**Biogeosciences
Discussions**

Interactive comment on "Climate suitability estimates offer insight into fundamental revegetation challenges among post-mining rehabilitated landscapes in eastern Australia" *by* P. Audet et al.

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The paper's title "Climate suitability estimates offer insight into fundamental revegetation challenges. . ." entices one to read more. It is unfortunate that the authors used the word 'estimates' because the parameters they used (rainfall metrics as they call them) in their analyses are not 'estimates' at all. A much better word to have used would have been 'indices' as that word more accurately reflects the analyses the authors have conducted. And that word more accurately would indicate the uniqueness of the analyses the authors have conducted.

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The major value of creating an index is to somehow collectively, and hopefully simply, capture information that a large suite of parameters provides. So instead of having many numbers, an index provides us with a single one. Hence the attraction for indices, at least in my opinion. Then, unfortunately, comes the details. Firstly how does one choose which parameters to include in the aggregation? Then, how does one 'aggregate' those various parameters into a single index, and how sensitive is the index to how those parameters are aggregated? For the paper under discussion, the authors have chosen rainfall parameters for inclusion in their index. They have chosen two rainfall thresholds (25 mm and 3 mm) for analysis, but provide no justification as to how these values were chosen. Was it 'a review of the literature and expert opinion' referred to on page 18550? 'Daily rainfall intensity' is a key parameter but that has not been defined: is it an average, and if so, of what?

The value of using a rainfall intensity factor in susceptibility is clearly related to erosion hazard, but using annual rainfall alone can be extremely misleading, as it is the water balance (precipitation – evapotranspiration) that is a much better indicator of the likelihood of revegetation.

The authors should choose one of either suitability or susceptibility as using both is redundant (compare Fig 2a and 2b).

Lastly after reading the paper one is left with the nagging question whether or not one could have come to the same conclusion/observations without having used the index method. And the answer is yes as the authors acknowledge. So where lies the value of the index touted in the introduction? What missing piece of information does an index provide? Figure 5a is an interesting synthesis of the topic of the paper. Could the authors not have in essence used it as the hypothesis for their paper instead of the synthesis? So coming back to the title: what new insights did the analyses provide?