

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-230

Tapas Martha (Referee)

Referee comment on "Evaluating landslide response in seismic and rainfall regime: A case study from the SE Carpathians, Romania" by Vipin Kumar et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-230-RC2>, 2021

This study investigates a pertinent research question i.e. assessment of a combined trigger for landslides. Evaluation of stability at the source zone and prediction of run out incase of failure is quite interesting aspect of this study. The stability has been assessed both for static and dynamic conditions. The article is written well. I have following minor comments:

Line 67: Do you have any idea when this landslide happened? A historical perspective of the landslide will be helpful to the readers.

Figure 1: Follow symbology for Anticline/Syncline as per the structural geology norms.

Figure 4: Can you explain why all three peaks are only in 2005 and 2010, not for other years?

Figure 5: This is a good figure since it demonstrates the influence of earthquake as a triggering factor. Similar to this spatial representation of earthquake epicentre, you can consider showing the spatial distribution of rainfall pattern over the region.

Line 145: Pl. indicate how many earthquakes occurred in the rainy season. This is important since the research question hinges around this statement.

Line 170: Is it called as resonance frequency or peak/predominant frequency in Nakamura analysis?

Line 178: Mention how the shear wave velocity was estimated? What type of investigation was done: CPT? Some details are required here.

Line 183: High resolution (5 m) TanDEM-X DEM data are available. Why that has not been used?

Figure 6: The 80 m soil thickness is quite huge. Since it is mathematically estimated, better to so some validation result also.

Line 270: Better to write 'cross sections'

Line 294: Check the symbol for slope angle.

Line 520: Please explain why you selected release depth for run out starting from 5 m contrary to large overburden depth present in this area. Also explain how did you identify the release area?

Line 523-535: Present this paragraph as a Table.

The range of factor of safety is >1 , which indicates stability of the landslide in general. In this context, explain what could be the extreme trigger condition to reduce the factor of safety below 1.