SEDIMENTARY EVOLUTION OF THE ARARIPINA FORMATION: SINGULAR DEPOSITIONAL RECORD OF MESOALBIAN TECTONICS IN NORTHEAST OF BRAZIL

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ABSTRACT: The Cretaceous Gondwana breakup event was responsible for the reactivation of Precambrian structures producing several interior rift basins in the Northeast Brazil. In this context, the sedimentary succession of the Araripe Basin record the pre, syn and post-rift sequences formed during the distinct tectono-sedimentary stages involved in the formation of the South Atlantic Ocean. The middle Albian Araripina Formation is part of the post-rift sequence, bounded at base by basement rocks (nonconformity) or by the marine Romualdo Formation (disconformity), and at its top by a disconformity/angular unconformity with the fluvial deposits of the Exu Formation. The Araripina Formation is composed of rhythmically interbedded sandstones and mudstones, and the succession can be divided in two by a major truncating surface. Under this tectonic surface, facies association shows that sedimentation was likely in a distal-fan system associated with ephemeral rivers and, on top of the surface, the depositional environment was likely extensive floodplains subjected to episodic inundations. The paleocurrent patterns suggest deposition towards east and southeast, with source-areas at west and northwest. This data is opposite to the westward paleocurrents measured in the Exu Formation, indicating a polarized change in the dispersal pattern of the sedimentation. This change is probably related with the epirogenetic uplift of the eastern portion of the Araripe Basin that rearranged all the continental paleodrainage during the Mesoalbian. Several evidences of soft-sediment deformation are present in the rhythmites (i.e., pseudonodules, ball-and-pillows, injectites and convoluted folds) and are here interpreted as produced by seismic activity, constituting true seismites. The evidences of syn and post tectonic activity in the Araripina Formation is related to reactivations of basement faults during the Albian, probably in response to the beginning of the opening of the Brazilian equatorial margin. Indeed, the Araripina Formation seems to be constrained by the splays of the Farias Brito Fault. In addition, the occurrence of fractures (faults and joints) that show NE-SW, E-W and NW-SE patterns, is concordant with tectonic regional structures of the crystalline basement. Finally, the Araripina Formation plays an important role as a unique sedimentary record of the Mesoalbian tectonic activity in the Northeast of Brazil during the last stages of the Gondwana breakup.

KEYWORDS: SEDIMENTOLOGY; SYNSEDIMENTARY TECTONICS; ARARIPE BASIN.