

**AAPG Annual Meeting
March 10-13, 2002
Houston, Texas**

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Sand Supply to the West African Margin

Factors controlling the supply of sand to the West African margin are explored via 4 GIS-generated palaeoreconstructions charting the evolution of central and southern Africa since the break-up of Gondwana. Factors include drainage reorganisations, climate change, magmatic, onshore uplift and denudation events, and falls in relative sea level on the surrounding continental shelves.

Landscape models, geomorphological evidence, AFTA and to a lesser degree offshore data indicate that the majority of post-break up denudation from southwest Africa occurred during the Cretaceous, during the rapid initial erosion of the uplifted African rift shoulders. Furthermore, the African continent has subsequently become significantly drier reducing the erosive potential of the drainage systems that have evolved on it.

Uplift and volcanism due to the impact of the Afar plume commenced in the Early Oligocene. Doming directly affected the Congo drainage system, whilst plate slowdown and volcanism across Africa during the Oligo-Miocene may also have been responsible for an increase in sediment supply to the Niger delta and the generation of the Oligocene-Early Miocene unconformity documented along much of the West African margin.

Santonian tectonism also had a large-scale effect on the African continent and resulted in a relative sea-level fall around much of Southern and Western Africa's coast, basin inversion within the West and Central African rift system and widespread magmatism. This event is linked to stress field variations resulting from a change in the poles of rotation for the opening of the Atlantic, which in turn might be related to initial Africa-Eurasia collision.