

INTEGRATED BIOSTRATIGRAPHY OF THE CENOMANIAN TO CONIACIAN NKALAGU FORMATION IN THE LOWER BENUE TROUGH, NIGERIA

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Micro- and macrofossil assemblages of three sections of the Nkalagu Formation, including the type-section of this Formation, have been studied. Zonations for several fossil groups have been erected, integrated and were correlated with international standard zonations to allow for high resolution biostratigraphy.

Biozones were identified for planktic foraminifera (*Praeglobotruncana* cf. *stephani*-Zone (Middle Turonian), *Marginotruncana sigali*-Zone (Late Turonian), *Dicarinella primitiva*-Zone (latest Turonian), *Dicarinella concavata*-Zone (Coniacian)), benthic foraminifera (*Planulina beadnelli* (= *Gavelinella dakotaensis*)-*Ammoastuta nigeriana*-Zone (Cenomanian to Early Santonian)), calcareous nannofossils (*Eiffellithus eximius*-Zone (Middle Turonian to early Late Turonian), *Marthasterites furcatus*-Zone (late Turonian to Coniacian)), and ostracods (*Cytherella* spp.-Zone (latest Cenomanian), *Cythereis vitiliginosa reticulata*-Zone (Middle to Late Turonian), *Cythereis* sp. 2-Zone (latest Turonian to Coniacian)). Inoceramid and ammonite assemblages from several horizons complement the datasets and confirm the ages of the microfossil zones. Integration of fossil groups allows separation of 6 integrated zones with an average duration of about 0.4 Ma. IZ-A: latest Cenomanian (dominance of *Cytherella* spp.), IZ-B: Middle Turonian (until LA *P.* cf.

stephani), IZ-C: (?basale) Late Turonian (LA *P.* cf. *stephani* to FA *M. furcatus*, with *Inoceramus*), IZ-D: middle Late Turonian (*M. furcatus* to LA *C. vitiliginosa reticulata*, with *Inoceramus* and *Mytiloides*), IZ-E: late Late Turonian (FA *D. primitiva*, *Cythereis* sp. 2, with *Prionocycloceras*), IZ-F: Coniacian (from FA *D. concavata*, with *Didymotis*-event).

Latest Cenomanian sediments were deposited in a dysoxic to maximally suboxic, normal marine environment of an inner shelf area close to the coastline. Middle Turonian to Coniacian sediments were deposited in the upper bathyal under normal marine salinity and low oxic conditions of the bottom-water.

Planktic foraminifera and calcareous nannofossils show distinctive Tethyan influences and indicate warm waters. Agglutinated foraminifera show endemic tendencies on species level (restriction to the Benue Trough). Calcareous smaller benthonic foraminifera are generally pandemic and are restricted in their distribution only by facies differences. Marine ostracods are generally endemic and belong to the West African Province.

The data and interpretations provide a base for basinwide correlation in the Lower Benue Trough and in parts also for its middle and upper regions. They allow a direct correlation with other West African basins and with worldwide biostratigraphic zonal schemes.

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