

The Significance of the Evaporites in the Basins Around the Atlantic Margin

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ABSTRACT

The timing of the opening of the Atlantic Ocean may be deduced by considering the sedimentary environments that were produced within the rifts that marked the disruption of Gondwanaland. Immediately before the fragmentation, the climate in the center of the continent was arid, and the isostatic adjustments following rifting produced drainage flowing away from the newly-formed trough. These climatic and physiographic conditions led inevitably to the deposition of evaporites as the sea entered the rift zones whose margins now form the edges of the continents around the Atlantic. As a result, the sediment sequence in the Atlantic coastal basins shows a change from continental to evaporitic to normal marine conditions, and the age of the continental

margin evaporites gives the chronology of the opening of the Atlantic. The South Atlantic became established during the Aptian, whereas the North Atlantic had begun to develop in the north in the late Triassic and had become established further south by the middle or late Jurassic. The Gulf of Mexico came into existence in the middle Jurassic by the subsidence of a continental plate. The union of the two parts of the incipient ocean came about during the Albion, and the resulting free circulation prevented the restriction necessary for the continued accumulation of evaporite deposits. No such deposits are known therefore from the northern coast of Brazil or from the east-west directed part of the coast of Africa.