

# Supplement to: Ice nucleating particle concentrations of the past: Insights from a 600 year old Greenland ice core

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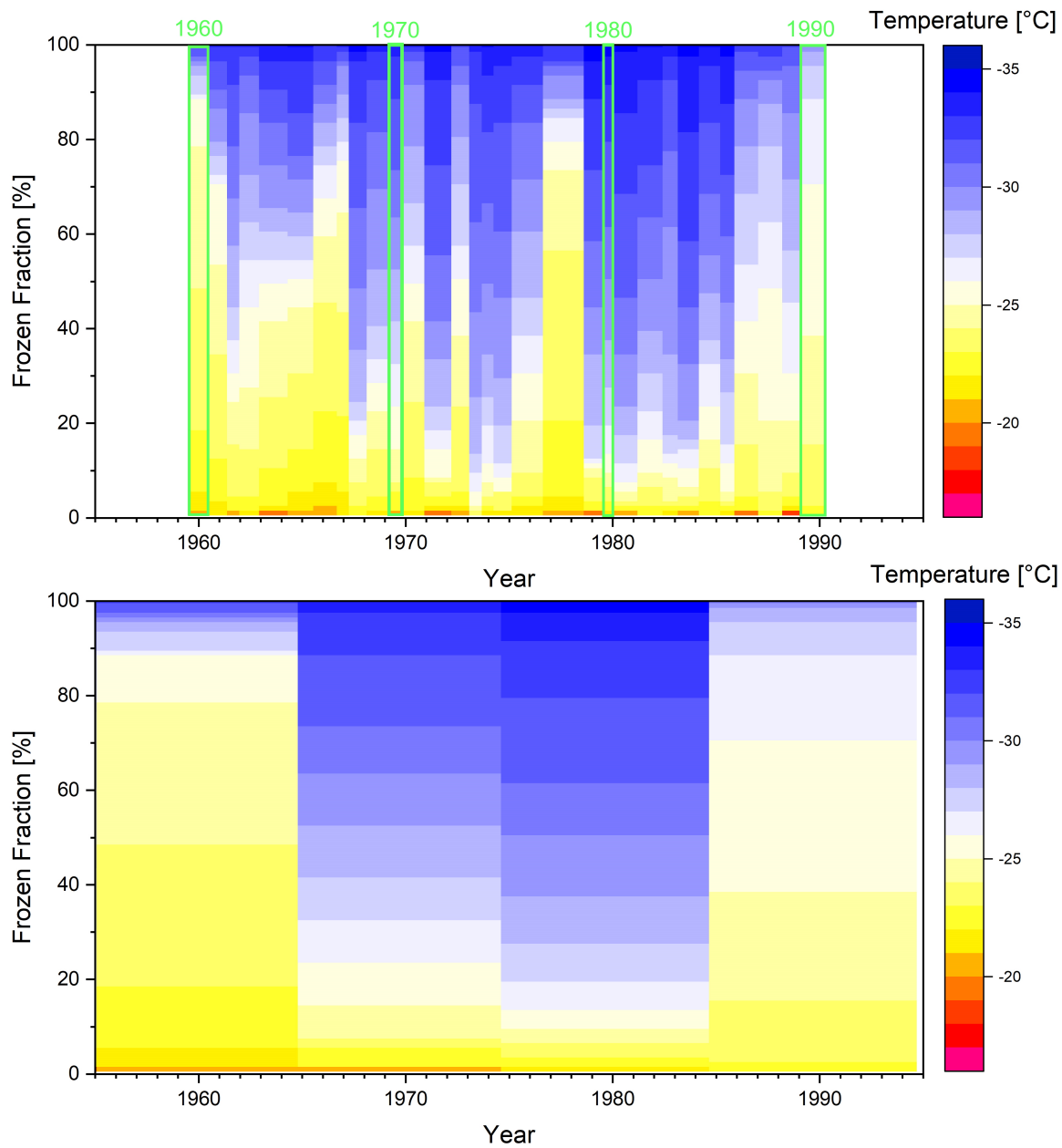
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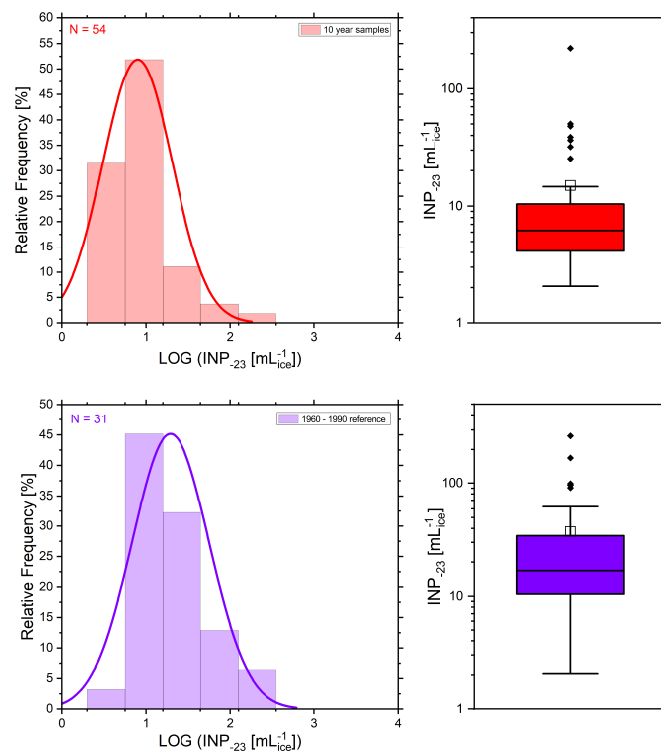
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**Table S1.** Pearson correlation between the INP concentration and CFA/IC parameters of the complete data set. Bold coefficients indicate a significant correlation ( $p < 0.05$ ). The number of samples is given in parenthesis.

