This study presents the measurement results of ambient INP concentrations and related aerosol properties during the NASCENT campaign in Ny-Ålesund, Svalbard in October-November 2019.The paper describes the complexity of ice nucleating particles (INP) in Arctic coastal environment. Physicochemical parameters have been analyzed and tested and are ice nucleation temperature, heat-lability, and fluorescence activity, which were correlated with environmental parameters such as wind speed, wind direction, temperature, and snow coverage. The results are highly interesting and assume high-latitude dust sources from long-range transport that could be responsible for INP enrichment. This paper should be published after some minor changes:

2.1 measurement location: Please provide already here the GPS coordinates for the aerosol container and the GVB station.

Instead of figure 1b, a map would be more helpful showing the distances and a wind rose including wind speed and wind direction frequencies.

Figure 2 is valuable for the interested reader but might be shifted to the appendix.

2.2 INP sampling techniques: You might discuss the different sizes and number of droplets been investigated with the three techniques (WT-CRAFT, HINC and DRINCS). What is the impact of both parameters on the error bars, the homogeneous ice nucleation temperature and the limit of detection? Please provide a discussion which makes these differences and their impact on the results more transparent for the reader.

2.3. Heat treatment: As already discussed by many authors, the impact of heat treatment is an ambiguous procedure (please quote the respective literature), e.g. some low-molecular INM from pollen can be rather heat stable (T_{on}<-15°C), while high-molecular INM agglomerates from the same source are losing INA due to heat treatment. A more reliable technique is digestion of the INP/INMs with enzymes, which will give evidence for the presence of proteins. Treating ice nucleation active samples with enzymes (e.g. Kozloff et al., 1991; Burkart et al. 2021, Pummer et al., 2012; Felgitsch et al., 2019), chaotropic reagents (e.g. Pummer et al., 2012; Fröhlich-Nowoisky et al., 2015), or a strong oxidizer (e.g. H_2O_2; Gute et al., 2020) to investigate the nature of ice nuclei has been performed in the past.

3.1 INP concentrations: In figure 4, it is interesting to note that in the range -5° to -15°C the INA decreases a lot, which might be interpreted as proteinaceous aggregates (Seifried et al. 2023). In figure 4c the legend with full circles is missing. Eventually, the authors might use different symbols related to the different colors. In figure 4c also error bars are missing.

In the text you mention a sensitivity of the proteins due to cryo-storage. Please provide explanation for this effect.

Table 1: The Pearson correlation coefficient is listed. Please, explain why a r>0.5 indicates strong correlation. How this category has been defined? Also, for N_{INP}(T=-6°C) / n_{AC+ABC} the 0.63 should have two asterixis.

Figure 7 and 8: The labels on the axes are rather small.

Figure 9: Please us different symbols related to the different colors.

Table 2: What means “NO”?

Figure 11 and 12: The labels in the figures are much too small and are unreadable.

Figure B1: Please describe the figure in more detail. The particles have the typical shape of NaCl crystals. Please mark the spots in the SEM where the EDX has been recorded. If available an EDX mapping might be shown.

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