

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2022-172

Anonymous Referee #2

Referee comment on "Timing landslide and flash flood events from SAR satellite: a regionally applicable methodology illustrated in African cloud-covered tropical environments" by Axel A. J. Deijns et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-172-RC2>, 2022

The authors presented a paper in which they developed a model to roughly estimate the timing of geohazards such as flash floods and landslides in central Africa through the use of Sentinel-1 SAR parameters such as amplitude and coherence.

The paper is well written and shows some interesting applications, however I have some concerns and some observations before its final publication.

In particular, I do not believe that the use of Time Series using SAR data to estimate the timing of an event can be considered a novel practice. Several attempts have been performed either using the phase, thus the displacement itself (see Intrieri et al., 2018), and Burrows, as correctly written in the manuscript.

Besides, the methodologies here depicted are based on standard change detection based on the trends.

The key aspect is represented by the abundance and the variety of parameters selected. Another aspect which should be clarified is related to the trend change threshold. Is there any quantitatively and standardized measure of the change which could be defined for each time series? How can be discriminated a change in the amplitude or coherence trends over the time? Is there a numerical thresholding? If so, how this is calculated, and this can be exported?

I have also some concerns about the reference to both landslides and flash flood. Do they behave at the same way in terms of amplitude and coherence?

Results show very different timing detection results, however, from the time series analysis seems that this is mostly due to the size of the event. Is there any implication also considering the differences between flash floods and landslides (I would rather consider smaller flash floods since the source and the travel areas can be considered limited with respect to landslides).

Besides, I see a very poor relationship with rainfalls which can be considered a very significant factor for the triggering of such events. Would you please provide a comment?

I have also some minor concerns to take into account:

The introduction section is well written and addresses correctly the scientific theme and the missing gaps. I would just improve and provide more detail in the brief description of the paper and its main outlines in the very end of the introduction.

Figure 1 should be redraw also including any reference to flash floods and landslides. Is there any way to distinguish them?

Would you please provide a table about the S1 database used in the research framework?

Line 251: why did you keep a rectangular cell even using a multilooking factor?