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7 March 2017

Dr. Mark F. P. Bierkens
Special Eric Wood Issue
Hydrology and Earth System Sciences

Dear Dr. Bierkens:

Thank you for your decision on our revised manuscript titled “Evaluating uncertainties in modelling the snow hydrology of the Fraser River Basin, British Columbia, Canada” by Siraj Ul Islam and Stephen J. Déry (Reference # HESS-2016-469). We have now revised our manuscript by addressing the minor comments of the referee. Our responses (in bold italic lettering) to the comments are enumerated in the attached document. Given the nature of these comments, only one minor revision to our manuscript was required.

Please do contact us if you have any questions or concerns in regards to our responses.

Sincerely yours,

Stephen Déry

Referee:

General comments

This my second review of this paper. I am satisfied with the answers provided by authors to both sets of reviewers' comments. Also, I would like to thank the authors for the additional work conducted to improve the overall strength of the results.

I only have two minor comments for the authors that can be found below.

Thank you for thoroughly reviewing our manuscript again. We have now revised the manuscript based on your minor comments.

Specific comments

- P.12, it is written: « The elevation correction, which is important when interpolating from coarser to higher spatial resolutions (Dodson and Marks, 1997), was not used to correct the orographic effects for the NARR dataset. Interpolating the NARR dataset from a 32 km to a 25 km resolution does not induce much elevation dependent uncertainties since the change in orography remains minimal between mean elevations at 25 km and 32 km grid resolutions. »

Please, back up this statement with a quantitative demonstration; that is introduce the supporting numbers.

The grid scale change (%) in elevation between mean elevations at 25 km and 32 km grid resolutions is shown in the Figure R1 below revealing nearly 0% change in orography over most of the region.

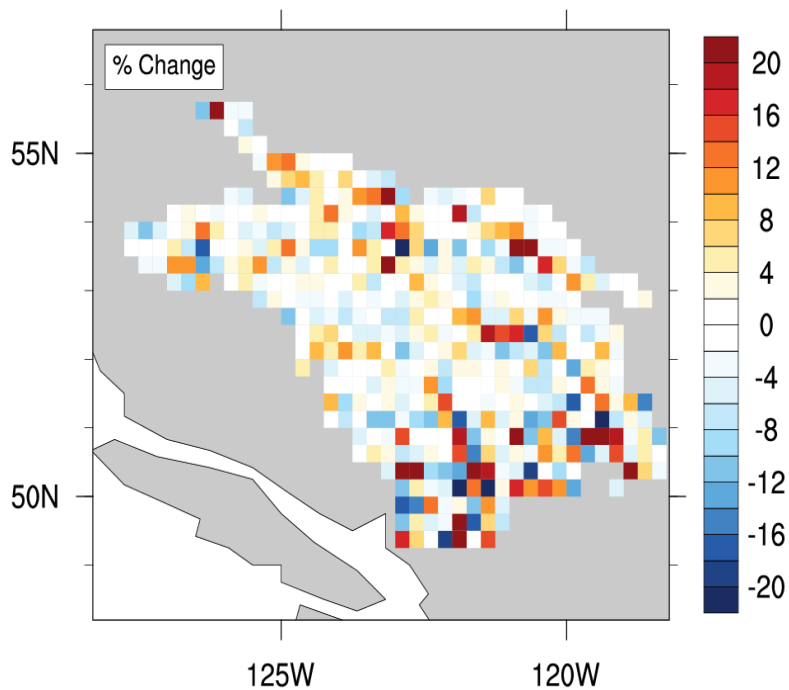


Figure R1: Spatial change (%) in elevation between 25 km and 32 km resolution.

We have now revised the paragraph at Page 11, Lines 18-21 and Page 12, Lines 1-2 as:

“The elevation correction, which is important when interpolating from coarser to higher spatial resolutions (Dodson and Marks, 1997), was not used to correct the orographic effects for the NARR dataset. Interpolating the NARR dataset from a 32 km to a 25 km spatial resolution induces negligible elevation dependent uncertainties as elevation changes remain below $\pm 20\%$ in the FRB, with most of the grid cells having nearly no difference in orography.”

• P.44, please spell out all authors in the following reference:

Su, F. G., et al.: Streamflow simulations of the terrestrial Arctic domain, *J. Geophys. Res.-Atmos.*, 20 110(D8), 2005.

Name of the authors is included in the references as:

*“Su, F., Adam, J. C., Bowling, L. C. and Lettenmaier, D. P.: Streamflow simulations of the terrestrial Arctic domain, *J. Geophys. Res.-Atmos.*, 110, D08112, doi:10.1029/2004JD005518, 2005”.*