

ABSTRACT

PIRES, J. P. **Reconstruction of Neogene sea surface temperatures in Ceara Rise (South Atlantic) based on alkenones.** 2015. Dissertation (Master in Chemistry) – University of Brasilia, Brasilia, 2015.

The Ceara Rise is a seismic peak located in the Atlantic Ocean and receives both marine and terrigenous sediments. These sediments are important for understanding the paleoclimatic and paleo-environmental conditions in the ocean. With the goal of reconstructing the past sea surface temperature (SST), the lipid biomarkers *n*-alkanes and alkenones were analyzed in sediments of Ceara Rise. The quantification of both biomarkers was performed by Gas Chromatography with Flame Ionization Detector (GC-FID). For the *n*-alkanes, analytical curves, which resulted in acceptable figures of merit by official norms and the National Health Surveillance Agency (ANVISA) were built. Because there is no alkenone standard commercially available for the construction of analytical curves for alkenones, the quantification was done by comparison of the areas of analytes to the area of a standard ketone commercially available. The quantification by comparison areas was validated by T-Test, in which the values of concentration of *n*-alkanes obtained for this quantification method were compared with the calculated concentrations from analytical curves, which led to satisfactory results. The *n*-alkanes were evaluated according to the proxies Carbon Preference Index (CPI) and Average Carbon Length (ACL). The results suggest that the main source of organic matter in the studied sediments originates from terrigenous material transported by rivers and by wind action. The $U_{37}^{k'}$, proxy that use the concentration of alkenones to calculate the SST, was used for climatic reconstruction of the region. The concentration range of alkenones was 0.001 to 0.516 $\mu\text{g g}^{-1}$. According to the result of $U_{37}^{k'}$ proxy, the estimated lowest temperature was 22.5 °C, toward the end of Early Miocene, while the highest temperature, 28.5 °C, was held at half the Early Oligocene.

Keyword: Ceara Rise, Sediments, Carbon Preference Index, Average Carbon Length, $U_{37}^{k'}$ and Sea Surface Temperature.