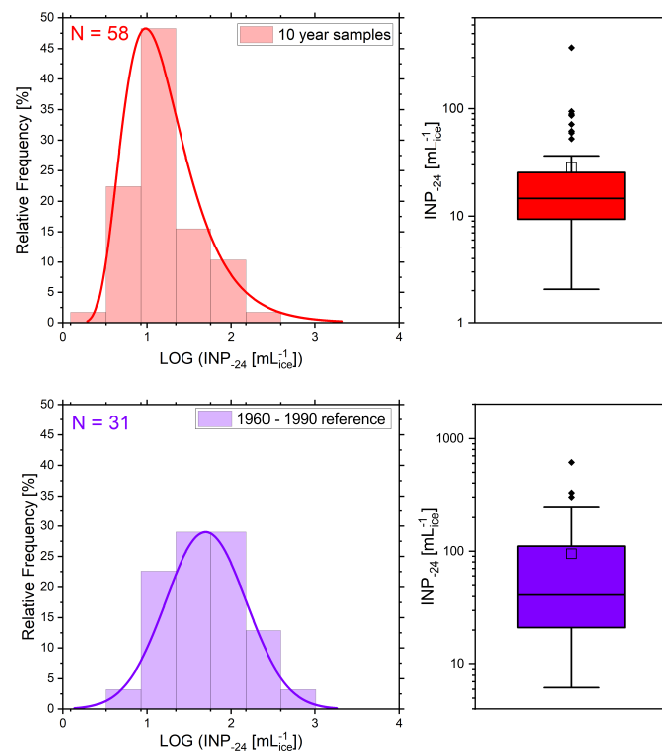
		-20 °C	-23 °C	-24 °C	-25 °C	-26 °C	-27 °C	-28 °C	-30 °C
CFA	dust	-0.11 (57)	<b>0.19</b> (121)	<b>0.26</b> (125)	<b>0.27</b> (125)	<b>0.21</b> (125)	<b>0.24</b> (124)	<b>0.31</b> (123)	<b>0.34</b> (120)
CFA	conductivity	-0.04 (58)	0.15 (122)	<b>0.20</b> (126)	<b>0.20</b> (126)	0.15 (126)	0.11 (125)	0.14 (124)	0.04 (121)
CFA	Ca <sup>2+</sup>	-0.16 (58)	0.06 (121)	0.12 (125)	0.12 (125)	0.07 (125)	0.09 (124)	<b>0.18</b> (123)	<b>0.20</b> (120)
CFA	Na <sup>+</sup>	0.01 (48)	0.01 (105)	0.04 (107)	0.03 (107)	0.00 (107)	-0.04 (106)	-0.03 (105)	-0.08 (103)
CFA	NH <sub>4</sub> <sup>+</sup>	-0.09 (55)	-0.02 (112)	0.01 (116)	0.02 (116)	0.01 (116)	0.06 (115)	0.11 (114)	0.05 (111)
CFA	NO <sub>3</sub> <sup>-</sup>	-0.11 (55)	0.00 (113)	0.01 (116)	0.00 (116)	-0.01 (116)	0.04 (115)	0.12 (114)	0.18 (111)
IC	Ca <sup>2+</sup>	-0.10 (61)	0.05 (126)	0.10 (130)	0.11 (130)	0.09 (130)	0.09 (129)	0.17 (128)	0.13 (125)
IC	Na <sup>+</sup>	-0.01 (61)	-0.01 (126)	-0.01 (130)	0.00 (130)	0.00 (130)	0.00 (129)	0.03 (128)	0.03 (125)
IC	NH <sub>4</sub> <sup>+</sup>	-0.10 (61)	-0.02 (126)	0.02 (130)	0.02 (130)	0.01 (130)	0.06 (129)	0.15 (128)	0.06 (125)
IC	NO <sub>3</sub> <sup>-</sup>	-0.01 (61)	-0.06 (126)	-0.05 (130)	-0.06 (130)	-0.07 (130)	-0.05 (129)	0.01 (128)	0.01 (125)
IC	K <sup>+</sup>	-0.04 (61)	0.00 (126)	0.01 (130)	0.01 (130)	0.00 (130)	0.02 (129)	0.04 (128)	0.03 (125)
IC	Mg <sup>2+</sup>	-0.05 (61)	0.01 (126)	0.01 (130)	0.01 (130)	0.01 (130)	-0.03 (129)	0.03 (128)	-0.02 (125)
IC	F <sup>-</sup>	-0.04 (34)	0.00 (69)	0.00 (70)	0.02 (70)	0.08 (70)	0.11 (70)	<b>0.24</b> (69)	<b>0.29</b> (66)
IC	MSA <sup>-</sup>	-0.15 (34)	-0.10 (61)	-0.10 (63)	-0.11 (63)	-0.09 (623)	0.04 (62)	0.08 (62)	0.11 (62)
IC	Cl <sup>-</sup>	-0.07 (61)	-0.01 (126)	0.00 (130)	0.01 (130)	0.00 (130)	-0.01 (129)	0.02 (128)	0.01 (125)
IC	Br <sup>-</sup>	-0.07 (46)	0.12 (96)	0.10 (99)	0.08 (99)	0.06 (99)	-0.12 (98)	-0.07 (97)	-0.01 (96)
IC	SO <sub>4</sub> <sup>2-</sup>	-0.07 (61)	-0.01 (126)	0.03 (130)	0.03 (130)	0.02 (130)	0.01 (129)	0.07 (128)	-0.03 (125)



