Spatial variability of ^{10}Be in deep ice and the influence of the measurement procedure - supplementary information

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Figure S1 shows the cutting plan for A-cut pieces from EDC and indicates the surface which was scanned with the xLASM system.

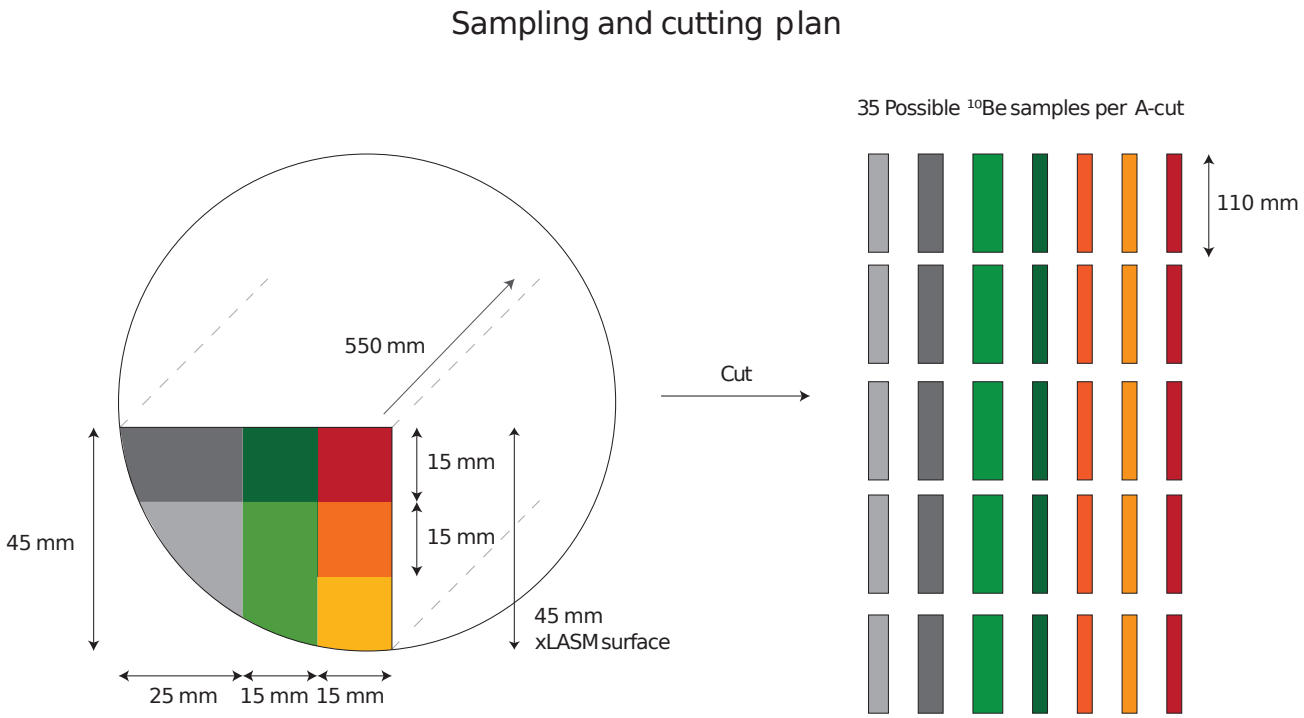

Figure S1. Cutting plan.

Table S1 lists the EDC samples and their respective depths and ages.

Table S1. EDC sample selection.

Bag	$Depth_{top}$	$Depth_{bot}$	Age / yr BP
951	522.50	523.05	21,954
3247	1785.30	1785.85	138,770
4342	2387.55	2388.10	272,503
4782	2629.55	2630.10	358,368
5060	2782.45	2783.00	429,744
5302	2915.55	2916.00	544,440
5540	3046.45	3047.00	646,708
5708	3138.85	3139.23	738,413

Table S2 lists the Skytrain samples and their respective depths and ages.

Table S2. Skytrain samples.

$Depth_{top}$	$Depth_{bot}$	Weight / g	$Weight_{small}$ / g	^{10}Be / 10^4 at/g	$^{10}Be_{small}$ / 10^4 at/g
124.0	125.6	1243.4	81.0	1.658 ± 0.025	1.105 ± 0.249
485.6	487.2	1179.9	73.7	3.075 ± 0.047	3.566 ± 0.205
526.42	528.0	1208.4	72.6	2.846 ± 0.043	2.685 ± 0.123
552.8	554.4	1191.5	61.1	2.468 ± 0.038	-
570.4	572.03	1243.8	70.1	1.911 ± 0.029	2.746 ± 0.653
597.6	599.2	1305.2	73.9	2.809 ± 0.043	-
619.2	620.76	1203.8	73.7	1.504 ± 0.030	1.985 ± 0.226
636.0	637.64	1296.1	47.4	2.090 ± 0.035	3.150 ± 0.483
640.0	641.57	1072.2	40.9	2.388 ± 0.107	-
644.8	646.42	1274.1	55.4	1.548 ± 0.024	1.563 ± 0.210

Figure S2 shows high-resolution Cl^-/Na^+ ratio and nss-Ca^{2+} data from Lambert et al. (2012) and Wolff et al. (2010).

