

## **Early Cretaceous to Neogene palynofacies and attendant depositional trends, Canar, Haraz, Suttaib and Zabia area, Muglad Basin, Sudan.**

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### **Abstract:**

Data from a suite of 14 wells drilled in the west central part of the Muglad Basin have been subject to a preliminary palynological and palynofacies synthesis. This mainly entails biostratigraphical age dating and palaeoenvironmental (biofacies) analysis. Sediments are entirely non-marine throughout this interval leaving palynology as the only viable biostratigraphical discipline that can be employed, revealing a stratigraphical interval from Valanginian/Hauterivian (Neocomian) to Miocene.

Palynological analysis is comparatively new to this part of the Muglad Basin, though an existing scheme largely developed in the Muglad Basin with input from other parts of central and north Africa has been successfully employed. With the assistance of some wireline log data for positioning formational boundaries, Early Cretaceous formational units, Abu Gabra and Bentiu have been identified and dated. Likewise Late Cretaceous Darfur Group (Aradeiba, Zarga, Ghazal and Baraka Formations, plus Tertiary Amal Formation and Korfogan Group (Nayil, Tendi & Adok Fms.) have been similarly recognised and dated on palynostratigraphy.

Palynomorph recovery is often poor, though a low diversity of angiosperm (flowering plant) pollen and pteridophyte (fern) spores in the assemblages is usually sufficient for biostratigraphical age dating to stage level. Occasionally samples reveal great abundances of the lacustrine alga *Pediastrum* and *Botryococcus*. The profusion of these taxa is intermittent in the Palaeocene - Neogene but seem to be most prevalent in the Canar-Zabia region.

This is a regional depocentre bounded to the north by the Haraz/Suttaib high, to the east by the Timsah High and to the south by the Diffra High as identified on gravity data. Stable semi-permanent lacustrine facies would be expected to be most prevalent in such a location. Shallow lake shore and lake fan/delta facies may be represented in the palynofacies laterally from the axis of this region up on to the sub-basin fringe.

In the Cretaceous Darfur Group of the study area however, the locus of lacustrine indicators in the palynofacies assemblage appears to be differently arranged. Contrary to the position of intra-basinal structures as evident in the Tertiary, such facies appear most evident over the region of the presently recognised Haraz/Suttaib High.

This preliminary synthesis of limited palynofacies data may be providing a contribution to depositional environmental reconstruction in the Muglad Basin and further work may provide a means of enhanced stratigraphical resolution from delineation of sub-basinal palynofacies zones.