

Interactive comment on “Freshwater flux to Sermilik Fjord, SE Greenland” by S. H. Mernild et al.

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General comments: It is made clearer in the abstract, that ice discharge is the dominant source of freshwater to the Sermilik Fjord.

Abstract: The abstract is re-written. It is now clearer, that ice discharge is the dominant source of freshwater to the Sermilik Fjord. The 3.8 m is erased from the abstract, and explained in further detail in the ‘Result and Discussion’ chapter. So is the role of changing glacier cover.

Table 2: Table 2, is divided into a Table 2 and a Table 3. The value after the Fenris row (33.9*10⁹ m³ y⁻¹) is the sum of the satellite-derived ice discharge from the Helheim

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Glacier (25.9), Fenris Glacier (2.5), and Midgård Glacier (5.5).

3.2-1201: The potential loss of water across the Mittivakkat Glacier divide has been illustrated in Mernild (2006) and Mernild et al (2006b), as a factor. Since the watershed divide is right on the middle of the glacier, it has an impact on the water flow. No fig’s will be added (a fig of the watershed divide can be seen in Mernild and Hasholt 2006). Neither a photo of the runoff measuring station will be added. A photo of the station can be seen in: Mernild, S. H., B. Hasholt and B. U. Hansen 2006. Meteorological observations 2004 at the Sermilik Station, Ammassalik Island, Southeast Greenland. Danish Journal of Geography, 106(2): 131–140. and, Hasholt, B. and S. H. Mernild 2006. Glacial erosion and sediment transport in the Mittivakkat Glacier catchment, Ammassalik island, southeast Greenland, 2005. IAHS Publ. 306, pp 45–55.

References are added to the manuscript to illustrate where the reader can find additional info about the potential errors 2 and 3.

SnowModel has further been tested local scale in the following studies based on both physical adjustments and mathematical adjustment factors: Mernild, S. H., G. E. Liston, B. Hasholt and N. T. Knudsen 2006. Snow distribution and melt modeling for Mittivakkat Glacier, Ammassalik Island, SE Greenland. Journal of Hydrometeorology, 7: 808–824. Mernild, S. H. and G. E. Liston 2010. The influence of air temperature inversion on snow melt and glacier surface mass-balance simulations, SW Ammassalik Island, SE Greenland. Journal of Applied Meteorology and Climate, vol. 49(1): 47–67.

And, on regional scale:

Mernild, S. H., G. E. Liston, C. A. Hiemstra, and J. H. Christensen 2010. Greenland Ice Sheet surface mass-balance modeling in a 131-year perspective 1950–2080. Journal of Hydrometeorology, vol. 11(1): 3–25. Mernild, S. H., G. E. Liston, and B. Hasholt 2008. East Greenland freshwater runoff to the North Atlantic Ocean 1999–2004 and 2071–2100. Hydrological Processes 22: 4571–4586 . DOI: 10.1002/hyp.7061.

Conclusion: The conclusion is re-written to make it clearer.

Interactive comment on The Cryosphere Discuss., 4, 1195, 2010.

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