

Reconstruction of paleoenvironmental changes using molecular markers in sediments from continental shelf off Rio de Janeiro, SE - Brazil

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Hydrocarbons are very useful markers on investigation of paleoenvironmental changes. In this study two cores (RJ13-01 and RJ13-02) were collected in the continental shelf of Rio de Janeiro in the isobath 100-m and dated by ²¹⁰Pb and ¹⁴C methods covering 14.5 cal kyr BP and 5.3 cal kyr BP, respectively. The main goal of this work was analyzed *n*-alkanes and polycyclic aromatic hydrocarbons (PAHs) combined with magnetic susceptibility (MS), grain size of the sediment (GS) and total organic carbon (TOC) allowing the reconstruction of pyrolytic events, vegetation type and sea-level variations in the context of paleoclimate changes. Results highlighted three periods: the first period (14.5 to 7.5 cal kyr BP) with the occurrence of mean GS, shell fragments, high ACL (average chain length) values (~ 30.5) and high pyroPAHs (33%) around 8.0 cal kyr BP indicating higher incidence of dry weather in most periods; marked by a low sea level. The second period between 7.5 and 4.5 cal kyr BP marked by a maximum transgression of the sea, drought events with greater intensity of wildfires with high pyroPAHs of 5-6 rings (68%) between 6.1 and 4.1 cal kyr BP. The third period (4.5 cal kyr BP to present) showed higher fluxes of OM between 3.2 cal kyr BP to 3.3 cal kyr BP (RJ13-01) and 3.4 cal kyr BP (RJ13-02), as indicated by TOC, *n*-alkanes and PAHs from 2.5 cal kyr BP in RJ13-01 and along RJ13-02. These factors are related to the displacement further south of the Intertropical Convergence Zone (ITCZ), which brought humidity to Amazon, the intensification of SAMS, bringing humidity to SE of Brazil trough SACZ. Also has been marked by the decrease in sea level. Dry climate indicators (ACL, pyroPAHs of 5-6 rings) suggest that there were fluctuations between wet and dry climate along the late Holocene.