

Response to the Editor on “Investigation of New Particle Formation mechanisms and aerosol processes at the Marambio Station, Antarctic Peninsula” by Quéléver et al. submitted to ACP

We thank the editorial team for accepting our paper for publication and for providing additional technical comments. All technical corrections were assessed, and the modifications were done in the manuscript.

Technical corrections:

TC1: P2, L43: add "of" so that it reads "concentration of ammonia"

>> change made

TC2: P18, Fig. 6 caption: Aerosol -> aerosol

>> change made

TC3: P21, L522: check sentence. Difficult to understand. I suggest to rephrase

>> The sentence was changed to: *”Furthermore, laboratory studies (e.g., Schobesberger et al., 2013) have shown that (negative) ion composition from APi-TOF analysis can matches the cluster composition of the neutral clusters involved in NPF. Therein, the appearance of DMA in the SA dimer and trimer suggests sufficient DMA to trigger nucleation. On the other hand, the large clusters containing NH₃ is consistent with high NH₃ gas concentrations that can dominate nano-particle growth.”*

TC4: P21, L532: Check sentence. Sounds wrong.

>> The sentence was changed to: *“MSA-containing ions can be identified (cf. Fig. 7, orange dots) at $m/z = 94.9808$ and $m/z = 192.9482$, respectively. Several studies have shown MSA can be involved in atmospheric nucleation (Hodshire et al., 2019) - especially with clusters containing MSA, SA and DMA (Bork et al., 2014). However, in our case, MSA-containing clusters were only found as CH₃SO₃⁻ or as CH₃SO₃H.HSO₄⁻. MSA was not observed in large clusters that would contain altogether SA, NH₃ and/or DMA. Therefore it is unlikely that MSA would contribute to the nucleation observed in this study case (at least not through to negative ion pathway)”*.

TC5: P21, L539: arctic -> Arctic

>> change made

TC6: P21, L539: delete parentheses around reference

>> change made

TC7: P23, L585: Sounds weird. I would suggest to rephrase to "shows air mass trajectories vs time and altitude" or "shows time and altitude dependence of the air mass trajectories"

>> change made

TC8: P23, L585: delete parentheses around reference

>> change made

TC9: P24, L602: Feb -> February

>> change made