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Nonlinear Processes in Geophysics
Discussions

Interactive comment on "Inhomogeneous precursor characteristics of rock with prefabricated cracks before fracture and its implication for earthquake monitoring" *by* Andong Xu et al.

Andong Xu et al.

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We would like to thank you for your positive comments, as well as the suggestions to improve the manuscript. We have checked the whole manuscript and revised the manuscript according to the referee (the new manuscript will be uploaded soon after contacting with the editor). The specific comments of the referee and our reply are as follows.

Comments: There are some minor but recurrent issues in grammar/vocabulary

throughout the article that I believe need to be addressed. Presentation of some figures could be improved (some have unnecessary empty space and/or labels may be hard to read if printed).

Reply: We have revised some minor issues in our manuscript including expressions and figures, especially Figure 5 in which the labels is misaligned that due to the format convert of Word to PDF.

Comments and questions: In sec 2.4 the authors choose magnitudes of 2.5 and above for the catalogue, but it is not clear why this particular choice was made and how this pertains to the completeness of the catalog in space and time, i.e., is the chosen SAF catalog complete above this magnitude? (in other words, what is the magnitude of completeness for the chosen catalog and does changing these minimum magnitudes change the conclusions?) are there variations in time for this completeness specially after the larger events? Since the authors are speaking of links between experiment and 'natural' seismicity, it could be good to perhaps highlight/discuss the issues particular to each of the cases and where significant differences may lie between the two. For example; how would various types of incompletnesses (short-term aftershock incompleteness, catalog incompleteness etc.) affect their statements/conclusions? Within the context of the experimental setup, how are these incompletenesses accounted for? Given the brevity of the conclusions perhaps that section could be expanded to include some of these points along with a more elaborate synthesis of the statements in Sec.4.2. In Sec. 5, it could also be instructive and clearer to understand the overall message of the study by elaborating under which parameters/conditions the "... attempt to link the experiment with the nature" is made.

Reply: We choose magnitude of 2.5 and above for the catalogue because the chosen SAF catalog in one seismic cycle (1983-2004) above this magnitude is complete (Figure S1 in supplementary). We will add this statement in our manuscript due to the lack of clarification in the present manuscript. We analyze the catalogue completeness of magnitude of 2.5 and above, which shows slight variations with time divided in our

research and has less influence on our conclusion. However, we have not considered the variation in time for this completeness specially after the larger events yet, because the time we choose in this study is one seismic cycle that we think there is only one large event. The questions the referee proposed are very interesting and beneficial to our research in the future. In this study, we set different thresholds to capture the large deformation sampling points of different samples, corresponding to the magnitude of 2.5 and above for the catalogue we choose. How incompleteness corresponds to the experimental results in this study is not easy to analyzed, which is also not our target. We aim to link the experimental results with natural seismicity and hope to apply this foundation on earthquake monitoring.

Please also note the supplement to this comment:
https://npg.copernicus.org/preprints/npg-2020-44/npg-2020-44-AC2-supplement.pdf

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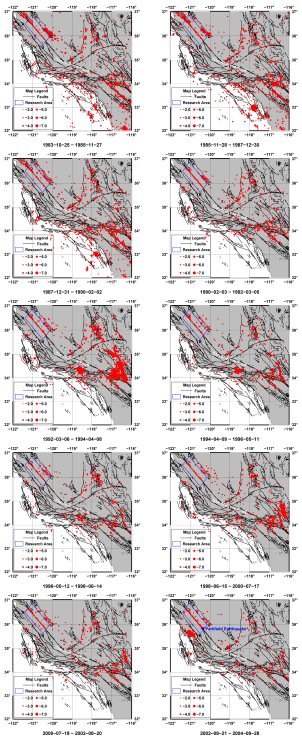

Fig. 1.