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Interactive comment on "A nondimensional framework for exploring the relief structure of landscapes" *by* S. W. D. Grieve et al.

Anonymous Referee #2

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Grieve and others present a method and software for linking erosion and the relief structure of landscapes. The manuscript is clearly written and the sensitivity analyses provide a useful guide to aid in interpreting the results of their method. Hence, I think this manuscript will be a useful and well-received contribution; the authors have produced a software that will benefit the community. Thank you.

One comment regards the interpretation of data that do not fall on the Roering et al. (2007) curve. In the case of the Oregon Coast Range this could be either because 1) the landscape is in a steady state and the parameterization requires adjustment or 2) the landscape is not in a steady-state and the parameterization is correct. I suspect it is quite difficult to clearly distinguish among these two possibilities, and that both should be discussed in the manuscript. Similarly, for the Coweeta site, there should be some justification for a substitution of the Sc value from the Oregon Coast Range

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for the value calculated from the framework, and more explanation of how the field observations indicate alluviation is reducing the critical gradient in this landscape.

An additional comment is that results from this framework shown in Table 1 suggests there is little variation in Sc among the landscapes that were examined, despite differences in the setting of each site. I think this is a discussion point that could be elaborated upon.

The comments and requests from the first reviewer are well-posed and reasonable, and should also be weighed by the authors.

Minor comments: I encourage the authors to search the manuscript for "data is" and replace these instances with "data are".

Page 3. Line 10. "methods published" – this sentence could be rephrased, it is slightly awkward

Page 5. Line 15. Be explicit here about what limits relief. It isn't a critical angle per se, but material strength.

Page 7. Line 12. I suggest inserting a comma following "(2012)"

Page 18. Lines 17-19. It would be useful to show these data in a figure, so that readers can compare results from the two Sc values.

Page 16. Line 21. Replace "This is" with "The high R* values" or similar phrasing to be more explicit.

Figure 5. The ordering and lettering of the panels does not parallel the order in the caption. Check that the main text follows the revised ordering, when referring to this figure.