

Jurassic-Lower Cretaceous radiolarites in Central America and the Caribbean – remnants of Pacific ocean floor

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Early Jurassic to Early Cretaceous ribbon-bedded radiolarites are widespread in Tethyan and circumpacific orogenic belts, but they are unknown from the Atlantic, the Gulf of Mexico and the Venezuelan Mesozoic passive margin. Mesozoic radiolarites formed in detritally starved, oceanic areas beneath moderate to high surface productivity, such as many areas of Tethys and the Palaeo-Pacific. The Jurassic-Early Cretaceous Central Atlantic – Palaeo-Caribbean ocean basins formed a mediterranean sea rich in detritals along its margins, but of low surface productivity, resulting in clay-rich (below the CCD) and/or calcareous pelagic facies throughout. However, ribbon-bedded radiolarites occur in a variety of

tectonostratigraphic settings on and around the Modern Caribbean Plate. In the Nicoya Complex (NW-Costa Rica), the Siuna Oceanic Complex (NE-Nicaragua), El Tambor Group (Montagua Suture Zone, Guatemala), Duarte Complex (Santo Domingo, Hispaniola), Mariquita Chert (SW Puerto Rico) and in the Phare Unit (E-Désirade, Guadalupe Archipel). These radiolarites are associated with mafic and ultramafic igneous rocks of a diverse petrogenetic origin: rarely do they form the stratigraphic cover of MORB-type ocean floor (the only clear case seems to be the Duarte Complex, Hispaniola). More often, the radiolarites are incorporated as exotic blocks in Late Cretaceous plateau basalts and intrusives (Nicoya Com-

plex, Costa Rica), or subduction-related mélanges (Santa Elena, N Costa Rica, Mariquita Chert, SW Puerto Rico). On La Désirade, radiolarites are stratigraphically interbedded with pillow basalts of a back-arc setting (Gauchat, 2004). The occurrences of Nicaragua, Honduras and Guatemala are currently under study.

Radiolarian assemblages were examined by various authors (Dupuis, 1999; Mattson and Pessagno, 1979; Montgomery et al., 1992, 1994a, 1994b). Faunal characteristics were interpreted in terms of palaeo-latitude of formation of these radiolarites. However, the Tertiary to Recent paleobiogeography of radiolarians shows that higher latitude radiolarian assemblages are very similar to upwelling

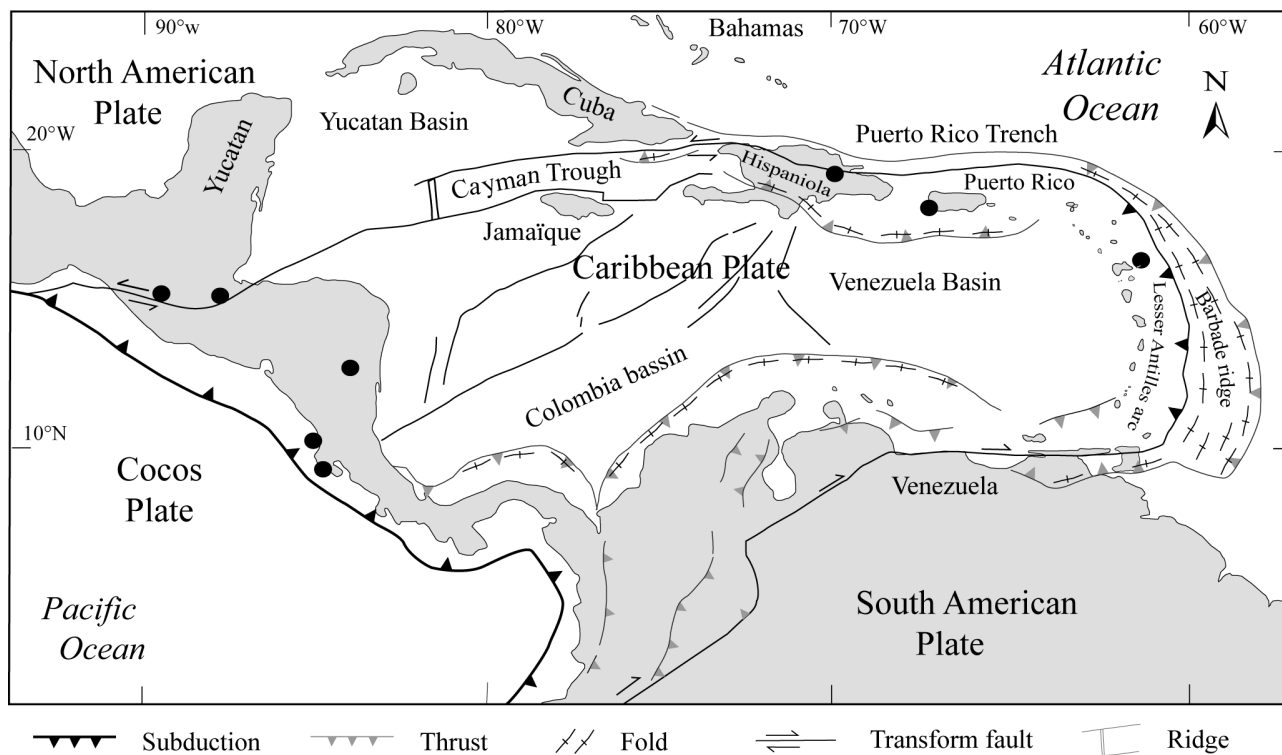


Figure 1 Tectonic map of the Caribbean Plate with Jurassic-Early Cretaceous radiolarite occurrences marked by dots

assemblages that occur throughout the tropical realm in up-welling areas. Several Caribbean radiolarian assemblages described from La Désirade closely resemble coeval faunas extracted from cherts of the Californian Coast Range Ophiolite, cherts that certainly formed in the upwelling area along the Western American Margin. We consequently interpret the Mesozoic radiolarite occurrences associated with the Caribbean Plate as remnants of Pacific ocean floor, some of which may have been formed in arc-related settings close to the Western American Margin. The presence of these faunas does not allow for a palaeo-latitudinal interpretation, but rather suggest a palaeo-longitudinal displacement from the Eastern Pacific and/or the western American Margin into their present position in Central

America and the Eastern Caribbean. This interpretation supports an allochthonous, Pacific origin of the Modern Caribbean Plate.

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