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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 #2

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Authors use various modeling tools and limited local data to estimate water-balance components for the Kangerlussuaq catchment and for the ice-sheet part of the catchment. The calculations use previously published data and methods, and thus are judged to be sound. Apparently the author previously published estimates for the two most-recent years, which correspond to the period with more measurements; and has also published ice-sheet-wide estimates for the period simulated in this paper. Thus the current paper represents an incremental addition to the modeling of runoff from a part of the ice sheet. The authors also introduce correlations between the current calculations and prior calculations, as well as satellite-derived estimates of surface melting. The stated objectives of the paper are somewhat technical and center around making

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the estimates and doing the above comparisons. There are really no conclusions in the paper, only findings from the calculations. After going through the paper the reader is left asking “so what?” The authors need to extend the analysis and their interpretation of the calculations and comparisons. Are they suggesting that the satellite data are good proxies of runoff from the Kangerlussuaq drainage? Are they suggesting that measurements in the Kangerlussuaq drainage, and associated modeling, are proxies for the whole ice sheet? Did they learn something from the current calculations for Kangerlussuaq that would cause them to go back and redo their ice-sheet wide calculations? The paper could be improved if it was reorganized around one or more science questions that then motivate the model calculations and comparisons that can result in conclusions. The text in the current summary and conclusions section is repetitive of the prior section and should be eliminated. There should be a clear results section, followed by a discussion section to provide interpretation of the results. The current results and discussion section starts with a paragraph giving background information, and serves to obscure just what are the current results. The discussion section should also include estimates of the uncertainty, especially given the large extrapolations and correlations needed to develop model inputs.

Interactive comment on The Cryosphere Discuss., 4, 321, 2010.

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