DECOUPLING OF NORTH SOURCED DEEP CIRCULATION AND SOUTH SOURCED SURFACE CIRCULATION RECORDED ON THE NORTHEASTERN BRAZILIAN CONTINENTAL MARGIN DURING THE LAST DEGLACIATION

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RESUMO: Paleoceanographic reconstructions in the western tropical Atlantic off northeastern Brazil have provided insights into the variation of humidity over the Northeast Atlantic tropical region, tightly related with warming increase in the South Atlantic Ocean. During the past 25,000 years, oceanic surface heat and salt accumulation in South Atlantic surface water, under the control of southern Hemisphere climatic variability, have played an important role in the interhemispheric climatic variability. Here we show important insights of the decoupling of deep circulation from that of surface circulation at a millennial time scale in a coastal region of northeast Brazil. Variability in the properties of the upper ocean layer were mainly controlled by continental rivers' input under the influence of air-humidity variation and also by heat and salt accumulation in the South Atlantic after the slowdown of the North Atlantic Deep Water (NADW) production. Whereas the variability in near-bottom ocean layer was mainly controlled by the influence of mixing of local water mass with a shoaled NADW and northward flow of the Antarctic Intermediate Water (AAIW). Located at the junction between the two Hemispheres, northeastern Brazilian continental margin sediments recorded the instantaneous propagation of climate variability in the entire Atlantic Ocean and offers a high potential for paleoenvironmental studies. Sediments have been accumulated throughout the Quaternary with rates that vary from a few millimeters to several centimeters per kilo annum. In the Barreirinhas Maranhão basin (0.5 – 2°S and 42 – 44° W) southeast of the Amazon Estuary, several piston cores have been acquired during the campaign MAGIC (September 2012). A study has been carried out on two selected cores located in two different geomorphological structures (the continental slope and top of palaeo-volcano). High resolution XRF, grain-size and foraminifera shell isotopic records provide insight into the paleoclimatic history of the basin and the surrounding areas. Sustained humid periods have alternated with short periods of drought as the ITCZ (Intertropical Convergence Zone) shifted, respectively, south and north of the study sites. The humid phases have been successfully linked and tuned to the well-known glacial episodes recorded at higher latitudes in the North Atlantic and the Antarctic ice cores.

PALAVRAS-CHAVE: EQUATORIAL BRAZILIAN MARGINS, CLIMATE, CORES