

**Title:** Geophysical and Geodetical Investigation of a Landslide Area (Koyulhisar-Sivas, Turkey)

**Journal:** Natural Hazards and Earth System Sciences

**Dear Editor,**

My review for the paper entitled “*Geophysical and geodetical investigation of a landslide area (Koyulhisar-Sivas, Turkey)*” is given below.

The paper presents geophysical and geodetical applications to investigate one of the most active landslides areas in Turkey. Mainly, it is not well-organized and includes many repetitions in the text. In addition, complicated text with long sentences can often leave the reader tired and confused. Also, I think that researchers were not successful to generally identify the geometry of the landslide under consideration. An electrical resistivity tomography (ERT) study could be more proper geophysical technique instead of ground-penetrating radar (GPR) together with the seismic refraction tomography (SRT) for investigation. Considering the geodetic survey, the results of GPS measurements showing the amount of displacement in the survey area belongs to previous researchers. Therefore, the geodetic investigation is not one of the main parts of this exploration. Thus, I suggest a major revision for the paper considering its current form.

#### **General comments**

1. Considering the text of the paper, the authors should keep their sentences short and clear instead of trying to over-impress by writing complex sentences, which can often leave the reader tired and confused. Therefore, explanations are generally not clear.
2. Introduction and mainly whole text include many repetitions. Also, the same conjunctions used in the sentences following each other are unnecessary and very annoying. For instance, “*it was understood that*” was used four times in the conclusion part of the paper. This may reflect that the paper present as if the results of a report.
3. It must be used the true symbolic character for explanations related to the degree, for instance,  $5^0$  given in the abstract and the rest parts of the paper must be revised as  $5^\circ$ .
4. Fig. 8 must be presented earlier in the paper or the design of the article should be revised by the authors. Why readers are forced to look at Fig. 8 after the first figure mentioned in the introduction part?
5. References should be carefully checked by the authors since the correct surnames of the researchers have not been provided (for example, Adlaş, Baklaya, should be corrected as Aldaş and Balkaya respectively).

6. Abbreviations of geophysical methods should be defined at the first occurrence by following their long names. For instance, ground-penetrating radar (GPR), instead of GPR (ground-penetrating radar).
7. It would be so nice if the data acquisition and evaluation parts of both geophysical methods applied in the survey should be explained and collected in a separate section of the paper. This information is widely spread in this form of the article.
8. The numbers on the figures are not clear.

### **Scientific comments**

1. It is obvious that researchers were not successful to generally identify the geometry of the landslide under consideration. The results obtained show that both SRT and GPR measurement profiles are still between the boundary of the landslide area. To identify share plane, both crown and toe of the landslide must be cut by longitudinal geophysical transects. Therefore, there is no any meaning of parallel profiles studied.
2. An electrical resistivity tomography (ERT) study could be more proper geophysical technique instead of a ground-penetrating radar (GPR) together with the seismic refraction tomography (SRT) for investigation.
3. The authors must provide correct scientific definitions for the terms or explanations used. For instance, *closed(?) antenna* and *inversion processing of the GPR data* mentioned in the text. It is not clear what is meant here inversion term (time-depth conversion or data analysis).
4. Figure 3 must be presented more illustrative since all images from the area are intertwined, and it is not understood which region of the study area represents.
5. The explanation of GPR velocity chosen for time-depth conversion is not adequate since dry or wet soils and clays and sand environment can display various values depending on different environments.
6.  $V_p$  value of 0.1 km/s is not a low seismic velocity since the values bigger than 0.07 km/s can be also defined as a rock medium.
7. Considering the seismic observations, the authors must analyze the safety region of the seismic tomograms and provide a comparison of observed and calculated traveltimes at least for one section.
8. The results of GPS measurements showing the amount of displacement in the survey area belongs to previous researchers. Therefore, it is seen that the geodetic investigation is not one of the main parts of this exploration.
9. Comparative figures considering the results of SRT and GPR at the same scale must be provided by the authors.