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$\delta^{11}\text{B}$ 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 ($\delta^{11}\text{B}$) 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 times¹, 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 – $\delta^{11}\text{B}$ 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 $\delta^{11}\text{B}$ 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 $\delta^{11}\text{B}$ ¹¹.

Here we measured the $\delta^{11}\text{B}$ 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 ($\mu\text{-dDIHEN}^{12}$). Our preliminary results show significantly higher $\delta^{11}\text{B}$ 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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