

Interactive comment on “River patterns reveal landscape evolution at the edge of subduction, Marlborough Fault System, New Zealand” by Alison R. Duvall et al.

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We appreciate the thoughtful, thorough, and constructive responses from the reviewers and the associated editor. Both referees brought up several valid concerns and provide many excellent suggested edits and comments to address these. We intend to revise the manuscript in accordance with these suggestions (see comments to each below) and feel the paper will be improved significantly as a result.

Anonymous Referee #1

Referee #1 noted that we focused our background and discussion too narrowly on New

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Zealand and as a result omitted a large body of literature on the subject of drainage network evolution in faulted landscapes and with respect to material strength heterogeneities in bedrock. We appreciate their additional literature suggestions and plan to incorporate these and other relevant works into the revised manuscript. This should provide a more complete treatment of the subjects in question and help to make our paper more universally relevant.

They also pointed out the need for more method details and a distinct methods section of the paper. We plan to write a more complete methods section in a revised manuscript. Also, with respect to methods, they suggest a statistical analysis of the orientation data and the addition of a chi map. We agree that these would be valuable additions and will include both in a revised version.

Referee #1 also finds that the way the manuscript was presented came across as somewhat circular and suggest that we more clearly state the hypotheses that we are testing upfront and revisit these in the conclusions. We plan to revise the manuscript writing with this in mind.

Anonymous Referee #2

Referee #2 echoes some of the comments by Referee #1 and adds other important concerns.

We intend to revise the paper format to provide a more appropriate differentiation of background, methods, results, and interpretation. We regret that the original version was unfocused and difficult to follow. We are also expanding the background as well as adding more complete descriptions of the analysis in a methods section, including statistics on the orientation data and adding chi map (see comments to Referee #1 above). We will also reorder the discussion section to begin with a discussion of the key findings and interpretation of our data before placing this in the context of the broader geologic setting.

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We agree that our original 8 subsections (A1 – A8) of the field site for fault and river orientation analysis were arbitrary and as a result, might be obscuring or unnecessarily confusing our results. We have redone the analysis by dividing the landscape into three separate sections (NE, SW, and South of the Hope Fault).

We plan to separate sections of figures so as to avoid clutter and emphasize the importance of the different analyses. For example, we plan to separate the fault orientations and river orientations results into two separate figures.

Referee #2 also provided numerous line edits, questions, comments and we intend to address each one in the revised manuscript.

Interactive comment on Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2019-41>, 2019.

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