

Interactive comment on “Increasing runoff from the Greenland Ice Sheet at Kangerlussuaq (Søndre Strømfjord) in a 30-year perspective, 1979–2008” by S. H. Mernild et al.

Anonymous Referee #1

Received and published: 23 April 2010

General

This is an interesting and useful paper that addresses important questions concerning melt and runoff variability and climate change over the last 30 years for a drainage basin near Kangerlussuaq, West Greenland. The study uses a combination of meteorological/hydrological modelling, field measurements and satellite data, and makes some interesting conclusions concerning recent changes in catchment runoff, although some of the uncertainties regarding the modelling could perhaps be more clearly presented. In general the work seems fairly solid. The paper is up-to-date and, on the whole, well written, and I am happy to recommend its publication once the following

C148

comments have been addressed.

Specific

Abstract & Summary: I would like to see a more explicit uncertainty estimate stated for the “~10%” decrease in percentage of catchment outlet runoff explained by runoff from the ice sheet.

p.323, l.22: delete “in different way”.

p.323, l.25 “in stead” -> “instead”.

p.328, l.20: “data was” -> “data were”.

*p.330 (bottom)-p.331 (top): Not sure how the authors “subdivided between runoff originating from the GrIS and from the area outside the GrIS, based on precipitation and snowmelt.” – please clarify.

p.331, l.18: change “where” -> “were”.

p.331, l.22: “approximately 2-3 weeks before simulated runoff...” – this significant time lag sounds as though there may be a problem with the retention part of the Snow-Model?

p.332:, l.14 “Local climatic trends...” – there are also larger-scale climatic trends over Greenland relating, for example, to distance from the North Atlantic Oscillation northern centre of action near Iceland.

Fig. 1: I don't like the greyscale topographic map: this looks quite unclear, and I think it would be better to show elevation contours at, e.g. 500-m intervals. Also, the watershed divide is far from clear on this figure. Panel (b) should include a scale bar.

Fig. 2(b) caption is confusing and needs rewording to reflect my point* above.