

Table S1. Example of relationship between pH and predicted $\delta^{11}\text{B}_{\text{CaCO}_3}$ using Eq. 1. The difference between each predicted $\delta^{11}\text{B}_{\text{CaCO}_3}$ illustrates the influence of pH on predicted $\delta^{11}\text{B}_{\text{CaCO}_3}$. For example, a change in pH from 7.75 to 7.80 results in a difference in predicted $\delta^{11}\text{B}_{\text{CaCO}_3}$ of 0.35 ‰ (15.77 ‰ – 15.42 ‰). Note: the sensitivity of predicted $\delta^{11}\text{B}_{\text{CaCO}_3}$ to pH increases with pH (up to pK_B).

pH	$\delta^{11}\text{B}_{\text{CaCO}_3}$ (‰)	Difference (‰)
7.70	14.98	
7.75	15.3	0.32
7.80	15.64	0.34
7.85	16.01	0.37
7.90	16.42	0.41
7.95	16.86	0.44
8.00	17.33	0.47
8.05	17.84	0.51
8.10	18.38	0.54
8.15	18.96	0.58
8.20	19.57	0.61
8.25	20.21	0.64
8.30	20.89	0.68
8.35	21.6	0.71
8.40	22.32	0.72
8.50	23.85	1.53

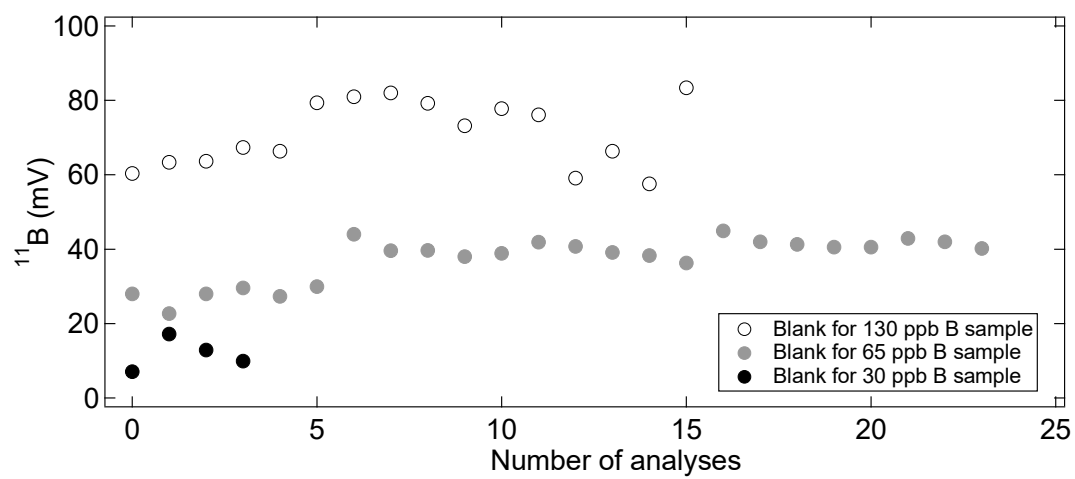


Fig. S1. Blank intensities for ^{11}B where NIST951 was measured at concentrations of 30 ppb, 65 ppb, and 130 ppb.