

Deformation of the West African Margin

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The continental margin between Cameroon and Southern Gabon is separated into the North Douala and Gabon Basins by the Kribi Fracture Zone. This is a 75 km-wide transform fault that trends NE-SW and intersects the coastline between 2-30 N. Much of the margin off Equatorial Guinea is influenced or controlled by fracture zone tectonics. North of the Kribi Fracture Zone, oceanic crust extends to the coastline and floors the narrow shelf off Cameroon. Little rift margin exists in the North Douala Basin. Reflection Moho beneath oceanic crust is relatively weak but continuous throughout the North Douala Basin and oceanic crustal thickness is extremely uniform, averaging about 1.75 s in two-way travel time.

South of the Kribi Fracture Zone, oceanic crust is offset about 350 km to the southwest, creating the broad rift margin off Gabon. Rifting of the margin here involves brittle, upper continental crustal sheets overlying a complex series of ductile lenses that generally dip southeasterly immediately south of the Kribi Fracture Zone (the Congo ductile lenses) and northwesterly farther to the south (the Sette Cama ductile lenses). The Sette Cama ductile lenses may unroof toward the juncture with oceanic crust. Strong reflection events are often associated with the ductile shear zones that define the lenses, but a single, continuous event representing reflection Moho cannot be delineated. The concept of a regionally continuous reflection Moho beneath rifted continental crust may not be a useful reference frame here.