XVIII IX
RAS CLS

PLANKTONIC FORAMINIFERA BA/CA AS PRODUCTIVITY PROXY IN WESTERN SOUTH ATLANTIC

P. Albarracín[1], N. García Chapori[1], C. Laprida[1], R. Martín[1] G. Díaz[1], J. Groeneveld[2]

[1]Instituto de Estudios Andinos "Don Pablo Groeber" (IDEAN-UBA-CONICET), Intendente Güiraldes 2160, 1428 CABA, Buenos Aires, Argentina, pau.albarracin23@gmail.com
[2]Institute of Oceanography, National Taiwan University No. 1, Section 4, Roosevelt Road, Da'an District 10617 Taipei City.

Planktonic foraminifera are marine microorganisms that play a crucial role in paleoceanographic reconstructions. The measurement of trace elements and their ratios in foraminiferal shells have proven to be valuable proxies for studying past oceanic conditions. In particular, the Ba/Ca ratio has been linked to various environmental conditions such as surface primary productivity, seawater Ba concentration and fresh water input. Therefore, the calibration between the Ba/Ca ratio and the parameter to be reconstructed results essential for robust interpretations of past oceanographic parameters and climate conditions. Accurate calibrations enhance not only our understanding of historical oceanic conditions, but also the role of trace elements in marine ecosystem.

This study focuses on analyzing surface sediment samples from the western South Atlantic between 33°S and 47°S to assess the potential of Ba/Ca ratios measured on planktonic foraminifera as a paleoproductivity proxy. In order to do this, non-encrusted shells of *Globoconella inflata* were carefully crushed and cleaned following the standard cleaning procedure for trace elements analysis of foraminifera. Export productivity flux data (molC/m^2/yr) were obtained from the SIMPLE-TRIM model for the same samples, and hence a regression analysis was applied.

Our results revealed a positive correlation (r^2=0.53) between the Ba/Ca ratios and the productivity flux data highlighting its potential use as a proxy of paleoproductivity in the region. Higher Ba/Ca ratios measured in *G. inflata* correspond to sites of higher productivity, while lower ratios correspond to sites with lower productivity. A positive correlation between export production and Ba/Ca ratios has also been recorded on *N. dutertrei* and *P. obliquiloculata* shells from sediment traps and core-top samples of the Equatorial Pacific suggesting that increased Ba/Ca ratios in the non-spinose species are the result of calcification occurring in Ba-enriched particulate organic matter.

The results obtained here contribute to refine the reconstruction of long-term past oceanographic changes in the western South Atlantic by improving our ability to reconstruct past productivity conditions. Additionally, the insights gained here contribute to the development of more accurate models for predicting future changes in productivity and upwelling patterns in this region. However, it is necessary further research to expand our understanding of the specific mechanism driving Ba incorporation into the planktonic foraminiferal shells.