

REVIEW OF THE ARTICLE

Name of article: Detection and monitoring of ground deformation induced by active landslides, using SAR interferometry: a case study in Chango town, Peru

1. Originality: Is the question original and well defined? Do the results provide an advance in current knowledge?

The article is well defined.

The results have provided a serious study for an area with many land displacements such as landslides and land subsidence.

2. Significance: Are the results interpreted appropriately? Are they significant? Are all conclusions justified and supported by the results?

- The results were not properly interpreted

- All conclusions are justified and supported by the results

3. Quality of Presentation: Is the article written in an appropriate way? Are the data and analyses presented appropriately? Are the highest standards for presentation of the results used?

- Yes, the article is written in an appropriate way.

- The data and analyses are presented appropriately

- Yes, the highest standards for presentation of the results are used

4. Scientific Soundness: is the study correctly designed and technically sound? Are the analyses performed with the highest technical standards? Are the data robust enough to draw the conclusions? Are the methods, tools, software, and reagents described with sufficient details to allow another researcher to reproduce the results?

- The study is correctly designed and technically sound

- The analyses performed with the highest technical standards.

- The data *are not* robust enough to draw the conclusions.

- The method has been described quite well, but the tools and software for the implementation of the DInSAR and PS-DInSAR methods have not been clearly presented.

- It is necessary to add a data processing process flow chart that other researchers can use to make other similar applications.

5. Interest to the Readers: Are the conclusions interesting for the readership in the field of earth science?

The conclusions are interesting for the readership in the field of earth science

6. Overall Merit: Is there an overall benefit to publishing this work? Does the work provide an advance towards the current knowledge?

Although this paper is not new in method, it is new in research area. The publication of this paper also helps to warn of possible hazards when there is a landslide in the Chango town Peru area.

7. Detail comments:

- Name of the article: is it fully reflecting the content of the manuscript?
Other comments or suggestion.

It is fully reflecting the content of the manuscript

- Abstract: is it properly written in the format required by the journal (a continuous passage, no line breaks)? And is it concise, fully reflecting the purpose of the paper, research methods, and main results?

it is properly written in the format required by the journal and it concise, fully reflecting the purpose of the paper, research methods, and main results.

- Keywords: are they suitable for index purposes? Are there any that needed to add or remove?

Keywords are not be found

- Introduction: Is it convince enough in terms of the purpose and objectives of the article? Any recommendations on addition or reduction?

In the introduction, the research team reviewed the studies using DInSAR and PSInSAR techniques for determining land deformation and the reasons for choosing the Interferometric Radar method to identify landslides. However, the reader did not find any analysis related to the study area at risk of adverse land deformation requiring monitoring. The author needs to add to this analysis. Besides, I also do not see a necessary analysis for you to choose the DInSAR method because this method has been shown to be affected by the atmosphere, currently, very few studies apply the method unless they use a limited number of images and are not sufficient for other methods.

- Study area involved in the article: Have the geologic, tectonic setting or seismicity characteristics been properly described? Any additional recommendations?

The study area presented is quite sketchy, does not present the geological features of the area. Besides, the locations where landslides and subsidence occurred and the characteristics of such deformations have not been mentioned.

- Data and research methods used: The source and reliability of the data? Are the methods used consistent with the research objectives and clearly described in the manuscript? Any suggestion on addition or reduction?
Other comments?

Source and reliability of data are guaranteed

The methods used are consistent with the research objectives and are clearly described in the manuscript, however, as analyzed above, the DInSAR method is only used when the data is limited and if the data source is limited. Because this is a method that still has a lot of systematic errors due to the great influence of the atmosphere. The author needs to explain more convincingly when using this method to process images for determining land deformation.

In the data processing part, image processing flow chart needs to be added

- Are the results presented in clear, complete and reliable forms?

Recommendations (?):

The results presented are not clear. More clarification is needed on the more detailed Getis-Ord GIS* analyses.

- Are the charts and/or tables presented in the manuscript reflecting the research findings (quantities and units, uncertainty; are the letters readable?)

The charts and/or tables presented in the manuscript reflecting the research findings. The unit is sufficient, the letters readable.

Check table 2 (marked in the article)

- Figures: does the manuscript contains a generalized figure showing the study area? Is the resolution of the graphic illustrations good enough and is the handwriting readable?, Provide comments on legends and/or annotations of each figure, recommendations on any additions or reductions.

The coordinates of Figure 1 are too small.

The legend in figure 6(a) needs to be revisited.

Figure 8 needs more explanation, what are the numbers in the legend of this figure (highlighted in the article)?

- Discussion: are results interpreted reasonably and radically? Are results logical and convincing and are they comparable with those, published earlier? Other comments?

The results have not been explicitly discussed. When using two methods DInSAR and PS-DInSAR, the authors did correlation with each other and say that these two methods have a correlation of 0.74, then the conclusion is appropriate to determine the terrain deformation for the study area. I think it is not reasonable because I found that these two methods use the same data set, the only difference is that the DInSAR method will have systematic errors that are influenced by the atmosphere and clouds. So although the results of DInSAR will be overestimated, if correlated with PS-DInSAR, it will definitely have a high correlation.

The article has not given a real accuracy assessment with a reliable measurement to be able to say that the results made from the Radar time series are reliable.

Another, the author has not determined where there is subsidence, or where there are landslides from the image processing results and to know exactly what to do. The author's presentation is so general that the reader can't understand why when using a series of images in two cycles of ascending and descending, the values are so opposite and how to combine them to get the final result.

- Conclusion: is it consistent with the objectives of the article? Does it summarize the main results/findings and consistent with the points made in the commentary and discussion? Any recommendations on the future's work? Other comments and recommendations.

The conclusion does not encompass all the strengths and weaknesses of the research method or the obtained results; it only provides a general overview. The Interferometric Radar method has been extensively utilized by numerous scientists worldwide for a considerable period, employing various techniques such as PSInSAR, SBAS, SqueeSAR, and MTSAR. Importantly, the accuracy of this method has been thoroughly explored and acknowledged by researchers globally. So after revising and expanding on the aforementioned analysis, the conclusion should emphasize the level of accuracy achieved through the application of this research method.

- References: Are the references adequate and following the format required by the journal both in the text and in the list of references? Point out those references that are lack of or unsuitable for the article.

The references are adequate and following the format

8. English Level: Is the English language appropriate and understandable?

You need to make significant improvements to your English. I have made several marks in the article, but you, as the author, need to edit the sentences yourself in order to enhance readability and comprehension.

9. Overall Recommendation (accepted without revision, minor revision, major revision, major revision with returned review, reject):

Major revision with returned review