

Interactive comment on “Characterizing aerosol transport into the Canadian High Arctic using aerosol mass spectrometry and Lagrangian modelling” by T. Kuhn et al.

Anonymous Referee #1

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Nice and ambitious paper which presents interesting results from the high Canadian Arctic. The measurements from the PEARL will be of great and increased interest to the science community when the time period of the data has grown large enough to perform reliable statistical analysis. Its high altitude location may give crucial information in the years to come if the data is combined with the ones from e.g. Alert, another Canadian Arctic station, when it comes to characterizing to what extent the stratification of the Arctic troposphere affects what source regions that are sampled in the measurements at different heights.

Some small comments: Throughout the paper be consistent in the use of “l/min” or “l

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min⁻¹”. Choose one and stick with it.

Page 13408 Line 8: “long range” missing a “-”

P.13409 L.22: “sources of these materials” “.” is missing.

P.13413 L.7: Definition of the expression “ID”.

P.13415 L.12-13: “Of course, the particles are very well. . .” Consider revising.

P.13418 L.25-26: “These data are shown in green on Fig. 4.” Should be “in Fig. 4.”

P.13419 L.11-17: “Data from the first. . . . a correlation coefficient R²=0.50” Consider reformulate this part to make it more clear for the reader, and consider the use of the word “points” in this section.

P.13420 L.25: Definition of the expression “MS mode”.

P.13423 L.21: “(called the source. . .” missing the end of this parenthesis.

P.13424 L.12,17 & P.13441 Figure caption Fig.9: Which dates are plotted and discussed, 20-23 or 26-29 of August?

P.13424 L.26 (Fig. 10): “. . . areas distributed over Russia.” From the plots it is really hard to see if these footprint residence times are only located over Russia as described. It looks like a major part of this “Russian” contribution might be more properly assigned also to the Baltic States, Belarus, Ukraine and Kazakhstan. This will then also have an effect on the section where conclusions are drawn.

P.13425 L.20-21: “. . . as well from central and western Russia”. See comment made above about the interpretation of Fig. 10.

P.13425 L. 23: “throughput” Misspelling?

P. 13426 L.18: See comment above about the interpretation of Fig. 10.