

Experimental Evaluation of the pH-Dependence of Boron-Adsorption onto Clay Minerals and Implications for the secular evolution of seawater $\delta^{11}\text{B}$ and [B]

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Abstract

The secular evolution of the concentration [B] and isotopic composition ($\delta^{11}\text{B}$) of boron in seawater remains largely unknown. An increase in $\delta^{11}\text{B}$ over the Cenozoic has been modeled through the assessment of B sources and sinks (Lemarchand et al. 2000), but the effect of varying seawater pH on boron adsorption and removal has not yet been taken into account. Here we propose to further assess B adsorption onto clay minerals to complement and augment the existing dataset. Experiments will include the exposure of clay minerals to seawater of varying temperature and pH conditions, and subsequent analysis of [B] and $\delta^{11}\text{B}$ in the experimental seawater as well as the clays.