

Influence of Past Changes in Atmospheric CO₂ on Boron/Calcium of Planktic Fossil Foraminifera

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Culture experiments have revealed that B/Ca of shells grown by the foraminiferal species *Globigerinoides ruber* increase with increasing seawater pH. Specifically, B/Ca responds to changes in the relative abundance of pH-sensitive dissolved carbon and boron species. Here, we present a high-resolution study on fossilized *G. ruber* from two sites in North Atlantic subtropical gyres (VM25-21 and ODP 1055B) through 20 ka BP to evaluate how B/Ca responds to past changes in atmospheric CO₂. Forams were picked and crushed gently, then cleaned and dissolved using a variation of the Boyle and Keigwin (1985) and Barker et al. (2003) cleaning protocols prior to analysis. ODP 1055B (from Carolina Slope, West Atlantic) produced a high-resolution record with lower B/Ca values during the glacial period followed by a rapid shift to higher B/Ca values in the early deglaciation, with values remaining high through the Holocene. These results were not predicted by culture calibrations, but they are consistent with B/Ca records from the Caribbean (ODP 999), suggesting this pattern is characteristic of surface waters in the greater North Atlantic region.