

**Supplement to: Viability of chemical and water isotope ratio measurements
of RAID ice chippings from Antarctica**

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This document contains supplementary figures and data tables referred to in the paper “Viability of chemical and water isotope ratio measurements of RAID ice chippings from Antarctica”.

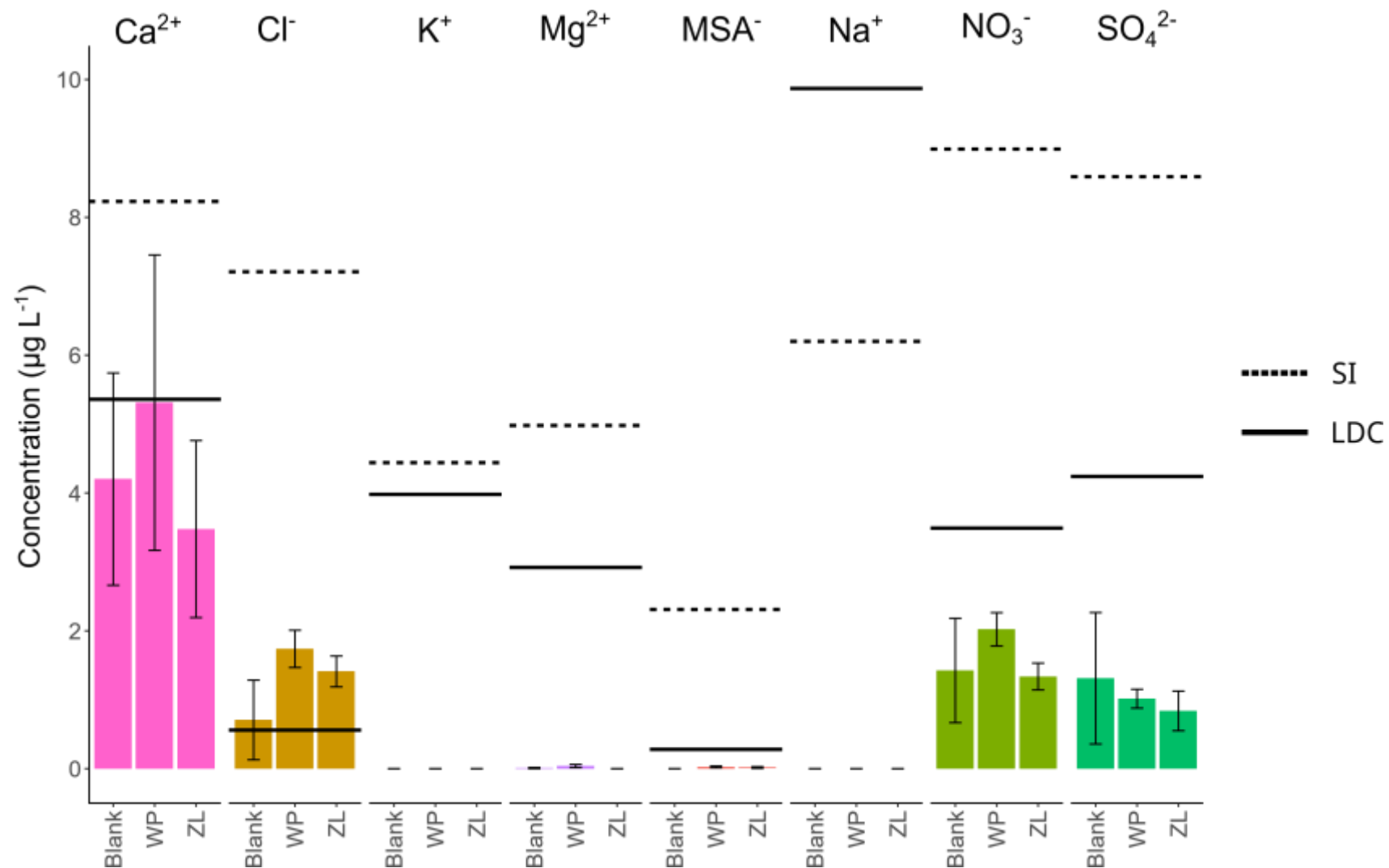


Figure S1. Ion concentrations in MQ water stored in Whirl-Pak (WP) or Zip-lock (ZL) RAID sample bags, or blanks. Error bars show the standard error, defined as the standard deviation divided by the square root of the sample size. Horizontal lines show the LoB for the SI (dashed) and LDC (solid) analytical campaigns

