

## ***Interactive comment on “Streamflow variability over 1881–2011 period in northern Quebec: comparison of hydrological reconstructions based on tree rings and on geopotential height field reanalysis” by P. Brigode et al.***

**Anonymous Referee #2**

Received and published: 8 April 2016

Dear Editor, Please find here below my review of the paper cp-2016-5:

Streamflow variability over 1881-2011 period in northern Quebec: comparison of hydrological reconstructions based on tree rings and on geopotential height field reanalysis By P. Brigode, F. Brissette, A. Nicault, L. Perreault, A. Kuentz, T. Mathevet, and J. Gailhard

This paper presents the reconstruction of the streamflow over a past period of time for a catchment in northern Quebec. It is based on analogue method using reanalysis of the past geopotential. This method allows to provide precipitations per year based on

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similar synoptic situations. These rainfall are later transformed in runoff by a second model. Comparing the results with the tree-ring model and spring floods analysis, the authors concluded that the results are promising.

1. Does the paper address relevant scientific questions within the scope of CP? Yes 2. Does the paper present novel concepts, ideas, tools, or data? Yes partly, it uses different know concepts but present an original approach. 3. Are substantial conclusions reached? Yes it shows the potential of the proposed method. 4. Are the scientific methods and assumptions valid and clearly outlined? In some aspect can be a bit improved some parameters are missing 5. Are the results sufficient to support the interpretations and conclusions? Yes 6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Clearly missing some inputs to reproduce the results 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes 8. Does the title clearly reflect the contents of the paper? Yes 9. Does the abstract provide a concise and complete summary? Yes 10. Is the overall presentation well structured and clear? Yes 11. Is the language fluent and precise? Yes 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Not really a lot of equations. . . 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? No, but some improvement are possible see general comments 14. Are the number and quality of references appropriate? Yes 15. Is the amount and quality of supplementary material appropriate? It can maybe be used, see general comments.

General comments

The paper is well written and is in a form very similar to other paper on the paleo climate text. It is rather long, but using several methods, this is necessary to present everything. Nevertheless, there is not always justification of the choices. For instance the choice of the zone used for the geopotential is not justified. And some parameters for the different models are not explicit. If possible it would be nice to integrate them

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in a way, but I know it is an issue because the paper will be longer. Because it is a long paper using several concepts, I would recommend to the author to summarize in a flow-chart figure each step of their methodology to reach streamflow. It would make it easier for the reader to follow the whole text. If the author can take this remarks into account, the paper will be nearly ready for publication.

Specific comments:

A few specific comments: Fig 1: I do not recognize the catchment on figure 1b? why? Page 3 line 4 add reference after "dendrohydrology". Legend figure 4: add "for" 1950?? Page 15 line 1: blank after the dot. Figure 9: I do not understand tree ring reference to Nicault and Boucher in b?

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Interactive comment on Clim. Past Discuss., doi:10.5194/cp-2016-5, 2016.