

Interactive comment on “Particulate trimethylamine in the summertime Canadian high Arctic lower troposphere” by Franziska Köllner et al.

Anonymous Referee #1

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This work in particular presents aircraft-based measurement results of particle-phase TMA in summertime Arctic aerosols, and analyzed its origin in combing with other supporting data. Overall, the paper is well written and clearly presented, in particular, I found the results results and data interpretation were convincing, overall I recommend its publication in ACP, while a number of comments need to be addressed first, as listed below: (1) The paper in total analyzed 7412 particles. Is this number covering all the particles sampled during the measurement? Or if you actually sampled more samples, then based on what principle, you chose this number of particles? Also, as you have sampled particles during 4-12 July, any changes of the properties with the changes of meteorological conditions of each day? Any difference between daytime

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and nighttime if flight time allows? (2) TMA-, Na/Cl-, EC-, and levoglucosan-containing particles in total occupied a bit less than 50% of all particles. However, the rest particles (>50%) were not discussed, how about their properties? (3) As analyses on 7412 particles in fact only covers a very small portion of ambient particles, and single particle analyses in principle is not a bulk analysis, I think such limitations should be mentioned clearly. On the other hand, why the results based on a small portion of particles are representative should be justified as well. (4) The analyses regarding the sources and processes of TMA-containing particles might be discussed in combination with data for other species. Is that possible? (5) Do the authors look at other amines besides TMA in the aerosols? Although TMA might be the most abundant low molecular weight amine, other amines can be present in the aerosols as well.

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