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Geoscientific Instrumentation Methods and Data Systems
Discussions

Interactive comment on "Interpreting muon radiographic data in a fault zone: possible application to geothermal reservoir detection and monitoring" *by* H. K. M. Tanaka and H. Muraoka

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Interpreting muon radiographic data in a fault zone: possible application to geothermal reservoir detection and monitoring

H. K. M. Tanaka and H. Muraoka

The paper addresses an interesting muon radiography experiment across a fault in order to derive the average density along profiles perpendicular to the fault plane. The paper falls in the scope of GI and merit publication provided the Authors make minor corrections according to my comments.

English is not my primary language, consequently I shall not make comments on the writing style. Following are my comments:

First sentence of Section3: do the Authors mean that the average flux measured for all azimuths at a given elevation is taken as the relative base level against which flux anomalies are defined?

Page 880 (lines 2 to 5): the Authors explain that the backward flux is used to measure the open sky flux subsequently used to determine the acceptance of the detector. However, the horizontal scintillator bars of the detection matrices involved in the backward directions are not the same as those involved in the forward directions. Is the so-determined acceptance precise enough, being understood that the efficiencies of the scintillator bars are not identical?

Page 880 (lines 14 to 16): what is the expected background noise level caused by fortuitous events simultaneously hitting the two segmented planes of the detection apparatus? What is the time resolution of the acquisition system?

Page 880 (bottom lines): the Authors use the flux relative attenuation (with respect to the backward open-sky flux) to determine the variations of average density across the fault. In this a case, the muon energy cutoff corresponding to each trajectory is unknown and the absolute average density cannot be determined. As far as I understand, the Authors account for this situation by assuming an arbitrary reference density of 2 g/cm3 and determine density variations relative to this reference. Am I right? Could the Authors give some more details?

Please, could you precise the uncertainty of the topography model? Does this produce significant error bars in the profiles of Fig. 4?

Prof. Dominique Gibert

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 2, 875, 2012.