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Palynostratigraphy, palynofacies and palaeoenvironment of deposition of Selandian to Aquitanian sediments, southeastern Nigeria



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ABSTRACT

Investigation of outcrop sections along the Onitsha-Awka transect in the Niger Delta Basin southeastern Nigeria was undertaken to assess the palynological composition, palynofacies and palaeoenvironment of deposition. Stratigraphic ranges of palynomorphs suggest an age of Selandian to Aquitanian. The palynological composition is marked by abundance of dinoflagellate cysts in the Imo Formation (Selandian to Thanetian), dominance of spores and pollen over dinoflagellate cysts in the Nanka Formation (Ypresian to Bartonian), and overwhelming amounts of spore and pollen in the Ogwashi Formation (Pariabonian to Aquitanian). Palynofacies content shows dominance of structureless organic matter in the Imo Formation, few phytoclasts in the Nanka Formation and maximum phytoclast amounts in the Ogwashi Formation. Thanetian to Ypresian boundary was marked by the mixing of older Palaeocene and younger Eocene microfossils, decrease of microflora towards the end of Palaeocene and the evolution of abundant and more diverse Eocene taxa.

The Imo Formation was deposited in middle to outer neritic zone based on abundance of gonyaulacacean cysts. However, peridiniacean and terrestrial microflora extend the deposition range to shallow waters of inner neritic and coastal zone. Increase in diversity and abundance of terrestrial palynomorphs over marine palynomorphs assemblages in the overlying Nanka Formation suggest deposition under alternating coastal and inner neritic conditions while the Ogwashi Formation records oscillating coastal plain and brackish water depositional conditions. The palaeoenvironments illustrate that general retrogradation was followed by progradation of the delta during the Cenozoic.

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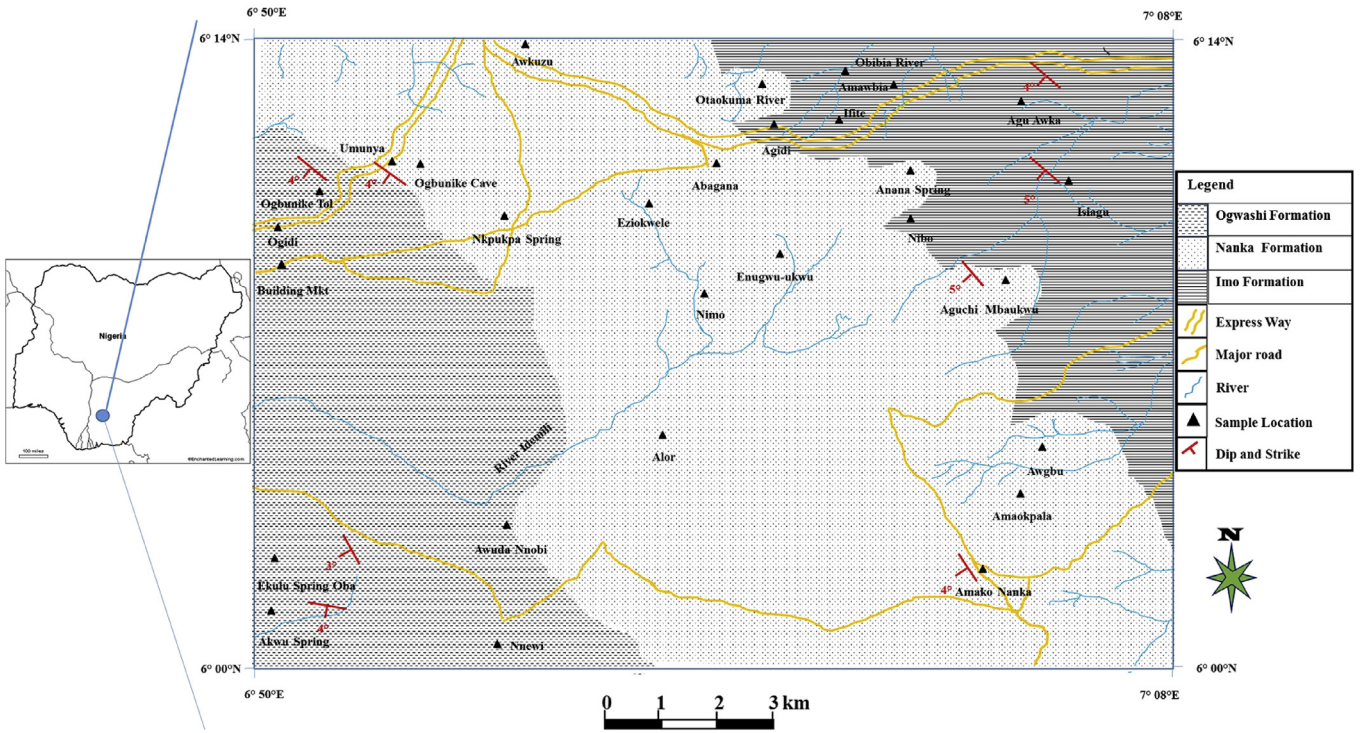


Fig. 1. The geological map of the study area showing outcrop locations, dip and strike and accessibility.

