



Cataloguing Seven Offshore, Basement Terranes of the Caribbean Sea and their Linkage History from Integration of Geophysical Datasets, Well Logs, and Dredged Seafloor Samples

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ABSTRACT

The Caribbean plate is a complex, 3.2 million km² area of amalgamated and dissimilar basement terranes which we catalogue from an integration of seismic reflection, gravity, and magnetic data with 15 wells and 25 seafloor dredges. These are the: (1) Precambrian/Paleozoic Chortis continental block with average water depths of 1 km, sediment thicknesses of 3 km of pelagic sediments and a recent carbonate platform, and crustal thickness between 25–45 km; (2) Late Triassic/Early Cretaceous Mesquito Composite Oceanic Terranes which lies immediately south of the Chortis with average water depths of 0.3 km, sediment thicknesses of 3 km, and crustal thicknesses between 20–30 km; (3) Early Cretaceous/Recent Great Arc of the Caribbean that surrounds the plate in a relatively narrow band with average water depths of 1.5 km, sediment thicknesses of 2 km of a mixture of siliclastic and carbonate sediments, and crustal thicknesses of 15–25 km; (4) Cenomanian/Turonian Caribbean Large Igneous Province (CLIP) with average water depths of 4 km, sediment thicknesses of 2 km, and crustal thicknesses between 12–20 km; (5) Late Eocene/Recent Cayman Trough oceanic spreading ridge and pull-apart basin to the north with average water depths of 5.5 km, 1.5 km of pelagic sediments, and crustal thicknesses of 4–8 km; (6) Early Cretaceous extended oceanic crust formed by back-arc extension covering 350,000 km² to the south and southwest of the CLIP with average water depths of 4 km, sediment thicknesses of 3 km of CLIP comparable sediments, and crustal thickness of 2–6 km; (7) oceanic crust and thinned arc crust of the Grenada basin separating the Aves Ridge and the Lesser Antilles with 3 km water depth, 1.5 km pelagic sediments, and crust from 8–20 km. The timing of terrane linkages is tabulated using available radiometric and detrital zircon data and ages of sedimentary overlap assemblages.

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