

Interactive comment on “A review and evaluation of the methodology for digitising 2D fracture networks and topographic lineaments in GIS” by Romesh Palamakumbura et al.

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Dear Francesco Mazzarini, thank you for your time and effort in reviewing our manuscript in open discussion for publication with solid earth. The three main issues raised in your review include a better overview of the users of this method in fracture network analysis; secondly, a more evolved description of the pros and cons of the various methods of fracture data acquisition; and finally, a more detailed comparison of the results from different methods.

As part of the introduction a basic summary of 1D-3D fracture analysis is provided, however we acknowledge that this does not describe in detail the other various digital

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methodologies used to interpret fracture network traces, hence we would include a short summary that provides the reader with an insight into the broad range of studies that have used this method.

In the introduction of the paper, we briefly summarise the original method for measuring fracture networks in the field. Understanding the detailed pro's and con's of this field based method is important for understanding the benefit of carrying out the method digitally. An additional detailed description of the original field method could be provided, although we feel that this would be better served as a short paragraph as part of the introduction.

Finally, the qualitative and quantitative benefits of the method are demonstrated with various case studies. For each case study, we outline in detail how the digital method can be used to improve both the data collection process and the final dataset in certain circumstances. There is a broad range of benefits for using a digital method for collecting fracture data that affect various stages of the data gathering and analysis process. For example, the reliability and speed of initial data gathering, improving accuracy of the dataset and finally allowing for more evolved data analysis. Rather than only focussing on the benefits of the results, we suggest a more multi-dimensional approach where we discuss the wide the ranging benefits of using a digital method. This point has not been fully brought out from the case studies, hence we would include a short summary at the end of the case study section to synthesis the broad benefits of using a digital method on various aspects of fracture network analysis.

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