Review Rennermalm et al. ESSD, 4, 71-97, 2011 by R.S.W. van de Wal

The paper by Rennermalm et al. describes in great detail a data set of river discharge measurements in western Greenland over the years 2008-2010. A thoughtful analysis of the associated errors leads to a good data set with adequate errors assigned.

I feel that more can be done with the data and I would encourage the authors to do so. Whether it is necessary to include in the present manuscript is to be decided by the editor, but it will certainly increase the value of the manuscript.

Major comments

The paper is set up in a rather restricted scope. Eventually it is important to consider the link between discharge and what happens on the ice sheet. It is therefore regrettable that the authors do not dig into this. A very simple thing could be to compare the integrated summer discharge with the melt in the region (I believe I even provided data for that and else I urgently need to do so, if this is to be included). Does the year 2010 have an outspoken discharge? There has been considerably more melt in the region. You must be able to say something about this base on your discharge data. On a more detailed level a comparison can be made of the phase relation between melt and discharge or a distinction between engglacial lake drainage and melt in the discharge record.

It is hard to judge whether the careful analysis of the water discharge measurements are an improvement to a similar attempt in the early nineties by Russell and co-workers. I would like to see this. Can you show that measurements are more accurate now? Did people in the past neglect errors, which are important? This kind of information is important to judge whether the community made progress or is there no progress in the measurement technique itself and are we now only better aware of the uncertainties? (which is also progress).

There is a mixture of uncertainties and results in the paper. The paragraph on page 80 is fine, but what I would like to see is that it ends with a summarizing paragraph at the end, which clearly states the errors for the different sites. This information is now burdened in the result section. The result section can then focus more on the physical interpretation of the work and the comparison with melt.

Minor comments

-Abstract line 15 be more specific measurements of what??
-Abstract line 16 please rephrase now it reads if the channels deepen as a result of the statistical test
-Introduction line 8 please remove reference to unpublished work where there is no extremely urgent need to do. Note that I don't have access to this unpublished paper and that it potentially overlaps with the current paper and I therefore suggest the authors show that there is no overlap.
-Introduction I think it would be appropriate to work to the older work by Russell for reference to the catastrophic events (see below).
-Introduction There is definitely a need to include the paper by Van de Wal and Russell 1994 as it attempts to link river discharge to melt at the ice sheet. This is topic, which is not addressed at all which is a pity.
-Site description line 27 according to Russell there have been more outbursts in the past, I think you should mention that.
-It is interesting to see that there are discharge event in winter. We do also observe velocity variations in winter and it would be worthwhile to add a figure on that if you like to pursue this topic.
-Table 2 rst degree?
-Table 2 add a column d_0
-Figure 1 elaborate on how you distinguish the watershed on the ice and whether you believe that it is only this part of the ice, which drains to your discharge sites. Does the integrated melt over the drainage basin somehow match with the integrated discharge (evaporation and precipitation are small and can be corrected for)?

-I am somewhat puzzled by the fact that site 2 does not have the largest uncertainties. If I understand it correctly the velocity measurement with depth are carried out at this site at one depth only introducing a large uncertainty, which is not there for the other sites despite errors, are smaller. Can you clarify this? And if I am right stress this more in the text.

-I don't understand why the gray shading in figure 3 and 4 is not similar; particularly site 4 fig 4 seems to deviate from site 4 fig 3.

-Explain the off scale peak in discharge at site 2 in 2008 in the text.

-The time series set up in the figure 4-6 does not provide enough detail to observe the differences in the seasonal cycle for the different sites. Can you not plot them as a seasonal cycle for every site in a panel with three curves for the different years? One could then observe whether there are systematic differences between the years.

-A table with average discharge per site per year would be helpful as well.

-Figure 8. It is odd to have water temperature along the vertical axis if temperatures go down as low as -15˚C. I guess it would be better to have just temperature along the vertical axis.

References

R.S.W. van de Wal and A.J. Russell (1994). A comparison of energy balance calculations, measured ablation and meltwater runoff near Søndre Strømfjord, West Greenland. Global and Planet. Change, 9, 29-39.

A.J. Russell, F. van Tatenhove and R.S.W. van de Wal (1995). The effects of ice-front collapse and flood generation on a proglacial river channel near Søndre Strømfjord, West Greenland. Hydrological Processes, Vol. 9, 213-226.

Russell, A.J. 1989. A comparison of two recent jo □kulhlaups from an ice-dammed lake, Søndre Strømfjord, West Greenland. J. Glaciol., 35(120), 157–162.