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Hydrology and Earth System Sciences Discussions

Interactive comment on "Streamflow input to Lake Athabasca, Canada" *by* K. Rasouli et al.

Anonymous Referee #2

Received and published: 15 January 2013

Summary:

This paper describes the relative streamflow input of the Athabasca and Fond du Lac Rivers into Lake Athabasca, and how the inflow has declined over the past 51 years of measured record. The hydrological regimes and trends were established using a regime shift detection method and statistical tests. This study is an extension of previous studies using a larger data set and mean average annual flow.

Specific comments/points requiring clarification:

1. I recommend that the authors rewrite the abstract - it currently has too many numbers in it and would be a better reflection of the content of the paper if it just gave a background to the study and a general comment about the results and their significance. As it stands the abstract does not entice me to read the rest of the paper.

2. The paper emphasises the importance of Lake Athabasca to local Canadian industry, but what is the significance of the results from this study to an international audience?

3. I recommend the authors have this paper proofread - as quite a number of sentence require grammatical correction, ie. quite a lot of sentences require commas to make the paper easier to read and discussion easier to follow.

4. Please change all in text references of "yr" to year or years as necessary.

5. The paper focuses on annual changes in flow, but what about seasonal changes, which could potentially be more significant?

6. Why was the significance level in this study $p<0.1$ chosen as opposed to the standard $p<0.05$ or $p<0.01$?

7. For the regime trend analysis, what are the R2 and p values? While there are a lot of numbers from statistics in this paper, there is very little verification of the significance of the results.

8. pg. 9072 line 22 - remove "in the following paragraphs" and reword this sentence.

9. pg. 9073 line 25 - insert "While" at the beginning of the sentence.

10. If a trend is not significant, what is the R2 value? P value? Eg, pg 9075 line 13

11. The authors mention that the PDO had a significant affect, and conducted a correlation analysis - how significant is significant?? What are the numbers?? R2 values? Considering the authors use this to support their results there should be more evidence of this in the paper.

12. Again for the extrapolation of the linear trend (section 5.2) what is the significance of the trend used for extrapolation??

13. pg 9079, line 5 - The time series used for the analysis is 51 years so why does this

say "during the last 51 years of the study period"?

14. The conclusion only reiterates the importance of the results for the surrounding area to Lake Athabasca and the oil sands industry in the area. Again what is the significance of this study outside of Canada? Are there any comments about how successful the analysis was? How could this analysis be used elsewhere? Why is this paper important to the readership of HESS?? What is the contribution to the knowledge in the area??

15. Figure 2: move legend underneath the plot. Figure caption: "L. Athabasca basin over 1960-2010" - change over to between.

16. All trend figures require axis labels to have a Capitalised first letter.

17. Remove titles from above all graph panels and have more informative figure captions. A lot of the figure captions could be expanded to explain what the reader is seeing - without having to refer back to the text.

18. For figures with more than one panel, consider labelling them a) and b), rather than referring to upper and lower panels.

19. Within graph panels: the regime and and trends text, please make these line up, they look messy as they are. Also what are the significance of the trends shown? Are there p or R2 values??

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 9065, 2012.