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Earth System Science Data Discussions

Interactive comment on "Proglacial river dataset from the Akuliarusiarsuup Kuua River northern tributary, Southwest Greenland, 2008–2010" *by* A. K. Rennermalm et al.

Anonymous Referee #1

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Overall this is a nice well written paper and well structured with good use of statistics. However, I have major comments which must be included in the paper before publication. If not, the paper should not be accepted for publication.

Major issue: Overall the paper is missing a comparison to previous paper like Mernild and Hasholt (2009). If the authors are not familiar with it Hashold et al. is having a paper in review for JGLAC (which I also reviewed). This paper should be compared to results from those papers, since there is a runoff/discharge difference of more than 200%. Hasholt et al. in review is significant higher that Mernild and Hasholt (2009). Since these observed values described in this paper is from the same river drainage

system as both Mernild and Hasholt (2009) and Hasholt et al. in review, a comparison will give this paper more significant value, that just showing the values. This comparison will of course delay the publication a few months, but the scientific outcome will absolutely be much higher, and the paper will be highly interest, than just showing values. Therefore, the authors should compare their observed values both against Mernild et al (2009) values and Hasholt et al. (in review) values.

I don't have confidence in the Q/h-relations, since the one at site 2 only are based on 4 to 5 observations, and even not covering the entire range (only between 9 and 22 m/s). Also, at site 3 the observations are only covering discharge values below app. 2 m/s. For those locations we can hardly say anything about peak values. It seems to me that too few observations are available here to make the paper strong. According to my point above, I would recommend that you wait a year to include more observations in your analysis, to make the paper stronger, as it is now.

Minor issues: L. 30: Not only melt water, also precipitation. L. 35: What does that mean - near-ideal locations? L. 37: If, considerable uncertainty, how then near-ideal properties? L. 62: Don't have references, which are not accepted or published. Erase. L. 74: How rare? L. 80: Here, should be a figure reference to Fig 1. L. 85: Again, what is a near-ideal site? L.101: How is the watershed estimated? And based on what DEM and tool? What are the uncertainties for the location of the watershed divide, and the area? L. 140: How often did the sensor fail to record? L. 147: What does a 'relatively' stable river cross section mean? L. 151: How come you didn't use the same interval for each river? L. 160: Did you compare velocity observations for sires 3 and 4, both due to the 0.6*depth method and the method used for turbulent water? What was the difference between these two methods? L. 207: Now you are stating that discharge measurements are difficult making accurate and precise, and you are measuring near ideal conditions (see further up in the paper). Something is unclear. How precise are the observed data? L 234: What are the uncertainties on cross-section measurements at each location across the stream? L 272: How does this affect your Q/h-relation?

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And the uncertainties in calculating discharge? What is the reduced precision based on that? L. 303: How reliable? Add a value. L. 344: Do you have any knowledge about when freeze-up occurred? L. 385: Why is it new insight, also related to observations from Mernild and Hasholt (2009), and Hasholt et al (in review). Please explain why and what is new? L. 459: Don't use submitted material as reference. Only published and accepted. L 489: How is the watershed estimated? Which DEM and program were used? What are the uncertainties in location of the watershed divide and in the estimated drainage area? Table 2: Why is R2-value for Site 2 so low compare to the other sites? If not stated in the text, then please explain. Figures 3 and 4: This figure is very small. Please make it greater. Figure 5: Site 2: How trustful is the Q/h-relation, since it is only based on four values between 10 and 22 m/s-1. The relation seems weak. If not explained in the text, please explain uncertainties related to few observations. Normally more that five observations are used. Figures 7 and 8: Both are very small. Please make them greater.

Interactive comment on Earth Syst. Sci. Data Discuss., 4, 71, 2011.