

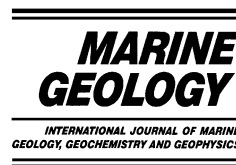


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Marine Geology 199 (2003) 159–180



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# Upper Quaternary deposits on the Sao Tomé deep-sea channel levee system (South Brazilian Basin): major turbidite versus contourite processes

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Received 26 February 2002; accepted 16 April 2003

## Abstract

This paper is an attempt to show how one may discriminate turbiditic and contouritic processes in the deposition of deep-sea accumulations. The case study is the Sao Tomé deep-sea 'channel levee' system in the South Brazilian Basin. This system is elongated parallel to the margin contour, and was first interpreted as being controlled by contour current activity. Detailed analyses of 3.5-kHz profiles and piston cores allowed to demonstrate that the Upper Quaternary sediments are predominantly deposited by turbidite and hemipelagic–pelagic sedimentation processes. On the levee and the transitional area towards the deeper rise, frequent fine-grained turbidites, accounting for 25–45% of the entire depositional series, are interbedded with the hemipelagic–pelagic muds. In the channel, thicker and coarser turbidites (15%) are associated with debris-flows (20%). Deposit deformation in the form of slides, slumps and diapir-like structures largely affect the distal transitional area. Slight evidence of contour current activity only consists of some sediment wave fields and manganiferous-rich layers or some top-truncated sequences and foraminiferal sandy layers.

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*Keywords:* Brazilian Basin; channel levee system; Echo-facies; Turbidite; Contourite; Upper Quaternary

## 1. Introduction

Major processes of building of deep-sea sedimentary levees, associated with turbidite 'channel

levee' and contourite 'moat drift' systems, are difficult to assess from depositional geometry alone. This is because these two types of levee may have similar patterns such as a trend with respect to the margin, internal deposit geometry and bedforms (i.e. McCave and Tucholke, 1986; Faugères et al., 1999). It is still more difficult when the turbidite and contourite processes interact within the sediment deposition.

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