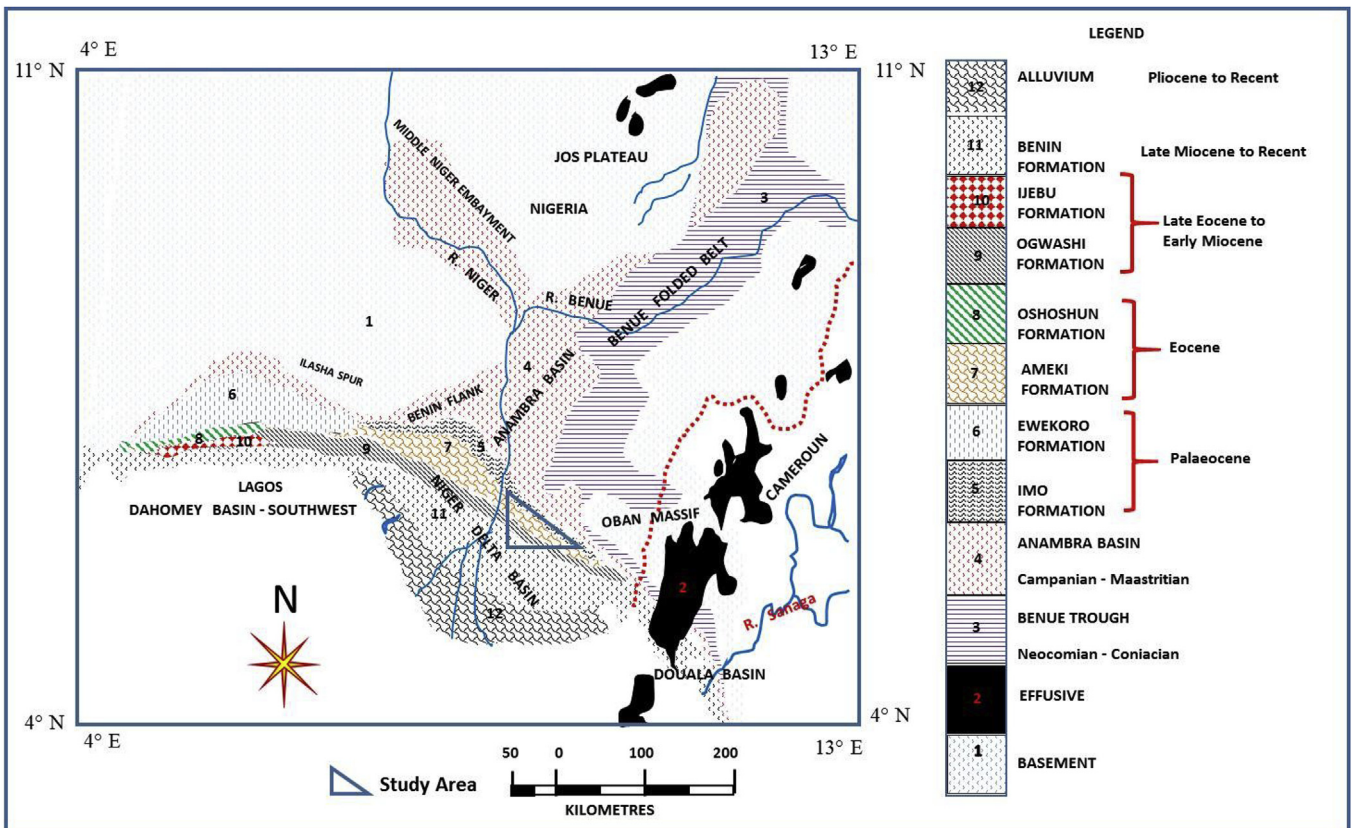


Fig. 2. The geological map of the southeastern Nigeria showing the Niger Delta basin (after Murat, 1972).

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