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δ11B and B/Ca ontogenetic variability within Globigerina bulloides

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Understanding the atmosphere-continent-ocean carbon cycle and its associated oceanic carbon system is one of the keystones to face the Anthropocene's climate change. Since the 1990s the isotopic ratio of boron ($\delta^{11}B$) in calcitic shells of planktonic foraminifera has proven to be a powerful geochemical proxy to determine the oceanic paleo-pH and its link to atmospheric CO_2 level over geological times[1], whereas the ratio B/Ca as proxy of the seawater carbonate chemistry is still questionable[2,3].

However, the use of planktonic foraminifera in paleoclimatic reconstructions requires calibrations of the pH – $\delta^{11}B$ relationships to correct what is known as « vital effect »[4]: each species controls differently its calcification process and consequently slightly modifies the seawater chemistry during biomineralization[5,6]. Moreover, shell size effect on $\delta^{11}B$ has been reported for some symbiont-bearing species due to photosynthetic increase of pH[7,8].

Calibrations for the symbiont-barren *Globigerina bulloides* have been already determined[9,10] but sparse data have been reported so far for the test size effect on $\delta^{11}B$ [11].

Here we measured the $\delta^{11}B$ of three different fractions (250-315, 315-400 and >400 µm) of *G. bulloides* sampled along the coretop PS97-122 from the Chilean margin (54.10°S, 74.91°W), by using a new protocol developed at IPGP and dedicated to small samples which couple a microsublimation technique and a micro-direct injection device (µ-dDIHEN[12]). Our preliminary results show significantly higher $\delta^{11}B$ values for the large fractions compared to the small ones, as found for symbiont-bearing planktonic species such as *Globigerinoides sacculifer*[7] and *Globigerinoides ruber*[8].

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