

Dear Editor:

Thank you very much for handling our manuscript. Point-by-point responses to each of the technical corrections are provided below. Our replies are highlighted in blue color while the original comments are black bold-faced.

Sincerely,

Damao Zhang

Technical corrections:

- Please improve the resolution of your figures for publications. They are currently too coarse.

We replotted all the figures with high resolution.

- Please stick to the acronyms and signs once you introduced them. I am particularly referring to CALIPSO, CTT, IWP, and N_{ice} but there might be more. Please check the manuscript.

We thank the editor for the comment. We removed duplicated acronym definitions (e.g. 'CALIPSO' in page 4, line1; 'IWPs' in page 9, line18). We stick to using CTT after its first definition in page 6, line 12 (except in figure captions so that readers can interpret the figures quickly by reading the captions). We also deleted the 'N_{ice}' acronym definition and used 'ice number concentration' all the time.

- Figure 6 is not really discussed and its message is transported by Figure 7. You might consider omitting Figure 6.

We thank the editor for this comment. However, Fig. 6 is a key figure to show that observed larger ZL seasonal variations over northern latitude bands are statistically reliable. We point this out in the manuscript in page 8 line 29.

- page 3, line 6: remove one of the stratiforms

We removed one of the 'stratiforms'.

- page 3, lines 8/9: use just 'INP', not 'INP aerosols'

We changed it to 'INP' as suggested.

- page 4, line 13: Winker et al. (2003) might not be the best reference for CALIOP

We changed the reference to an updated one – Winker et al. (2007).

- **page 6, line 12: change 'are' to 'is'**

Corrected.

- **page 8, line 15: change 'are not able to' to 'cannot be'**

Corrected.