



Interactive comment on “Muography as a new tool to study the historic earthquakes recorded in ancient burial mounds” by Hiroyuki K. M. Tanaka et al.

Anonymous Referee #1

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General comments. The article describes the study of an ancient burial mound with the muography technique in order to give an interpretation about ancient techniques used for the construction of these kinds of buildings. In this sense the article aims to propose muography as a new noninvasive tool for the archeology. Results, performed from two different observation points, show the presence of low density regions interpreted as collapsed landslide mass and vertical cracks. The reported conclusions, that takes in account also previous trench-survey-based works, about an intrinsic problem with the stability of the basic foundation of the mound are not, in the opinion of the reviewer who is not an expert of the sector, immediately clear.

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The article is well written, and the scientific interest is notable since the technique is for the first time proposed for this kind of application. Some minor comments and technical corrections are proposed.

Specific comments. 142: the word scalps is not clear to me. I consulted some English dictionaries and the meaning I have found is not appropriated for the context. Please specify better what are you describing.

210-212: an indication of the approximative value of the energy cut on muons and e.m. particles would be appreciated.

223.224: could you provide the detector spatial and angular resolutions ?

226: the 8×8 mrad(²) angular binning corresponds to the angular resolution ? see also previous comment. A mistyping is also reported in the technical corrections section.

254: Since the convex level of the mound is small [...] Could you clarify the meaning ?

260: An indication of the total number of muons collected and of the contents of muons recorded in the bins could be appreciated.

261: could you better describe what are the background and foreground mound and the effect on the measurement ?

263: I think that it is not appropriate to claim here a lower density region since no normalization to the effective thickness of material crossed by muons have been applied to the plot of Figure 3.

311: almost doubly defined density structure was imaged. It is not clear to me the sense. Please describe better.

347: do you have an estimation of the percentage variation of the density ?

Technical corrections

226: 8×8 mrad -> 8 mrad x 8 mrad

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Figure 3: vertical axis unit is in rad and not in mrad.

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