

RE-EVALUATION OF MESOZOIC SOURCE ROCK SYSTEMS OF THE CENTRAL ATLANTIC CONJUGATE MARGINS (EAST COAST, USA AND NORTHWEST AFRICA)

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ABSTRACT

Conjugate margins are divergent margin pairs that form as continents rift apart from each other. They are typically symmetrical in their large-scale crust and mantle structures, and therefore could potentially serve as analogs for stratigraphy and organic matter. The Central Atlantic margins are a desirable study area because there are several recognized potential source rock intervals within the Mesozoic on each margin, and there is plentiful public data available from scientific drilling programs. The conjugate margins of the Central Atlantic Ocean, the US east coast and northwest Africa, can be tested as analogs by determining whether coeval potential source rock intervals had related origins. Deep Sea Drilling Project (DSDP) cores from several sites on each Central Atlantic continental margin will be utilized to carry out geochemical and micropaleontological analyses, to first identify, and then characterize coeval source rock intervals. The temporal distribution of each source rock interval will be constrained using bio-chronostratigraphic datums (age markers). This will provide a more precise age assignment to facilitate correlation of different sites. Geochemical analyses (e.g., TOC, bulk rock pyrolysis, vitrinite reflectance) will establish kerogen types for the respective source rock intervals across the margin, and kerogen types can be linked to specific paleoenvironments originating from lacustrine, marine, or terrigenous sources. Benthic foraminifera will be studied in detail, due to their affinity for particular paleoenvironments in relation to the oxygen and nutrient conditions. The results from this study will more accurately characterize potential Mesozoic source rock intervals for the Central Atlantic conjugate margins.

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