

Interactive comment on “The Last Glacial Maximum in central North Island, New Zealand: palaeoclimate inferences from glacier modelling” by Shaun R. Eaves et al.

Anonymous Referee #3

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The manuscript presents the first detailed 2-D modelling experiments from nine catchments on volcanic summits in central North Island, New Zealand. The authors conclude that regional temperatures were reduced by between 4 °C and 7 °C at the LGM when compared to present. The manuscript is well written and presented and makes an important addition to the available literature. There are some points that need additional information but overall the paper is well presented and of a high quality.

Main points:

Model simulations: 1. To ensure the LGM results are robust sensitivity tests against the modern ice distribution should be presented / discussed. Whilst the comparison to presumed LGM limits are presented, the lack of direct comparisons to modern ice

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distribution does limit confidence. 2. The details and parameterization of the modelling should be made more explicit throughout

Geomorphology: 1. As it stands the geomorphological interpretation of the sites is not clear or well presented, leaving the reader somewhat unclear on the relationships. Whilst this is presented in other papers that are referenced, basic geomorphological maps and condensed chronologies should be presented to demonstrate clearly that the features being used to constrain the model simulations are clearly synchronous. As it stands there is no discussion of the possibility of multiple post glacial ice expansion, especially in the volcanic setting, where post glacial changes could make significant impacts on glacial dynamics and mass balance perhaps explaining the differences in the model simulations between the catchments? Perhaps a little more discussion and a further figure would achieve this?

Otherwise, this is a well written, and thorough piece of work that will make a valuable addition to this special edition!

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