Dear Editor:

We appreciate the efforts you and the reviewers have invested in our manuscript. We have addressed all relevant concerns of the reviewer and are submitting a revised version for your consideration.

We are aware, that the new content, with respect to the in both reviews mentioned paper of Chauhan et al., 2016, is only limited.

Notwithstanding of this, the paper we have submitted to SE is a completely new contribution with no redundancy to the previous one.

Also, we believe that it would be a nice contribution for this SI to round up things.

With respect to the technical comments we have revised the paper in such a way that the reviewer's comments are taken into account.

Following is an itemized list of reviewers' comments together with our response. Comments are reported in italic fonts (red) and our responses in regular (blue).

Sincerely,

On behalf of all authors Wolfram Rühaak

Anonymous Referee #2

Review for: Swarup Chauhan et al. "Phase Segmentation of X-Ray Computer Tomography Rock Images using Machine Learning Techniques: an Accuracy and Performance Study"

Dear authors,

from my point of view your contribution is not significant enough to be published in Solid Earth. The main reason is the only marginal added value to your already published paper "Processing of rock core microtomography images: Using seven different machine learning algorithms" (Computer & Geosciences, 2016). Your statement in the abstract "Therefore, our investigation provides parameters that can help selecting the appropriate machine learning techniques for phase segmentation" is rather vague to support the idea to have another paper to your already published paper.

See reply to reviewer #1

Moreover, there are other very weak points in the paper:

- The introduction is too short and will give not a good overview of the topic. Do the authors will really not have a better overview?

Revised: The introduction has been modified. P1-P3|29-4

- Other segmentation techniques are not discussed in the manuscript. Maybe they are superior to the discussed seven methods.

Reply: It is not clear what is meant with other segmentation techniques. The manuscript is not aimed towards the review of different segmentation techniques. The emphasis here is to show the capability of machine learning techniques to tackle phase segmentation problem. We propose ML techniques which can be used as one of the alternative to several other

segmentation techniques.

- Nowadays it is a standard to apply several filters in the data processing workflow. They are not mentioned or discussed.

Reply: In the case of Rotliegend Sandstone (21 µm) as the XCT images were noisy, contrast filter was used to enhance the image. Whereas, for other XCT images (Berea, Andesite and Musli) as the resolution and contrast were sufficiently high (7.5 µm to 13 µm) using filters did not show any noticeable change.

Revised: The above information has added in the subsection image processing.

- The quality of the figures is bad. Partly they are too small too identify details (e.g. Figure 2, 3 or 9) or the labeling is not explained (what is FCM-1_35 in Figure 4 ???)

Revised: The labeling and quality of the 2, 3 has been revised accordingly.

Reply: FCM was constrained at different membership function to check the segmentation quality. Hence, FCM-1.35 in figure 4 refers to the constrained membership value.

In conclusion, the paper is not acceptable in its current form. There are simply too many things to correct.