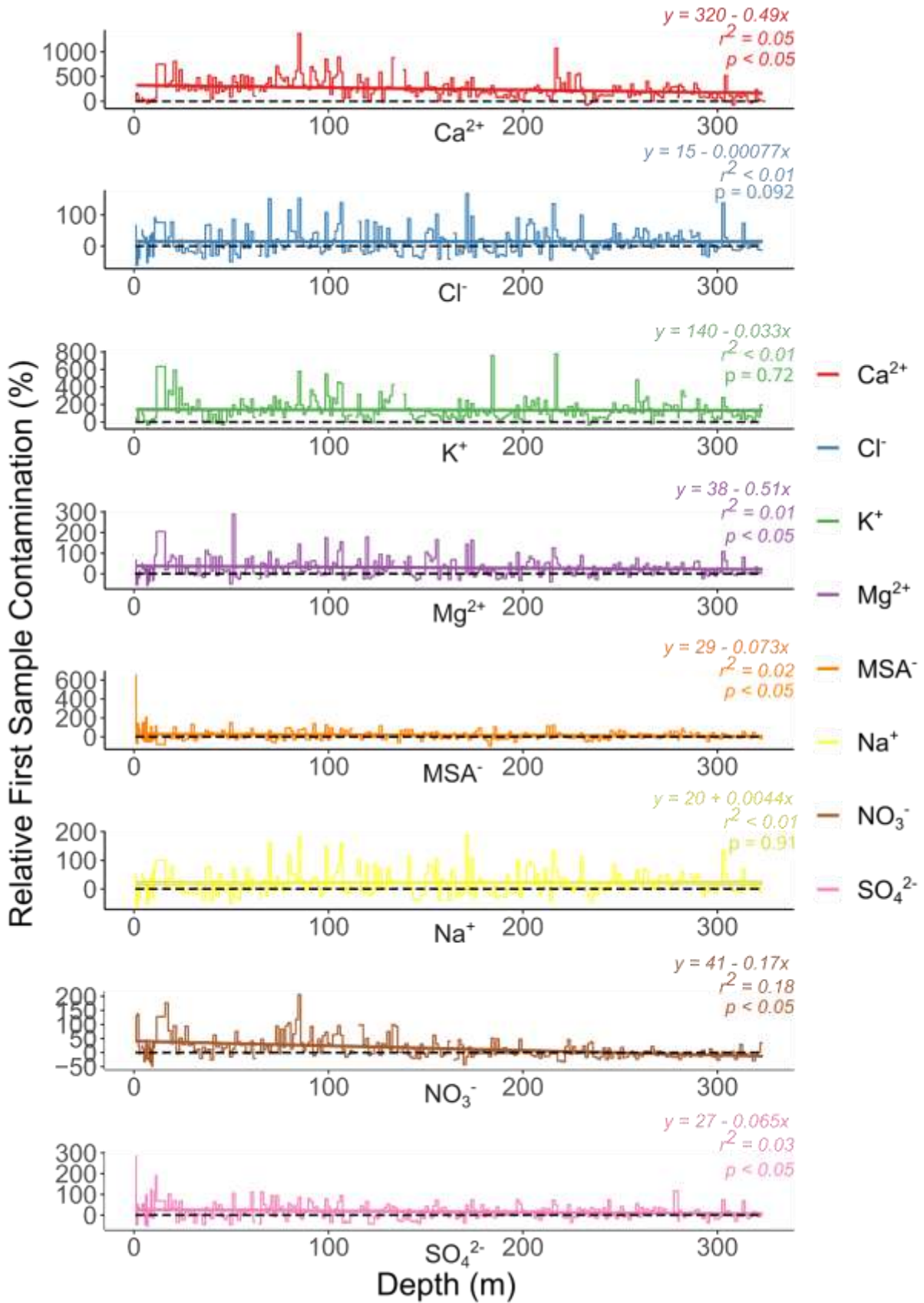


Figure S2. Percentage of change of concentration in contaminated sample (sample 1) relative to remaining samples (2-9) against depth in the Si:RAID chippings, by ion, with trend lines and corresponding trend line equation, r^2 and p value.. Dotted line shows % difference = 0.

