



SBGf Conference

18-20 NOV | Rio'25

Sustainable Geophysics at the Service of Society

In a world of energy diversification and social justice

Submission code: ZYQPGXJAL8

See this and other abstracts on our website: <https://home.sbgf.org.br/Pages/resumos.php>

Onshore Seismic Reprocessing in the Southeastern Brazilian Rift System: A Case Study from the Taubaté Basin

Fernanda Hermes (GISIS/UFF), Luciana Rios (GISIS/UFF), Guilherme Lenz (GISIS/UFF), Marco Cetale (GISIS/UFF)

Onshore Seismic Reprocessing in the Southeastern Brazilian Rift System: A Case Study from the Taubaté Basin

Copyright 2025, SBGf - Sociedade Brasileira de Geofísica/Society of Exploration Geophysicist.

This paper was prepared for presentation during the 19th International Congress of the Brazilian Geophysical Society held in Rio de Janeiro, Brazil, 18-20 November 2025. Contents of this paper were reviewed by the Technical Committee of the 19th International Congress of the Brazilian Geophysical Society and do not necessarily represent any position of the SBGf, its officers or members. Electronic reproduction or storage of any part of this paper for commercial purposes without the written consent of the Brazilian Geophysical Society is prohibited.

Introduction

Situated in southeastern Brazil, the Taubaté Basin constitutes a prominent segment of the Southeastern Brazilian Rift System associated with the tectonic evolution of the South Atlantic margin. Structurally, the basin is compartmentalized by the Caçapava and Pindamonhangaba highs, which divide it into three major subdomains. Its sedimentary infill comprises predominantly Paleogene to Neogene deposits, encompassing the Resende, Tremembé, and São Paulo formations. These units reflect a complex interplay of lacustrine and fluvial processes, yielding marked heterogeneity. This study focuses on the reprocessing of legacy 2D seismic data to refine the imaging and interpretation of stratigraphic intervals beyond the traditional basin/basement framework.

Method and/or Theory

The adopted seismic reprocessing strategy integrates geometry definition, amplitude compensation, muting, and velocity analysis, with the objective of improving the resolution and fidelity of both structural and stratigraphic features. Subsequent phases will encompass statics correction, migration, and interpretation guided by geological and geophysical constraints. The utilization of an academic license of a commercial software platform facilitates the implementation of industry-standard methodologies in a research setting.

Results and Conclusions

The ongoing reprocessing of 2D seismic data from the Taubaté Basin is intended to enhance subsurface imaging and enable more refined interpretation of key stratigraphic markers within a rift basin context. Initial stages have focused on geometry reconstruction, amplitude normalization, and velocity modeling, with upcoming steps involving statics correction, imaging, and geological interpretation. The workflow is still under development, and it is designed to yield improved delineation of stratigraphic packages, contributing to more accurate subsurface models. This study advances the geophysical understanding of Brazilian onshore rift systems by applying a systematic seismic reprocessing workflow aimed at enhancing stratigraphic resolution and constructing more robust velocity models.

Acknowledgements

This research is part of an academic project developed in collaboration with Petrobras. The authors also thank Universidade Federal Fluminense (UFF) for the infrastructure support and AspenTech for providing the academic license used in the seismic processing workflow.