

Thank you for the comments. I have made changes for each comment, as described in detail below, that, I believe, improve the manuscript and address your concerns. Additionally, I have edited the manuscript throughout for units, spacing of units, use of “valley”, “basin”, and “glacier” with correct capitalization. I have checked for completeness and correctness of citations in text and in the reference list.

Line 20 – I have reworded as suggested. I have revised the sentence starting “In the dry lee,” following the suggestion.

Line 27 – Here and elsewhere I have described our model as relating to the glaciation of the valleys rather than the basins as suggested.

Line 29 and 31 – I have specified that these are July average sea-level temperatures.

Line 32 – Yes – this is what I intended – I have revised the sentence to make clear what we intend to say.

Figure 1 – I have added names of countries to panel 1, changed the label in panel B and added a reference to panel d in the text. The references to panels in this figure have been corrected throughout the text.

Line 59 – changed meters to m w. e.

Line 63 – reworded as suggested

Line 73 – changed to 35 ka to follow journal style guide.

Line 75 – units separated from number and millimeters per year abbreviated as suggested.

Line 89 - space added

Line 91 – citation corrected

Line 121 – Episode removed

Line 170 – abbreviation removed

Line 180 reworded as suggested

Line 184 – units abbreviated as suggested

Line 189 – citation corrected

Line 208 – 210 – abbreviations replaced with citation date

Line 231 & 268 – table header moved above table

Line 283-284 – units abbreviated

Figure 3: Revised to add panel letters and caption revised.

Figure 4: Caption revised

Line 328: basins changed to Valleys

Table 3: Header moved and headings edited as suggested

Figure 5 – legend edited as suggested.

Line 371: degree symbol added.

Line 379: The units are correct as the sliding parameter is multiplied by the driving stress cubed over the ice thickness to get a velocity. I have added the reference that Oerlemans refers to as well.

Line 388: Changed as suggested – we meant local maximum extent but the suggested wording is more clear.

Figure 6 – formatting of units corrected.

Line 443 – changed wording to “during the early Wisconsin glacial advance”

Line 456-7 : units corrected

Line 500 – units spaced correctly

Line 605 – this is a typo – it’s a partial repeat of the following reference to Hobbs, 1978

Line 623 – corrected typos

Line 679 – corrected

Line 704 – doi added

Line 706-7 words in title capitalized

Line 720 and on – corrected here and in body

Line 734 - corrected