

RESPONSE TO RC2 (MANUSCRIPT ESSD-2026-192)

We thank the editor and the reviewers for the time and care they devoted to evaluating our manuscript. We greatly appreciate the constructive comments and suggestions, which helped us to improve the manuscript and to clarify the presentation of the dataset. Our point-by-point responses are provided below, with the referee comments shown in blue and our responses in black.

Are the particle images archived as well as the bulk parameters?

Thank you for raising this important point. The particle image files themselves are not included in the archived dataset. At present, HALO-DB does not support the storage of this image format, and the image dataset is too large to be included. However, we have added a statement to the Data Availability section that the cloud probe image dataset can be provided upon request. The processed bulk parameters are included in the archived dataset.

Line 101. The 2DS probe is now the standard for providing particle size distributions in the critical range of sizes of particles. Just wondering why a 2DS was not used.

We agree that the 2DS is an important instrument for particle size distribution measurements in this size range. However, due to technical issues with the instrument, deployment of the 2DS during the SENS4ICE-EU campaign was not possible. The dataset therefore reflects the measurements from the probes that were available and operational during the campaign.

135 large droplets>drops

I changed the wording to avoid repetition.

173 “Nevzorov probe” make it “173 Nevzorov probe specifications”

Sounds better this way, thank you for pointing it out.

273. How do you account for the ice mass in the third to second moment?

We agree that, for ice particles, the ice mass interpretation requires clarification in that section. The effective diameter of the ice phase defined as the maximum diameter, which is the diameter of the smallest enclosing circle of the image. Ice water content is determined by summing particle mass derived from the measured projected area, using the area-to-mass parametrization described in Baker and Lawson (2006). We have corrected the text to make this distinction clearer in Section 5.3 (lines 278-281).

279 what mass dimensional relationship is used?

We hope that this is also clarified in the previous answer. Specifically, it is the least squares fit with respect to the area. The equation is defined as $M = 0.115 A^{(1.218)}$, where A is the projected particle area and M is the particle mass. (from Baker and Lawson (2006))