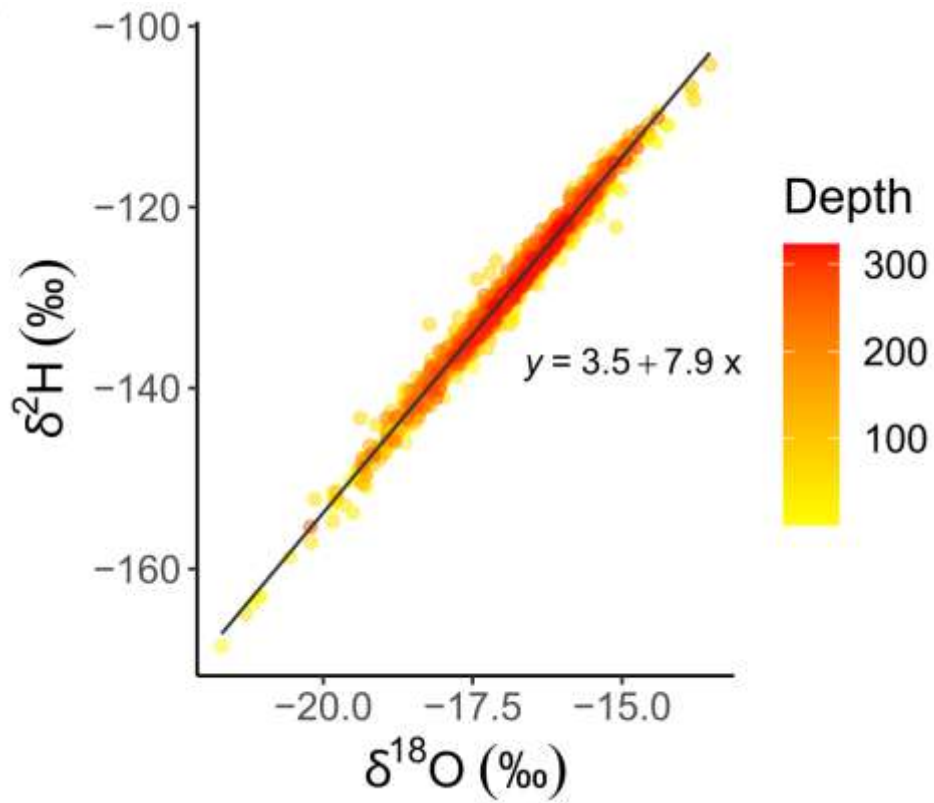


Figure S3. Water line, with equation, of the SI:RAID samples, coloured by depth.

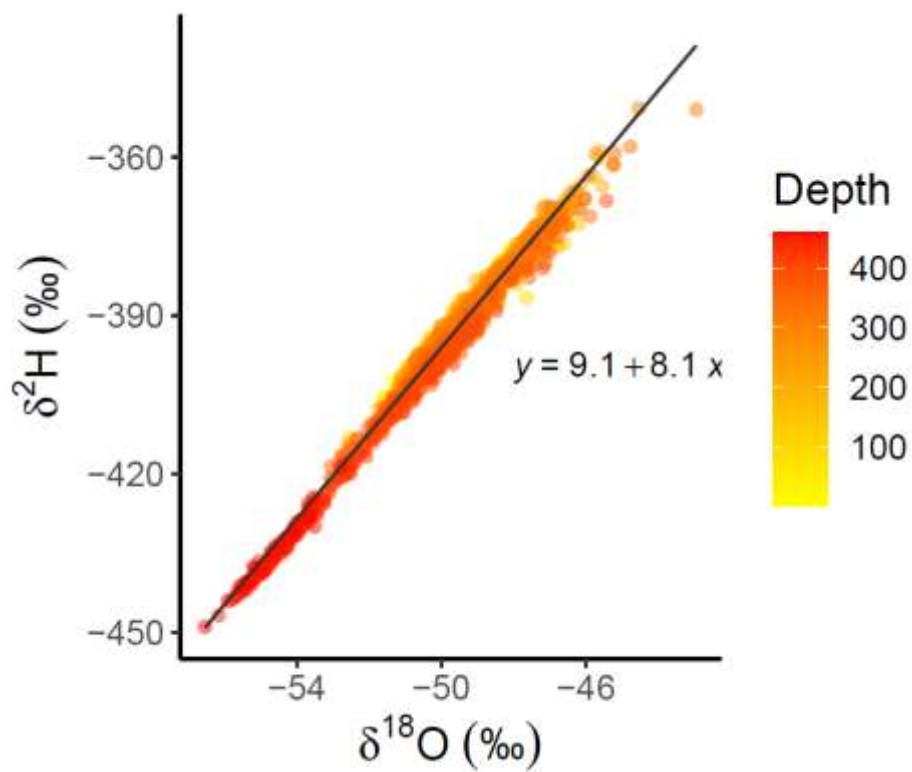


Figure S4. Water line, with equation, of the LDC:RAID2 samples, coloured by depth.

