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Interactive comment on "Numerical simulations of the Cordilleran ice sheet through the last glacial cycle" *by* J. Seguinot et al.

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Seguinot et al. present a well designed numerical model for the Cordilleran Ice Sheet (CIS) in North America for the last two glaciations occurring over the past 120 000 years. Although the constraints on such a model are not yet all fully understood, their proposed simulations attempt to take account all the complexity of the glacial system, and utilizes a variety of data sets. The modeling confirms what geologists have observed in the field; there was a fast decay of the CIS during MIS 2 and MIS 4 and non-glacial conditions existed during MIS (Olympia Nonglacial Interval; e.g., Plouffe and Jetté, 1997). I applaud them for undertaking of such a difficult task, and notifying the reader where input data is sparse or inconclusive.

I provide the following general comments and observations which may help the authors

in revising the manuscript for final publication. Many of these points are both my personal suggestions and also the recommendations of others currently researching the CIS or who have completed studies in the past.

1) With the large amount of research that has been undertaken to map the landforms and deposits of the CIS by federal and provincial scientists, academic faculty, and undergraduate and graduate students and determine the extent, volume and dynamics ice sheet, the impression left on the reader by the opening sentence would be incorrect. These studies have greatly advanced our understanding of the CIS, and could be an important dataset to test against the modeling. Stumpf et al. (2014) provides a list of some of these studies.

2) To help the reader better understand the maps presented, I would recommend some spatial information be added (e.g., latitude/longitude grids; political boundaries; lakes and rivers, place names etc..).

3) Was the model tested against regional-scale ground-based data (e.g., Ferbey et al. 2013) to constrain ice divide positions, ice flow direction, and ice sheet thickness?

4) For the central sector of the CIS, Stumpf et al. (2000) provides some insight into the chronology and effectiveness of glacial erosional during the MIS. In figure 5, and in the accompanying text, they describe how landforms on the surface formed. For example, in lake valleys east of the Skeena Mountains, it appeared the major glacial streamlined landforms were formed during a longer glacial advance phase, with ice flow paralleling the valleys, and later flows, some perpendicular the valley flow, only weakly impacted them.

5) Stumpf et al. (2000) was the first study to extensively document a predominant westerly directed ice flow across high elevations in the Skeena and Coast Mountains. This flow direction appeared to continue into the late-glacial period. Other subsequent studies also confirm that late-glacial readvance eastward out of these mountains and retreat of ice margins westward into these mountains was limited.

I wish you all the very best.

Regards,

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