

## **De-Risking Brazil's Deep-Water Equatorial and Eastern Margin: Defining the Petroleum Systems**

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### **Abstract**

Recent exploration discoveries in the deep-waters of offshore Guiana and French Guiana and Brazil's Ceará and Sergipe deep-water basins have confirmed the viability of new deep-water plays along Brazil's Equatorial and Eastern Margin. This vast underexplored area lacks the massive salt section present in the Campos and Santos basins to the south, but possess the same syn-rift lacustrine sediments, post-rift marine environments and turbidite reservoirs. Among the many under-explored basins off the north and northeast coasts of Brazil, are the deep-water Foz do Amazonas, Pará-Maranhão, Barreirinhas, Ceará, Potiguar and Pernambuco-Paraíba Basins, and south of the Santos Basin the largely under-explored deep-water Pelotas Basin.

The presence of hydrocarbon systems in these basins can be inferred by West African analogs, but the ultimate prospectivity of these basins is dependent on the confirmation of the presence of active petroleum systems. Analysis of regional surveys using high-resolution multi-beam scanning and precision-guided piston coring of suspected seepage anomalies has revealed valuable information on hydrocarbon provenance by providing key insights into the presence, type, and extent of petroleum systems in these under-explored frontier areas.

This paper describes the findings of regional multi-beam and piston coring surveys in these frontier basins and the attending geochemical analyses that indicate their prospectivity, the likely play concepts present, and the prioritization of each with respect to exploration potential and hydrocarbon sourcing.