

CONTOURITE DRIFTS AND ABYSSAL EROSION AT THE CONTINENTAL MARGIN OFF NE BRAZIL

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Multichannel seismic reflection data collected by Brazilian Government Continental Shelf Survey Plan (LEPLAC) allowed the recognition of large sediment drifts related to bottom currents at the continental rise off northeastern Brazil. The Antarctic Bottom Water (AABW), which flows northward across a physiographic constriction - the hotspot-related Bahia Seamounts -, controlled the deposition of these contourite drifts. In such pathway, at least since the Middle Oligocene, the AABW also led to the formation of regional unconformities and to the excavation of the 800-km-long and up to 470-m-deep Pernambuco Seachannel. This feature, which actually represents the trunk channel of a complex submarine drainage system, flows into the Pernambuco Abyssal Plain, building a large deep-sea fan - the Pernambuco Countourite Fan. The contourite drifts can be easily identified on the seismic profiles, mainly along the western margin of the Pernambuco Seachannel, because of the Coriolis force effects upon the northward-flowing AABW. As observed along continental margins elsewhere, the geometry of the drifts alternates from mounded to sheeted, channel-related or confined, depending on the physiographic setting and on the velocity of the flow. The so-called modified drift-turbidite systems, formed by an interplay between downslope sediment gravity flows and alongslope bottom-current-controlled deposition, are very common near the slope region of the Sergipe Basin, where the deep-sea fan of the São Francisco River was deposited. The understanding of such interaction between turbidites and contourites represents an important issue in hydrocarbon exploration, since it has strong implications to reservoir quality and distribution.