

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on essd-2020-324

Anonymous Referee #2

Referee comment on "Slope deformation, reservoir variation and meteorological data at the Khoko landslide, Enguri hydroelectric basin (Georgia), during 2016–2019" by Alessandro Tibaldi et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-324-RC2>, 2021

GENERAL COMMENTS

The manuscript provides continuous data monitored over about three years in a site located along the eastern mountain slope of the Greater Caucasus (Georgia) overlooking the Enguri artificial water reservoir, involved in the active Khoko landslide. In particular, it reports some data about i) the landslide displacement (monitored by two digital extensometers installed next to the head scarp), and ii) the fluctuations of the lake level.

The paper, interesting and well written, aims to provide potentially useful information for risk mitigation measures. Nevertheless, the discussion session is not able to explain the different responses monitored by the two extensometers. In particular, the Authors do not carefully argue their assumption according to which the landslide activity is almost exclusively governed by the lake levels, while the rainfall-induced direct infiltration does not significantly influence the pattern of deformation.

Some specific observations are reported in the following section.

SPECIFIC COMMENTS

Line 169. How far is extensometer n.1 from extensometer n.2 ?

Line 190. Some details regarding the about 70 mm starting value, registered on 4th November 2016, should be provided. Is it just an initial extension due to installation ? If it is so, the graph in Figure 5 should start from zero value.

Line 201. Such gap should be indicated in Figure 4 and the corresponding (just hypothesized) values should be reported (for instance) through a dashed line.

Line 210. As already requested for extensometer n.1, some details about the starting value of about 152 mm registered on 18 May 2017 should be provided. If it is due to installation, the graph in Figure 6 should start from zero value.

Line 210. "Deformation" should be replaced (here and elsewhere in the text) by "extension", because deformation is, of course, dimensionless.

Line 240. Could you explain such different responses shown in Trench 1 and Trench 2 ?

Line 271 - Discussion. Such section is rather weak. In particular, it is not able to explain the different responses monitored by the two extensometers. Some properly commented figures should be added to highlight the relation between the extension rate data and the lake levels monitored during the infilling and drawdown stages. Figure 10 by itself can not put into evidence such crucial aspect.

Lines 285-286. Such observation should be furtherly discussed. The represented daily precipitation values are not sufficient to make such observation. Rainfall accumulated over larger periods (for instance, one or more months) could agree with the observed velocity trends. Therefore, a relation between movements and direct rainfall-induced infiltration can not be excluded.

Line 293. Such delay is not clear and should be discussed. In particular, I did not understand why after 29 January 2019 the rate of extension monitored at trench 1 is about 1 mm/month, while deformation monitored at trench 2 is nil.

Figure 10. Such Figure resumes all the data shown by Figure 5, 6, 7, 8 and 9. Therefore, in my opinion, Figures from 5 to 9 could be eliminated and replaced by Figure 10.

TECHNICAL CORRECTIONS

Some technical corrections are reported by the attached supplement pdf file.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2020-324/essd-2020-324-RC2-supplement.pdf>