

## CAN FORAMINIFERA <sup>14</sup>C DATING BE INFLUENCED BY SPECIES?

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**Abstract:** Many ocean dynamics studies are based on sediment core analyses, with several indicators used to reconstruct the palaeoenvironment. As chronological records, carbonate microfossils, such as foraminifera of planktonic or benthonic life habits, are usually radiocarbon dated. Since assemblages of foraminifera can be easily collected at various points on the ocean floor, they have become great tools for obtaining information on paleotemperature, paleosalinity, paleoproductivity and sedimentation rate. The analyses of these microfossils in sedimentary basins is very important, mainly in the Brazilian continental margin, which is heavily exploited by oil industries. A drawback is their very small size, each individual weighing ca. micrograms, making it necessary to collect hundreds of individuals for a single sample. In addition, accurate dating requires separation of planktonic and benthonic species, or single species separation if possible, since several anomalies have been reported in foraminifera radiocarbon dates. As marine samples, interpretation of dating results has to take into account the Radiocarbon Marine Reservoir effect, in the form of the global surface ocean, plus the impact of the local offset  $\Delta R$ , calculated through a few possible approaches and possibly variable in time.

In this work, we compare <sup>14</sup>C incorporation in samples of *Globigerinoides ruber*, fragile, susceptible to diagenesis, *Globorotalia menardii*, robust, a more resistant shell and bulk of foraminifera, comprising several species of planktonic habit, from a core collected from the Campos Basin (Brazil). For each case, were prepared 30 mg samples with 50% etching and 15mg ones, with no etching or physical preparation with the aim of evaluating the interference of chemical treatment. We also evaluate the amount and age of contamination in background and modern carbonate samples at LAC-UFF with the aim of lowering the laboratory background and establishing size limitations for our carbonate protocols. For this reason, several sample sizes of reference material were prepared: 1 mg, 3 mg, 5 mg, 7 mg and 10 mg, and measured at LAC-UFF and the Max-Planck-Institute for Biogeochemistry. The results of this latter test were used to corrected the data from the actual foraminifera. Finally, after this work, an updated protocol for foraminifera sample preparation was established at LAC-UFF.

**KEY-WORDS:** FORAMINIFERA, RADIOCARBON, SMALL SAMPLES