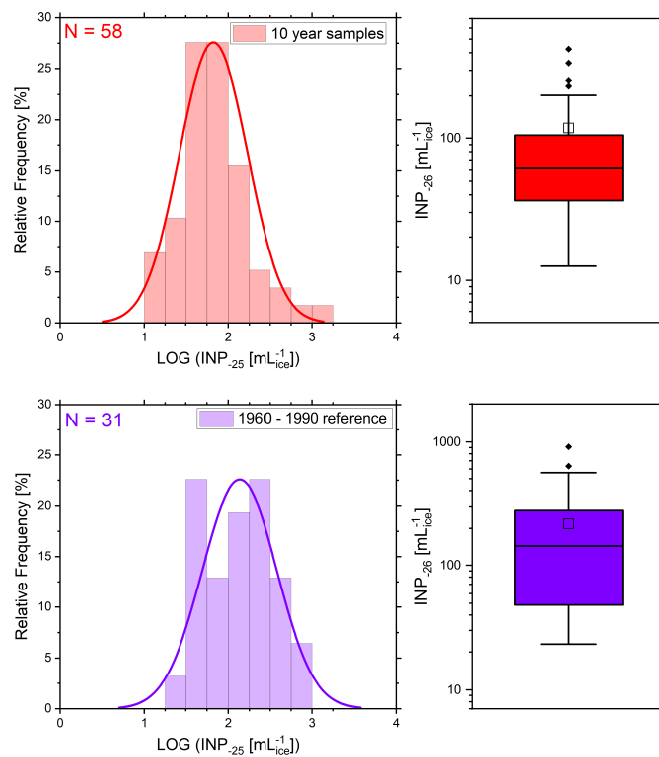
**Figure S1.** Qualitative comparison of the freezing spectra with regards of the two general sampling frequencies (top: 1 sample per year, bottom: 1 sample every ten years). The four samples of the lower sampling frequency (bottom layer and highlighted in green on the top layer) qualitatively reflect the higher frequency data well.