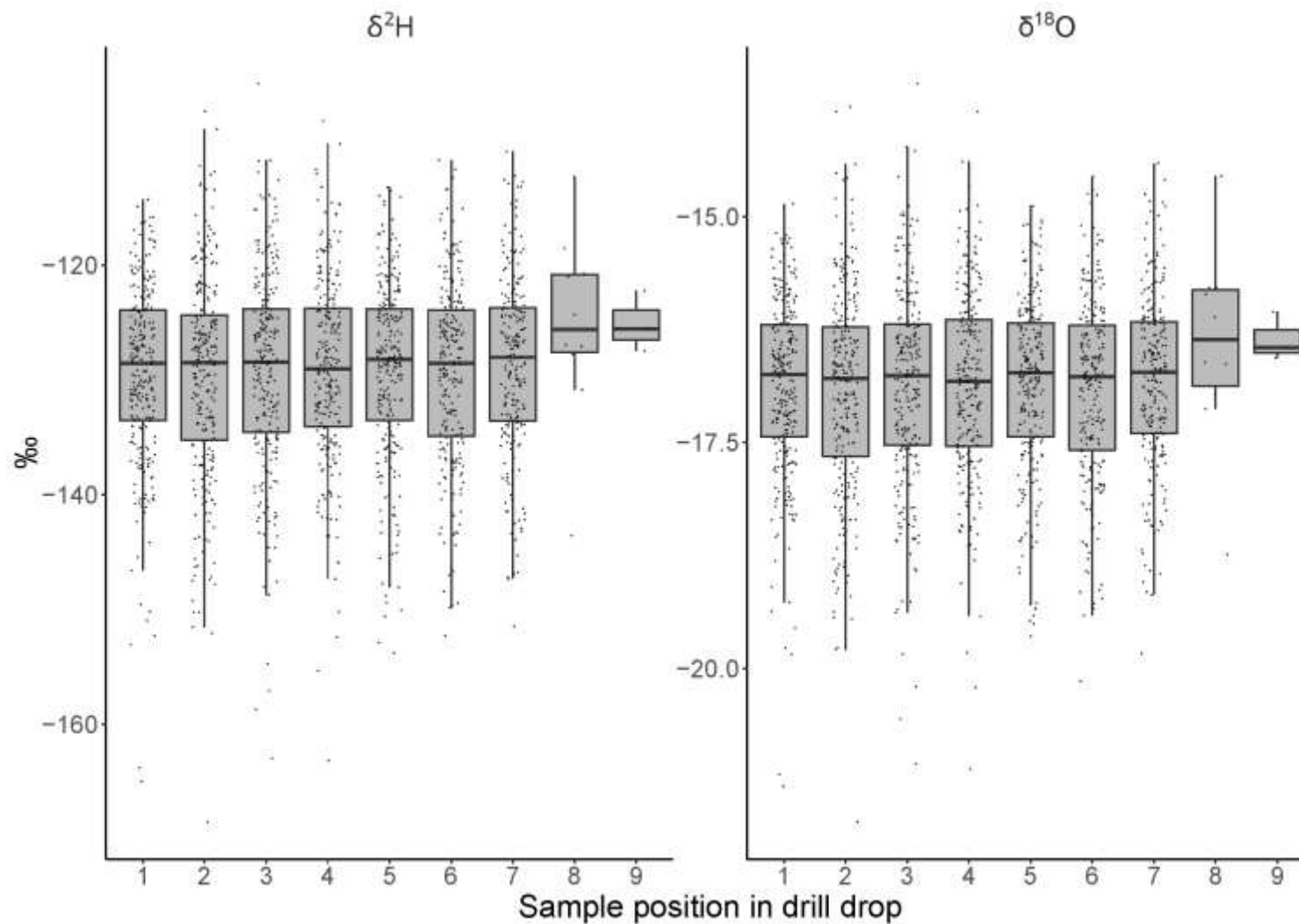


Figure S5. Box plots of $\delta^2\text{H}$ and $\delta^{18}\text{O}$ in SI:RAID samples, by position in the drop of the drill with points showing each data point. Bold horizontal line shows the median, boxes show interquartile range (IQR), vertical lines show 1.5xIQR and scattered dots show every data point with points outside the range of the vertical lines considered outliers.

Analyte	LDC LoB	LDC % below LoB
Na ⁺	9.87	5.45
K ⁺	3.98	29.03
Mg ²⁺	2.92	24.01
Ca ²⁺	5.36	7.36
MSA ⁻	0.28	0.00
Cl ⁻	0.56	0.00
NO ₃ ⁻	3.49	0.00
SO ₄ ²⁻	4.24	0.00

Table S1. LoBs and percentage of measurements below LoB in the LDC:RAID2 IC measurements, calculated using MQ blanks (*n* cations = 64, *n* anions = 61). For anions, sample *n* = 6, for cations sample *n* = 4-6.

Standard Level	Concentration (µg L ⁻¹)			
	MSA ⁻	Cl ⁻	NO ₃ ⁻	SO ₄ ²⁻
A1200	200	1200	800	1200
A600	100	600	400	600
A450	75	450	300	450
A300	50	300	200	300
A225	37.5	225	150	225
A150	25	150	100	150
A75	12.5	75	50	75
A30	5	30	20	30
A15	2.5	15	10	15
	Na ⁺	Mg ²⁺	K ⁺	Ca ²⁺
C2000	2000	200	200	200
C1000	1000	100	100	100
C500	500	50	50	50
C200	200	20	20	20
C100	100	10	10	10
C50	50	5	5	5
C20	20	2	2	2

Table S2. Concentrations of IC standard levels for each species presented in the paper.