In this file, there are responses to the Reviewer#1.

Responses to the Reviewer#1

We thank the Reviewer #1 for the review and recommendation. We've added the observed limitations by the Reviewer #1 to the manuscript.

To better observe communicating our response, we divided our responses into three categories: Agree/Clarification/Disagree.

1.

Suggestion, Question, or Comment from the Reviewer#1	Author's Response	Change in the Manuscript
The manuscript by Michalak et al. introduces a new computational model to predict fault geometry in data-sparse environments. I have the following concerns, which do not necessarily preclude acceptance of the manuscript: 1. The model is restricted to dip-slip faults w/out elevation uncertainties.	**Agree** This is a correct general assessment of our work.	We've added information to the Abstract that we analyze dip-slip faults.

2.

Suggestion, Question, or Comment from the Reviewer#1	Author's Response	Change in the Manuscript
2. This technique does not differentiate between normal and reverse dip-slip faults.	**Agree** This is correct.	We've added a sentence about this limitation to Discussion (5.2).

3.

Suggestion, Question, or Comment from the Reviewer#1	Author's Response	Change in the Manuscript
3. There are no real-world case studies to validate the model.	**Clarification** In this study, we are more interested in mathematical relationships between points and directions, and synthetic data provide a more suitable environment for this type of analysis. However, please note that we provided real-world data (GEBCO) which have some of the properties discussed (constant elevation difference).	None.

4.

Suggestion, Question, or Comment from the Reviewer#1	Author's Response	Change in the Manuscript
4. The use of Python would be more advantageous for the growing geomodeling community, especially since existing tools like GemPy have already established.	**Clarification** Please note that one advantage of using C++ is its speed, as compared to Python. This may be important if the output resulting from the combinatorial program is big. But we agree that for the community, some links with the existing open-source software would be appreciated.	None.

5.

Suggestion, Question, or Comment from the Reviewer#1	Author's Response	Change in the Manuscript
Despite these concerns, I believe the manuscript fits well with the scope of the journal,	Thank you for this encouraging note.	Not applicable.

and I would recommend it for publication.		

Other changes:

We had a bug in the code in relation to the sample circular dispersion (there was m_2^2 but it should be just m_2). The code and the tabulated results have been revised accordingly.

According to the request of the Editorial support (Mrs Daria Karpachova), we've made the background of selected figures (1, 3, 4 and 5) less dark.