

**SE-2021-88**

***Reply to Editor's review of the article:***

***A functional tool to explore the reliability of micro-earthquake focal mechanism solution***

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Dear Editor

thank you for your suggestions and advice on the colour scale of the figures. We have accepted your decision, and we have modified all the figures (and their panels) with an appropriate colour scale with perceptually uniform scheme.

We have carried out a detailed and thorough review of the manuscript. For that, we thank the Referees for their valuable advices. We have followed their suggestions and have modified the main text by improving its readability and adding a few sentences to clarify our work.

In particular, we have modified the layout of the "Methodology" paragraph according to a scheme, as suggested by both Referees, and we have organized the "Data Analysis" with the same structure.

In addition, we have followed the 2<sup>nd</sup> Referee's main comment and we have carried out a specific (totally new) test to explore the reliability of focal mechanism estimation in a more general framework. In order to explore the uniformity of focal sphere coverage, we simulated 10400 earthquakes fixing the fault plane solution and varying: 1) the number of seismic stations (6-30), 2) take-off angle and 3) azimuth of each single station. We have added a short text describing the test and one figure in the main text and another in the Supplementary Material.

Finally, we have carefully revised the English language.

We hope that the new version of the manuscript, with the many improvements derived from your suggestions as well as from the Referees, will be deemed suitable for publication on Solid Earth.

Best regards,

Guido Maria Adinolfi