The impact of thermal stress events on coral skeletal $\delta^{11}B$ and trace elements

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The resilience of scleractinian corals to climate change will partly depend on their ability to continue to up-regulate pH and calcify under sub-optimal conditions. Of key concern for coral reefs is the predicted increase of thermal stress events. Although thermal stress events have been in general associated with a reduction in coral calcification, very little is known about what happens at the site of calcification during and following these events. Using a combination of geochemical proxies and growth parameters, we characterize the response of a massive *Porites* colony from the central Great Barrier Reef to the thermal stress event of 1998. This event clearly affected Mg/Ca, Sr/Ca, Li/Mg and U/Ca ratios and also caused a 50% reduction in growth rate, with the coral fully recovering after approximately two years. Nevertheless, coral skeletal $\delta^{11}B$ suggests that the coral continued to maintain high pH at the site of calcification. This implies that coral pH up-regulation is not energetically costly and may be maintained under some stress scenarios. The reduction in coral calcification following the thermal stress was therefore likely related to other parameters such as decreases in aragonite saturation state.