Comment on gi-2021-35

Anonymous Referee #1

Referee comment on "A muographic study of a scoria cone from 11 directions using nuclear emulsion cloud chambers" by Seigo Miyamoto et al., Geosci. Instrum. Method. Data Syst. Discuss., https://doi.org/10.5194/gi-2021-35-RC1, 2022

This article concerns a study of the cone of the Izu–Omuroyama scoria volcano (Japan) using the muon radiography technique.
The authors installed nuclear emulsion detectors and performed a measurement campaign from 11 different directions.
They reported the detector design and installation and the data analysis procedure. So they produced the map density from everyone
the indications and discussed the results obtained.The article is detailed and methodologically correct.
It is fluent enough with good English. The results obtained are very interesting, also considering the possible developments on a 3D analysis of the volcanic cone.
I have just a few small observations to discuss before publication:

Lines 93-94: "An ECC detector can measure the momentum of the charged particle by detecting deflection angles caused by multiple Coulomb scattering."â□¨
In my opinion a ECC doesn't measure the momentum. It can provide a statistical information of the momentum of the muons, as correctly described in the section 4.2

Line 97: Please describe better and/or give a reference about the formula (1)

Line 117 "at 4 ka"
It is not clear to me which is the age.

Lines 1169-170 "we needed to add time information to the ECC"
It is not very clear the meaning of this sentence. Please rephrase.

Line 232: please provide the units of the errors the angles.
Is the absolute azimuth coordinates provided directly by the instrument ?
Which are the angles measured with the FOG and which with the digital leveler ?
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Lines 310-311: How do you evaluate the filtering efficiency ? It is not described and no reference is given.

Lines 315-316: how many are the candidate tracks ?

Lines 444-445: "There were also 4%–7% in each detector site except the forward

directions at the SE and NNE site "
This sentence is not clear to me.