Comment on **egusphere-2022-153**  
Federico Di Traglia (Referee)


Dear authors,

Your work, although very interesting and with many methodological ideas for estimating slope instability in the absence of geomechanical/geotechnical data, is too speculative. That is, there are no counter-tests to your hypotheses. I find some main criticisms:

- identification of the "stable / unstable / less unstable" units: you have a profile with the different surfaces destabilized over time, you can use that to perform analyzes (for example Limit Equilibrium Methods, I recommend in 2D with Borselli's SSAP, https://www.ssap.eu/). As resistance parameters you can use those present in the literature (eg andesitic lavas, pumice, altered ashes, and so on) and carry out a series of tests by varying the parameters within the limits of the values found in the literature;

- palaeo-geographic reconstruction: since you are reconstructing the palaeo-geography of an entire flank of the volcano, I think that similar reconstructions were carried out by those who did geological mapping. Are your reconstructions consistent with those?

- volume estimation: everything depends on point 1 (identification of the parameters). If you find the parameters, you could "test" your reconstruction by comparing it with some 3D instability models (for example using the parameters identified in 2D with SSAP within 3D models with SCOOPS-3D, https://www.usgs.gov/software/scoops3d).
Since yours is a methodological draft, the proposed method should be tested with existing methods. Otherwise your results are too speculative.

Please also note the supplement to this comment: