

Arc-Continent Collision: A Comparison of the SE Caribbean and Taiwan-Ryukyu Margins

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Subduction of the combined west-moving North and South American Plates beneath the east-moving Caribbean Plate with consequent development of the Lesser Antilles Arc has long been accepted as a model for collision between two oceanic plates. Earthquake evidence (presented in the form of seismic tomography) supports this model but, additionally, supports subduction of the Caribbean Plate beneath the continental South American Plate.

Since the South American Plate is comprised of both continental and oceanic crustal types which join at a stable continent-ocean boundary (Guyana COB), it is difficult to reconcile how the Caribbean Plate can both override and be subducted beneath what appears to be the same plate margin.

The paper compares this SE Caribbean margin with the better understood and documented Taiwan-Ryukyu margin. It illustrates how crustal loading in advance of arc-continent collision in the SE Caribbean has created a major petroleum system. Application of the Taiwan-Ryukyu model to the SE Caribbean increases understanding of the latter. Differences between the two are largely dependent on rates of collision and consequent efficiency.