

R3

The authors thank the reviewer for the careful review and the hints to improve the manuscript.

**Q1: ... I found a little poor the aerosol characterization and I recommend to the authors to add supplementary information from AERONET for a major aerosol characterization, taking into account that only two days are characterized. More detailed information will benefit the section of results. The use of SDA algorithm to discriminate coarse and fine particles can be useful. Furthermore, the data allows to combine visible and far infrared information.**

Answer:

Using emission FTS to do aerosol component retrieval in infrared waveband could help to obtain more information about the effect of aerosols on the Arctic atmosphere. We agree that it is advisable and worthwhile to combine AERONET measurements and the method outlined here. Such studies are planned for the future together with an evaluation if the lidar data from cloudnet can be used to replace the data of the KARL lidar.

**Q2: The paper is not focused in the methodology, already described elsewhere (Richter et al, 2020), hence this section may be shortened, for example the equations may be removed and give a more qualitative description and problems involved. On the contrary, an idea more quantitative of the associated errors to the retrieved parameters, as AOD, would be appreciated.**

Answer:

Richter et.al. 2020 used emission spectra obtained by an FTIR instrument to infer cloud parameters, not aerosol composition. The reviewer is correct, the general method is the same, but the scattering tables are different and so is the characterization. This paper is supposed to serve as a base for further studies.

**Q3: The Appendix A may be included in the Section 3**

Answer:

Appendix A has been corrected in the Section 3.3.

Specify comments

**Line 135, modify the word DSIORT, Stamnes et al. (1988))**

Answer:

Corrected.

**Line 222, Capital letter are used along the document for TCWret V1 and V2: modify Tcwret V1 and aerosol parameters using Tcwret V2.**

Answer:

Corrected.