**Atmospheric
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Interactive comment on "Mercury in the snow and firn at Summit Station, Central Greenland, and implications for the study of past atmospheric mercury levels" *by* X. Faïn et al.

Anonymous Referee #2

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This is an interesting manuscript about the measurements of mercury in Firn and the snow surface boundary layer in Summit. This interestingly shows that the snow is both a surface and sink for the mercury. The manuscript is clear and well written.

Comments

1) I consider that the authors should place more emphasis on the fact at their site having no significant local halogen oxide and halogen that this represents the base case. In this context how is the Hg deposited in the snow in the first place. Is this uptake in droplets prior to precipitation?

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2) I think the authors need to make some reference to the theories of the bromine explosion and the connection of potential frost flower regions with the source of bromine. Similarly there are now measurements of Iodine Oxide at least in the Antarctic both by remote sensing from space and at the ground, which show activation over the snow. Clearly there appears to be no bromine explosion at the Summit site.

3) The authors consider that photooxidation mechanism in the snow are not playing a role. I consider that the argument for photochemistry or photooxdiation mechanism in the snow/need further consideration. Is it possible that OH or NOx in the firn/snow may involved. What reactions could mercury be undergoing in the firn/snow and the lower atmosphere at their site.

I recommend that after the authors take these comments into account and remove the remaining English errors that the manuscript be published.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 18221, 2007.

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