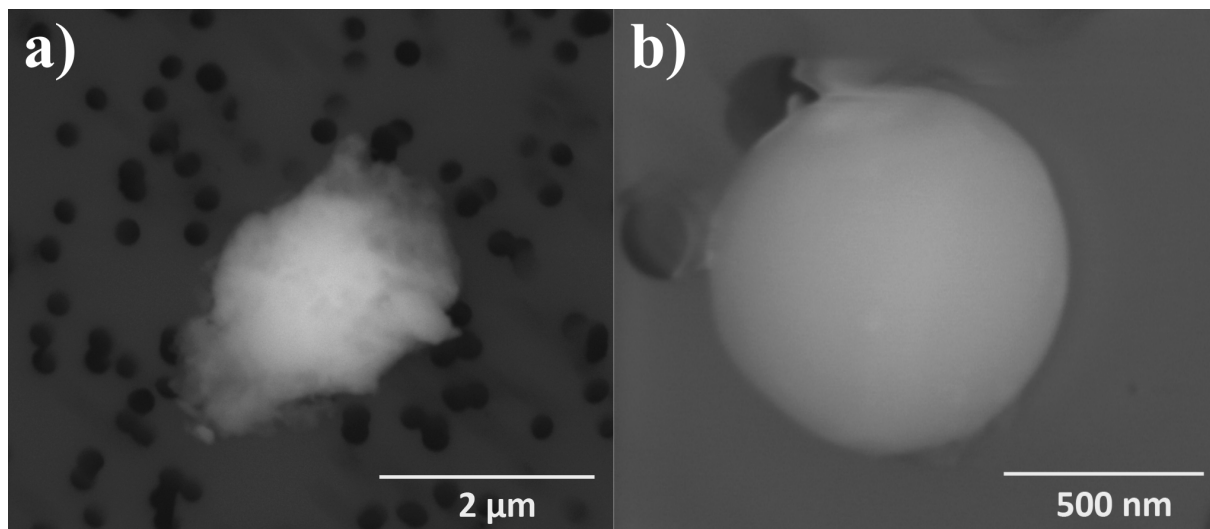
**Figure S2.** Empiric probability density function (bars) of the logarithmic INP concentration at  $-23^{\circ}\text{C}$  of the 10 year samples (top, red) and the modern day samples (bottom, purple). The data follows a log-normal distribution (fitted curve). The right panel shows the corresponding Box-Whisker plot.



**Figure S3.** Empiric probability density function (bars) of the logarithmic INP concentration at  $-24\text{ }^{\circ}\text{C}$  of the 10 year samples (top, red) and the modern day samples (bottom, purple). The data follows a log-normal distribution (fitted curve). The right panel shows the corresponding Box-Whisker plot.



**Figure S4.** Empiric probability density function (bars) of the logarithmic INP concentration at  $-26\text{ }^{\circ}\text{C}$  of the 10 year samples (top, red) and the modern day samples (bottom, purple). The data follows a log-normal distribution (fitted curve). The right panel shows the corresponding Box-Whisker plot.



**Figure S5.** Scanning electron microscope image of an aluminosilicate particle (a) and a fly ash particle (b) from the 1977 sample.