

Supplementary Table S2. *Fit parameters and results from the diffusion models applied to the ^{10}B -ISG non-renewed solution $^{11}\text{B}/^{10}\text{B}$ ratios*

Model number	Fit parameters ^b			Fitted values								Fit statistics	
	Distance fitted ^a	Parameters held	Parameters fitted	β_m ^c	1 S.D.	$D^{10\text{B}}$ or $D^{10\text{B}}_{\text{Max}}$ ^d	1 S.D.	α ^c	1 S.D.	β_c ^c	1 S.D.	Chi-squared	RSS ^e
1	e_B	$D^{10\text{B}}$	β_m	1.014	0.120	6.0	-	-	-	-	-	128.5	83.6
	e_B		$\beta_m, D^{10\text{B}}$	6.159	5.200	180	320	-	-	-	-	119.6	26.1
2	e_B	$D^{10\text{B}}_{\text{Max}}$	β_m	0.371	0.039	6.0	-	-	-	-	-	59.9	7.2
	e_B		$\beta_m, D^{10\text{B}}_{\text{Max}}$	0.337	0.048	2.4	2.3	-	-	-	-	34.7	7.5
	$e_B - e_{\text{Si}}$	$D^{10\text{B}}_{\text{Max}}$	β_m	0.399	0.044	6.0	-	-	-	-	-	108.4	11.3
	$e_B - e_{\text{Si}}$		$\beta_m, D^{10\text{B}}_{\text{Max}}$	0.340	0.047	1.3	1.1	-	-	-	-	34.7	7.1
3	e_B	$D^{10\text{B}}_{\text{Max}}$	β_m, β_c, α	0.356	0.116	6.0	-	1.73	0.61	2.50	0.12	27.4	18.0
	e_B		$\beta_m, \beta_c, \alpha, D^{10\text{B}}_{\text{Max}}$	0.296	0.079	5.3	0.6	2.38	0.81	2.54	0.19	27.4	17.9
	e_B	$\beta_c, \alpha, D^{10\text{B}}_{\text{Max}}$	β_m	0.326	0.034	6.0	-	1.50	-	2.10	-	62.9	21.7
	e_B	β_c, α	$\beta_m, D^{10\text{B}}_{\text{Max}}$	0.199	0.025	0.3	0.3	1.50	-	2.10	-	32.3	18.3
	$e_B - e_{\text{Si}}$	$D^{10\text{B}}_{\text{Max}}$	β_m, β_c, α	0.298	0.001	6.0	-	1.89	0.00	2.58	0.05	47.9	17.2
	$e_B - e_{\text{Si}}$		$\beta_m, \beta_c, \alpha, D^{10\text{B}}_{\text{Max}}$	0.309	0.031	2.7	1.4	2.00	0.26	2.47	0.17	28.4	18.6
	$e_B - e_{\text{Si}}$	$\beta_c, \alpha, D^{10\text{B}}_{\text{Max}}$	β_m	0.393	0.041	6.0	-	1.50	-	2.10	-	53.2	19.6
	$e_B - e_{\text{Si}}$	β_c, α	$\beta_m, D^{10\text{B}}_{\text{Max}}$	0.196	0.024	0.1	0.3	1.50	-	2.10	-	33.0	17.7

^a Fitting across the entire altered layer (e_B) or that corrected for hydrolysis ($e_B - e_{\text{Si}}$), where e_B and e_{Si} are altered layer thicknesses calculated using the fractions of B and Si, respectively, leached into solution; distances in the models fitted in metres.

^b In all fits, the pristine glass $^{11}\text{B}/^{10}\text{B}$ ratio was held at the average of the 6-hour non-renewal and 14- to 28-day renewal experiment values ($1.045205 \text{ mol mol}^{-1}$, - 741.54 ‰).

^c Unitless empirical parameter.

^d Given as $\times 10^{19} \text{ m}^2 \text{ s}^{-1}$.

^e Residual sum of squares calculated using fit residuals.