

General comments:

This is a very solid study with important new results on the aerosol in the summer Arctic and its possible sources and effects. Besides the few detailed comments listed below I only have one major issue. Why were the rich and unique data on aerosol composition only discussed in connection with the case study and not also in the discussions of air masses?

Recommendation: Accept with modifications and complementing discussion of aerosol composition.

Line	Comment
46	Please cite the references that established the phenomenon of Arctic haze long before your first citation
52	Again, the influence of the Arctic front has been published about decades before your first citation
85	Define “main mode number density”
91	There is another, more general, explanation, (see Heintzenberg and Leck, 1994)
116	To be complete you might want to cite Heintzenberg et al. (1991) even though no size distributions were measured
151	Where do these transmission data come from?
152	There must have been a substantial temperature increase from ambient to inside the CPC. Did you estimate the potential shrinking and loss of volatile particles due to this temperature increase?
182	“Floe”?
384	Explain “SIL” in text and figure
545	No “loadings”, please!
792	No citations “in prep.”, please!

#### Literature

Heintzenberg, J., Ström, J., Ogren, J. A., and Fimpel, H.-P.: Vertical profiles of aerosol properties in the summer troposphere of the European Arctic, *Atmos. Environ.*, 25A, 621-628, 1991.

Heintzenberg, J., and Leck, C.: Seasonal variation of the atmospheric aerosol near the top of the marine boundary layer over Spitsbergen related to the Arctic sulphur cycle, *Tellus*, 46B, 52-67, 1994.