

**AAPG International Conference
Barcelona, Spain
September 21-24, 2003**

Millard F. Coffin¹ (1) ORI, University of Tokyo, Tokyo, Japan

Cenozoic Extension of the Mesozoic Continental Margin of Kenya and Tanzania

The passive continental margin of Tanzania, Kenya, and Somalia developed in Mesozoic time via the breakup and separation of Madagascar and East Africa. Analysis of approximately 2000 km of multichannel seismic reflection data reveals subsequent Cenozoic extension of the Kenyan and Tanzanian continental margin. Normal faulting has created a major sedimentary basin consisting of graben and half-graben along the coast and on the continental shelf. The offshore basin trends north-south, and is approximately 400 km long and as much as 100 km wide, similar in scale to the East African rift lakes. Offshore we observe only the eastern boundary faults; onshore, workers have reported major north-south faults downthrowing to the east that likely comprise the western boundary faults. Drilling in a graben offshore Kenya indicates 4200 m of near-continuous subsidence at rates of 15 cm/kyr since late Oligocene time; extension probably commenced earlier. Fault activity has continued into Recent time, as manifested by fault scarps displaying approximately 100 m of seafloor relief on the continental shelf despite vigorous nearshore physical oceanographic circulation, and young ground deformation onshore Zanzibar. This region of extension is probably another component of the complex East African rift system. Across strike, it is approximately 1300 km from the westernmost rift lakes across the central rifts to the easternmost rift on the continental margin, suggesting a broader zone of diffuse plate deformation than currently believed.