**Comment 1:**

The abbreviation is incorrect. The first one should be labeled with the full name, while subsequent instances can be referred to by the abbreviation alone. Please review the entire text.

**Response 1:**

Thank you for your comment. Sometimes we prefer to restate the abbreviation if it is important to the context – especially when the concept is described in details. Generally speaking, however, we agree with your comment and fixed the text in a number of places. Let us know if we missed any specific occurrence.

**Comment 2:**

In section 3, “Fractures as numerical entities” line 199-200. It is important to Carefully check the content of the article, and avoid any irrelevant content in the article.

**Response 2:**

Thank you for your comment. Indeed the claim is generic, with the intention is to bring closure to the section. We rephrased and moved the claim as an introduction to the section.

**Comment 3:**

All figure and table in text should be described and marked in paper and added a figure number in parentheses.

**Response 3:**

Thank you. Sorry for our mistake. We have reviewed the figure references and added (a), (b) … in each figure.

**Comment 4:**

There are many sections in the article. I recommend to merge the section of this paper. Such as section 6 and subsequent sections.

**Response 4:**

I appreciate your comment, which concerns readability and improved text flow. As a matter of writing style, the authors regard the section split and entitlement as an important overview of the paper itself, along with clear figures and tables.

We are afraid that grouping text into fewer sections would aggregate heterogenicity in the text, with frequent context switches within each section and a lack of cohesion. Understanding the issue as related to writing style rather than content, we are keeping the sections as originally outlined for the time being. Please let us know if you have a different understanding and whether you consider that a blocker attribute for the manuscript review.

**Comment 5:**

In this study, these paper was classified the types of fracture, I recommend to explain the difference in subsequent sections, and It should be noted the differences between these different types of cracks in numerical simulations.

**Response 5:**

**Comment 6:**

All the figures of containing subfigures should annotated in the subfigure using (a) and (b), such as figure 4, 5 and 6.

**Response 6:**

Thank you for bringing that to our attention. The figures and respective descriptions were updated according to your suggestion.

**Comment 7:**

In section 5 “Low-permeability fractures”, I recommend to add some data to demonstrate the impact of technological changes on fracture model.

**Response 7:**

Thank you for the contribution. While the idea of this paper is not to produce original data, we preferred to more explicitly cite one work from Li and one work from Chai, both of them showing the volume split issues when low-permeability fractures cut a matrix cell. We also added a couple of new sentences in this section to make our point clearer. Please let us know whether you think relevant claims are still missing or deserve more emphasis.