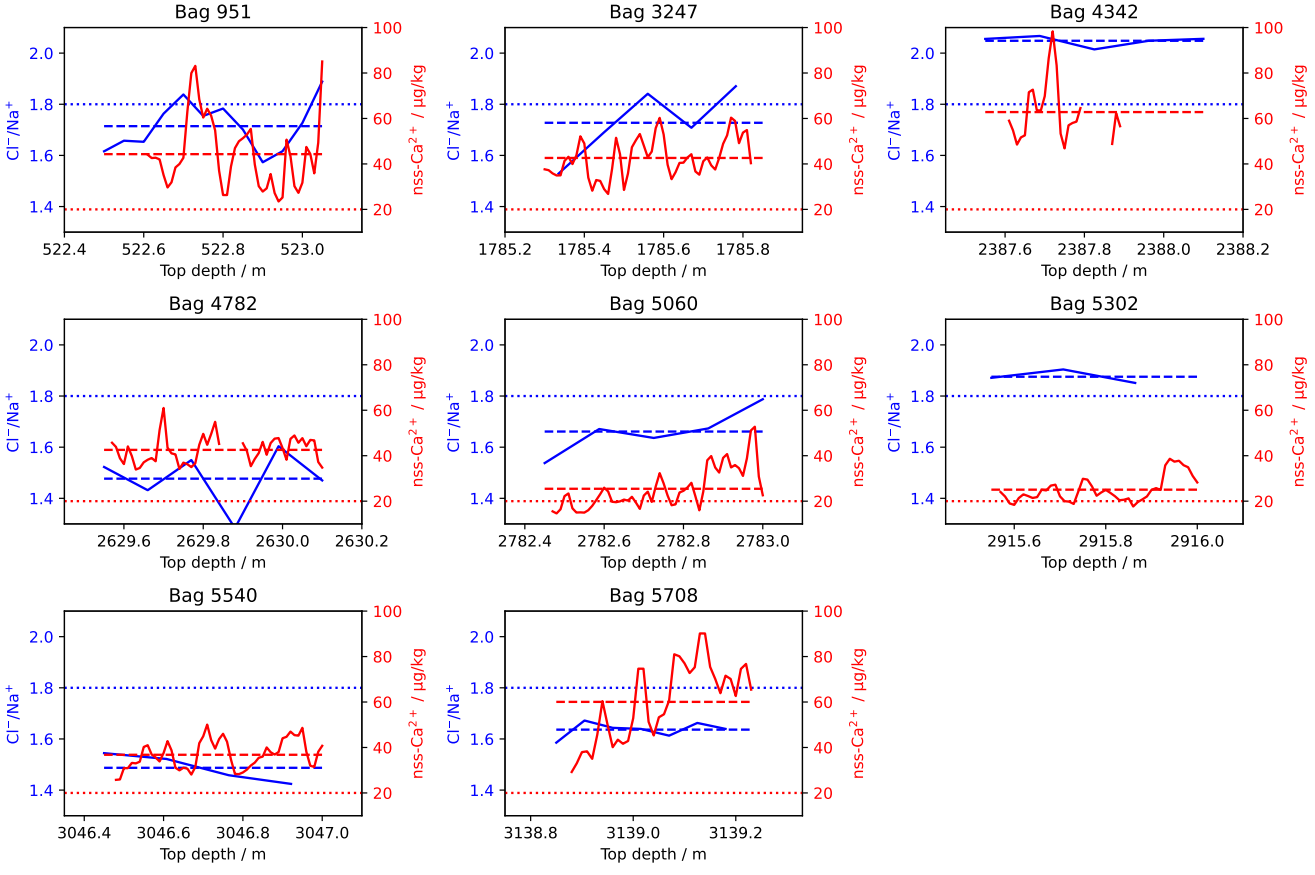

Figure S2. Cl^-/Na^+ ratio and nss-Ca^{2+} data in bags of the requested radionuclide samples (Lambert et al., 2012; Wolff et al., 2010).

To determine the precision of repeat measurements with HNO_3 treatment, the ^{10}Be concentration was measured in two aliquots of homogenised sub-samples from different depths, which both received 2 mL 65 $\%$ HNO_3 and were directly precipitated. Figure S3 shows the reproducibility between aliquots and the precision of 6609 $at\,g^{-1}$, taken as the one-σ standard deviation of the differences shown in panel B. This is significantly larger than the standard deviation among blank samples prepared with HNO_3 treatment and direct precipitation (560 $at\,g^{-1}$ in a 25 g sample).

