

ORIGIN, POLARITY REVERSAL, AND MIGRATION HISTORY OF THE GREAT CARIBBEAN ARC AS CONSTRAINED BY GEOCHRONOLOGY AND P-T PAT

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Most models for Jurassic-Neocomian break-up of western Pangea show a progressively lengthening, west-facing paleo-Mexico-Antilles-Colombia arc. Models diverge for mid-Cretaceous, some deriving Caribbean lithosphere (CARIB) from west of the early arc (Pacific origin), and some deriving it from between the Americas to the east (Proto-Caribbean origin). Pacific models require Aptian-Albian polarity reversal in the early arc which allows subsequent (Late Cretaceous-Cenozoic) E-ward migration of the CARIB, with the early arc comprising the roots of its leading (Antillean) margin. Proto-Caribbean models leave the early arc along the trailing (Panama-Costa Rica) margin, and initiate the Antillean arc on ocean crust in the mid-Cretaceous with no prior arc history. Hence, the oldest Caribbean arc should be the Antilles, which should also show evidence for reversal, in the Pacific model, vs the Panama-Costa Rican arc, with no evidence for reversal, in the Proto-Caribbean model.

New and compiled geochronological and P-T data support earlier arc activity in the Antilles (?Jurassic-Neocomian) than in Panama-Costa Rica (Albian), favouring a Pacific origin for CARIB. Further, hi P/T mineral assemblages from Cuba and Margarita support Aptian-Albian polarity reversal, being formed and exhumed, respectively, during times of E-ward and W-ward dipping subduction, also supporting a Pacific origin. Maastrichtian and Eocene rapid uplift/cooling in Cuba and Margarita, respectively, may date extension in Yucatan and Grenada basins, portrayed in regional Caribbe