



The sedimentary evolution of the Potiguar Basin during the Quaternary through geophysical and geochemical properties

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Abstract

The Atlantic Meridional Overturning Cell (AMOC) is an ocean current representing one of the main components of heat distribution, exerting direct impacts on the regulation and balance of the global climate. The Atlantic Equatorial Margin (MEA) of Brazil stands out as an essential study region due to the connection between the oceanic circulation between the Southern and Northern hemispheres, with interactions between cold deep waters and warm surface and intermediate waters. Starting from the process carried out by the circulation of water masses in the South American portion, studies and reconstructive paleoclimatic and paleoceanographic simulations demonstrate that, during periods of extreme cold climatic events in which the thermohaline circulation of the North Atlantic is considerably weakened, the reversion of the subsuperficial flux of the North Brazilian Current occurs. This system directly affects upper tropical ocean stratification, productivity, and warming surface temperatures in the equatorial South Atlantic Ocean. Given this context, the present work will present the preliminary results of the correlations between the geophysical, geological and geochemical data of three sedimentary cores MD09-3251CQ, MD09-3253CQ, MD09-3256CQ collected at depths of 730 m, 3867 m and 3537 m, respectively, in the Potiguar Basin region, throughout the Quaternary. These sedimentary records have peculiar stratigraphic characteristics, showing visible discontinuities in one of the cores, which refer to signatures of occurrences of structural and/or tectonic phenomena, as well as variations in the color of the layers that can be connected with climatic processes and dynamics of surface waters and deep. Analyses of X-Ray Fluorescence, Gammaespectrometry and Multi Sensor Core Logger were carried out, whose results reinforce the occurrence of extreme climatic events and changes in oceanographic characteristics that influenced the continental sedimentary contribution in the Potiguar Basin region. Additionally, granulometry and screening of planktonic and benthic foraminifera will be used to consolidate the obtained information.

Keywords: Atlantic Meridional Overturning Circulation; paleoceanography; gammaespectrometry; Quaternary; Potiguar Basin