

VEGETATION AND CLIMATE CHANGES IN THE NORTHEASTERN REGION OF BRAZIL DURING LATE PLEISTOCENE AND HOLOCENE

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This paper presents the results of a palaeoenvironmental study on vegetation and climate changes occurred during the last 15,000 years in the Northeastern region of Brazil. Samplings have been made in three continental sites at Ceará, Piauí and Paraíba States and in the Fernando de Noronha oceanic island (Pernambuco State). In the continental sites 22 soil profiles were sampled for C-13/C-12 analysis and C-14 dating as well as buried charcoal fragments. In the island were collected two sediment records (lake and mangrove sites) in addition to soil samplings in 8 sites. Sediment samples were submitted to pollen, carbon isotopes and mineralogical analysis. In the continental areas, based on the isotopic data obtained, it is possible to postulate that approximately since the late Pleistocene (~15,000 yr BP) to the early Holocene (~10,000-9000 yr BP), arboreal vegetation was present in the study areas. This period was probably related to a more humid phase. Afterward, since ~9000 yr BP till 4000-3000 yr BP, the savanna expanded, probably related to the presence of a drier climate. From approximately 4000-3000 yr BP to the present, a trend toward more depleted C-13/C-12 values was interpreted as an arboreal vegetation expansion due to the return to a more humid phase and probably similar to the present climate. The presence of buried charcoal fragments in several depths of the soil profiles suggested the occurrence of paleofires during the Holocene, reinforcing the dry early-mid-Holocene period. These results agree with studies developed in others regions of the Northeastern of Brazil and also in the south and central Amazon region, implying that similar climatic conditions have affected these areas during the late Pleistocene until the present. In the Fernando de Noronha island the carbon isotopes data of soils did not show significant vegetation changes during the last 7400 yr BP, probably suggesting that the climate was not the determinant factor for the vegetation dynamic. The pollen analysis of lake sediments from ca. 700 yr BP up to ~90 yr BP did not indicate the presence of Quaternary material. Only from ~90 yr BP to the

present were found similar plant species related to modern vegetation located around the lake. The geochemistry and isotope results, in association with the lithology and pollen analyses of mangrove sediment samples, indicated variations in the vegetation and in its location from the middle Holocene to the present. Such variations can be associated with climatic events and sea level oscillations and also with anthropogenic events considering the last five hundred years.