
Comparison of Tectonic and Subsidence Events of the Demerara (South American) and Guinea (West African) Rifted Conjugate Margins

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ABSTRACT

Previous workers have shown that the Demerara-Guinea conjugate margin of South America and northwestern Africa experienced two rifting phases in different opening directions. The first rifting phase occurred during the Oxfordian (158 Ma) when Africa separated in a southwest direction from North America to form the central Atlantic Ocean. The second rifting phase occurred during the Aptian (124 Ma) when northwestern Africa and northeastern South America obliquely rifted apart in an east-west direction to form the Equatorial Atlantic Ocean. We have compiled data from 15 wells from the Demerara margin of northeastern South America and 10 wells from its conjugate margin in the Guinea Plateau area of northwest Africa to compare the effects and timing of the two-stage rifting history. As wells on the two margins do not penetrate the Jurassic, subsidence plots from both conjugates show the passive margin phase in the Early Cretaceous followed by a period of rapid subsidence related to the Albian, Equatorial Atlantic rifting event and uplift event. Uplift is thought to have formed as a result of folding and thrusting as the South American and North African plates were compressional deformed during the early plate opening. Other unconformities affecting both conjugate margins include: (1) Cretaceous-Tertiary boundary, (2) Oligocene-Miocene, and (3) Plio-Pleistocene.