events or similar because this is not a feature name.

Pag 5 line 21. I do not follow this sentence. If the distance is short, then there is little attenuation. Attenuation is caused by geometrical spreading (distance) and by intrinsic attenuation. Although you explain the situation below, this specific sentence leads to a misunderstanding. Rewrite the sentence.

Pag 5 lines 26-28. This is not part of classification. Don't think it is strictly method?

Pag 6 line 4. Replace teleseismic by Teleseisms

Pag 6 line 9. Specify that in Fig. 2 the layout is for an earthquake. You are in a section devoted to **microseismic signals typology at clayey landslides.** Perhaps a short introduction is needed to avoid confusion.

Pag 6 line 10. Split the sentence into two parts. …. ordinate. For Pechgraben NqF is 1.95…. Note that you are referring to the plots of an earthquake recorded in SZ10.

Pag 6 line 14. At least indicate that the colours are in dB, if you do not show the colour scale.

Pag 6 line 21. …. Hz, defined as b1 to b5.

Pag 7 line 21. I understand that seismograms are not displayed by distance with the result that no apparent velocities can be obtained from the plots of figure 3. It could be helpful to indicate this in the figure caption.

Pag 7 line 25. Replace Fig. 4b and 4e, lower panel by Fig. 4b and 4e(lower panel). The same in the other cases below.

Pag 7 line 26. I would replace “consist of ” by “appear as ”. In fact, you have not modelled the wave field.

Pag. 7. It seems to me that the differences between Type III and IV are very small. Is the value of the duration indicated in Table 1 for Type III (moderate distance) correct? As showed, is the apparent velocity the only difference? I am not aware if this is sufficiently stressed in the text.

Pag 9 line 20. Mention Table 1 somewhere in the ETS-like signal and in the Confirmed rockfall events paragraphs.

Pag 10 line 25. I would number the recording stations to identify the seismograms in fig 7 and 8 so as to help the reader.

Pag 11 line 1-10. Same as above comment for figures 8 and 9.

Pag 11 line 28. This link is not working at the moment

Pag 11 source location. I suggest that you should include a reference or a discussion on seismic array configuration optimization in this section (or in 6.2). This is well known in earthquake studies, but perhaps it is worth emphasizing this here.

Pag 12 lines 15-16 and 24. Perhaps I am lost, but don't you think that there is a contradiction?

Pag 13 line 15. For me this is not a valid argument. Note that site effects are frequency dependent. The frequency content of teleseisms and distant earthquakes is lower than that of the events that you are considering. Fig 2 indicates f<10Hz. Moreover, note the frequencies indicated in Table 1. Perhaps applying Kanamura method H/V would be useful.

Pag 14 line 8. I am sorry, but I do not follow you. Why do you not represent the values of the amplitudes in the plots in Fig. 12b? Perhaps an explanation is needed.

Pag 14 line 11. This link is not working at the moment

Pag 14 line 16. Is the value $5e10^6$ correct?

Pag 14 line 22. Complete the legend of Fig. 12b indicating this.

Pag 15 line 13. Replace this by near, local and regional earthquakes and teleseisms.

Pg. 16 line 32. Schlindwein et al., 1995 is not indicated in the references.

Pag 19 line 18. Note that the name of my department has changed. It is Department of Earth and Ocean Dynamics. Faculty of Earth Sciences. University of Barcelona (UB)

Figures, Figure captions and Tables

- Is the value of the duration for Type III (moderate distance) indicated in Table 1 correct?

- Figure caption 1. Please define PG15, PG16 and SZ10

- Figure 2. Please replace the title. Seismic features of an earthquake in different representations… You are using different representations to show the characteristics

- Fig 6a. Indicate bp1 to bp5 similar as in Fig 4a

- Fig 8. b) You must add "at short distances" after human footsteps. This must be specified.

- Fig 9. a) You must add “at short distances” after human footsteps. This must be specified.

- Fig 10. I would indicate the solution by an open circle.

- Fig 12. In b) the extrapolated functions must be indicated. In line 5, is projection the correct word?

- Figure 15. I noticed that you have unified the slide quakes and dispersive tremors in landslide- induced tremors. This is consistent with the classification of your catalogue. Accordingly, I would replace Quakes by landslide –induced microearthquakes to be consistent.

- References

Aki and Richards 2002, is not mentioned in the text.

Joswig 2008. Please complete or correct (capital LETTERS) the reference: First Break (June)