



EGUsphere, referee comment RC1
<https://doi.org/10.5194/egusphere-2022-19-RC1>, 2022
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Comment on egusphere-2022-19

Anonymous Referee #1

Referee comment on "Combining seismic signal dynamic inversion and numerical modeling improves landslide process reconstruction" by Yan Yan et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-19-RC1>, 2022

I enjoy reading this manuscript. It proposes a new 'combined' approach to back-analyze seismic signals of a landslide process. The idea is great!

The methodology is technically sound. The proposed simulation process is deemed logical and the results were properly verified and discussed.

However, the writing (English language) must be carefully examined/fixed to make it easy to read and understand.

From places to places, I feel many descriptions are somehow redundant, they are telling the same idea. Please check the whole text again.

I would like to make sure that readers can apply the simulation techniques to their own landslide cases. Therefore, I suggest the DemMat, inversed and synthetic codes shall be shared to readers and are accessible to readers.

Specific comments/questions/suggestions:

- Abstract is lengthy. Please re-write for concise and clarity.
- Line 31: Using "low frequency curve" is not clear. What curve? Motion curve or others?
- Line 38: ... obtain the best numerical "simulations"?
- Line 45~46: "The approach outlined in this study could be used to support hazard prevention and control in sensitive areas." I don't think this method can support hazard prevention and control landslide hazard. It just one kind of back-calculation to understand the landslide process. What's happened has happened, so how can we prevent and control the landslide? Considering write something else that is appropriate.
- Line 137: Explain how to obtain the "Probabilistic power spectral density", what is the technique or provide references. How you identify the 'background noise level of the seismic station' from Fig. 3. And, how to apply it next? And why this is important?
- Line 147: What kind of "joint time-frequency domain transform" was used? Just delete 'joint'?
- Line 150: "... that corresponds to a specific moment..." What kind of 'specific moment'?
- Line 168: "... the records were resampled to 0.2 s." What does this mean? You mean 5 Hz sampling rate?
- Line 182: "... and 9+ $\delta \square \square \delta \square \square$ " Is the 9+ a typo?
- 4: Do you need to predefine the properties of the "slide bed elements"?
- Line 206: How about "We used a simulation block of 2270×1980×1680 m, with ..."?
- Line 207: Is this "cells" means "elements"? Is there any other better word?
- Line 218: What are the macro and micro conversion formula? Are they important?
- Line 219: Why 40% is fine? Any prove?
- 5: Why 35 and 10 % of delta is reasonable?
- 5: Is CSI 0.6 is a commonly acceptable value? Any references?
- 5: After the adjustment of Intergranular friction coefficient $\delta \square \square \delta \square \square$ and damping coefficient C, don't you need to check if CSI>0.6 again? The CSI is possible smaller than 0.6, isn't it?
- Line 252: "post-event geological survey showed sliding was mainly in a south-east-to-south direction" By observing Fig. 3, it seems that the sliding was almost in an eastward direction. Isn't it?
- 6 shows "showing signal-to-noise ratio of the low-frequency components"? Explain how to identify high and low SNR. From Fig. 6 I feel they are approximately the same SNR in the E\N\V direction, even in the low frequency range. Therefore, I treat Line 249~259 is a kind of qualitatively discussion.
- Line 272: how about "The time domain velocity recorded at ..."?
- Line 279: Although I get what you want to say, please re-write the sentences: "... and the signal may also be affected by superimposition of vertical and horizontal waves, which makes the end time lag. So, the critical moments of the landslide derived from the original seismic signal would be lagged, and the duration too long."
- 7: The time axis appears redundant times? e.g., 22:06 22:06 ...
- 7: You can show the Fig. 7 b in log-scale for better low frequency resolution.
- 7: Why choose vertical component (V) for analysis? Isn't that the GZI east (E) component has a lower SNR, with less noise?

- Line 300: Change to "... with the time domain stages (as in Table 2), ..."
- Line 309: "also, there is a clear difference from the outburst flood signal on October 12, 2018." Can you present a figure for showing the differences between outburst flood on Oct. 12?
- 8 caption: "Corresponding absolute values are shown as dashed black lines." How you calculate the absolute values? For what reason we need it?
- 9 caption "Red dotted lines indicate that the seismic trace was not used in the inversion." Why not used? What are your considerations?
- I wonder whether the Fig. 14 a and b shall be switched? What is the red area in Fig. 14 b? Also, please show where are the 1st and 2nd "level platforms" in Fig. 14. I don't quite get it from your description.
- Line 539~540: I think it is: "Part of the front edge of the landslide was detached on the right bank of the Jinsha River, slid up against the opposite slope on the left bank, and then ..." You may reverse the right and left?
- Line 542: "that combing on-site" Wrong word.
- The conclusion is not concise and complete. Many parts are redundant. I suggest you rewrite. You may want to write: a brief restatement of your research problem; summarize overall findings, and the implications of your research, etc.

Please also note the supplement to this comment:

<https://egusphere.copernicus.org/preprints/2022/egusphere-2022-19/egusphere-2022-19-RC1-supplement.zip>