The Cryosphere Discuss., 3, S92–S93, 2009
www.the-cryosphere-discuss.net/3/S92/2009/

The Cryosphere Discussions

Interactive comment on "Frost flower chemical signature in winter snow on Vestfonna ice cap (Nordaustlandet, Svalbard)" *by* E. Beaudon and J. Moore

Anonymous Referee #2

Received and published: 25 March 2009

The paper presents chemistry data from Nordaustlandet ice cores and interpretes winter sea salt signals for the occurrence of frost flowers on young sea ice. The data were collected in the IPY Kinnvika project. The hypothesis is that at glacier locations close to frequently occurring young ice formation regions, sea salt accumulation rates are high. The mechanism for the salt transport is frost flower formation and disintegration on the surface of young sea ice.

Sampling and data analysis have been very well done and described in the paper properly. The reasoning of the salt transport is clear and qualitatively correct. No estimate is provided for the mass flux by the frost flower mechanism which would be necessary for

the final judgement. Such quantification is, however, difficult and can be considered as a topic of a future work. The mechanism has been suggested earlier in Antarctica but so far not in the Arctic. Potentially, if the hypothesis can be verified, it would become an important tool in interpretation of ice core data for local climatoogical conditions. Supporting the Antarctic result and extending that to north, this paper makes a signicant contribution to the cryosphere literature.

Technically the paper is well constructed as it is.

Interactive comment on The Cryosphere Discuss., 3, 159, 2009.