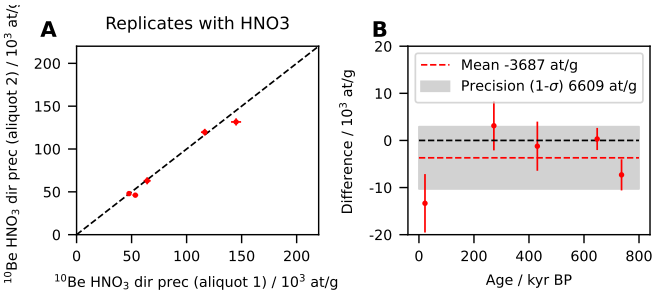

Figure S3. A ^{10}Be concentrations after treatment with 2 mL 65 $\%$ HNO_3 and direct precipitation of Be in two aliquots of samples from different depths at EDC. The identity line, where y = x, is shown as a dashed line. **B** The differences between the two aliquots and their one-σ standard deviation from the mean.

Figures S4 and S5 show the measured LASM images and the grain segmentation at two different depths. LASM measurements were also performed on samples from bags 4342, 4782, 5302, and 5708 suggest similar results, but the segmentation failed due to bad image quality.

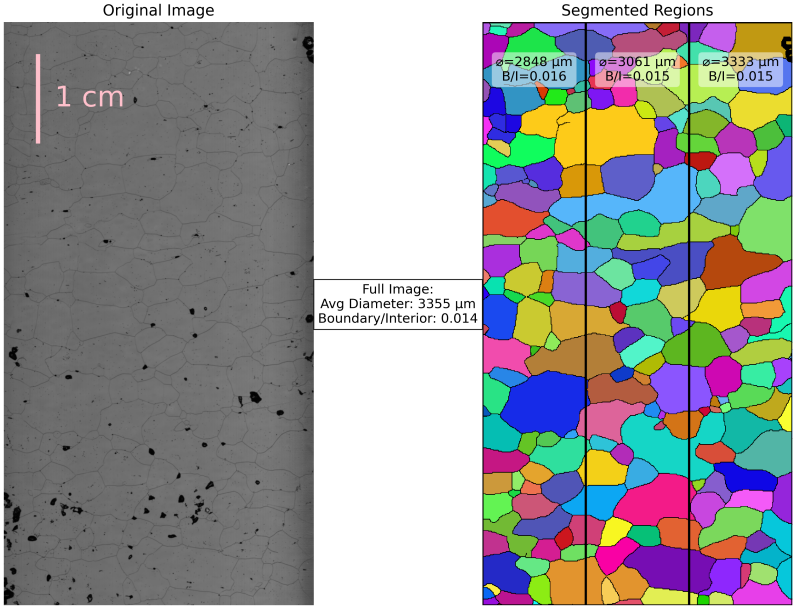

Figure S4. Original LASM image and grain segmentation from the EDC 3247 sample (age 139 kyr). The scale bar corresponds to both images.

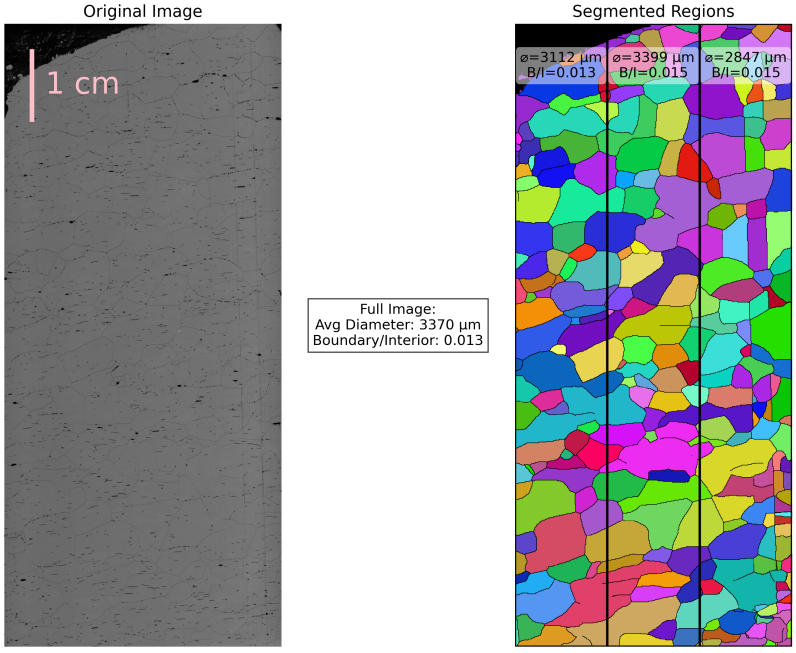

Figure S5. Original LASM image and grain segmentation from the EDC 5060 sample (age 430 kyr). The scale bar corresponds to both images.

References

Lambert, F., Bigler, M., Steffensen, J. P., Hutterli, M., and Fischer, H.: Centennial mineral dust variability in high-resolution ice core data from Dome C, Antarctica, Climate of the Past, 8, 609–623, https://doi.org/10.5194/cp-8-609-2012, 2012.

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