load casts interdigitating with the underlying muds to >30 cm. Below this, isolated sand pillows up to 10 cm in diameter extend into the matrix mud to >50 cm. Ratios of E-M I and II sand in the pillows were significantly different from the sand above. Trends in the E-M ratios in the surficial and load-cast sands and comparisons with other earlier studies suggest that dynamic emplacement of the shelf sand produced these structures. Owing to the size and isolation of the sand pillows in three dimensions, and lack of primary structures in the mud, a bioturbation origin was ruled out.

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Campanian–Lower Maestrichtian Paleobathymetric Models of Foraminiferal Assemblages in New Jersey and Delaware

Analysis of Campanian–Lower Maestrichtian benthic foraminiferal assemblages from outcrop and well samples in New Jersey and Delaware has led to recognition of five bathymetric biofacies. Each of the biofacies occurs in adjacent settings to one another in a profile downdip toward the Atlantic basin (paleoslope).

The *Gavelinella nelsoni–Gavelinella pinquis* biofacies occurs in nearshore sand lithofacies, deposited in depths of 30 to 50 m. The *Gandryina stephensoni–Nodosariid* biofacies occurs downdip from the above biofacies and indicates environments of deposition of approximately 60 to 80 m (midshelf). The *Praebulimina–Pseudouvigenina* biofacies which occurs adjacent to the *Gandryina stephensoni–Nodosariid* biofacies, suggests mid-outer shelf depths of approximately 100 to 150 m. The *Heterostomella americana–Gyroidinoides globosus* biofacies is characteristic of outer-shelf to slope deposition at approximately 200 to 300 m. The *Gavelinella ammonoides–Pullenia cretacea* biofacies occurs furthest downdip and suggests paleodepths of greater than 300 m in a slope environment.

These biofacies when plotted along a paleoslope profile enhance the accuracy of estimating paleobathymetry. When applied to studies of cycles of sea-level change the paleoslope profile provides constraints on the magnitude of rise and fall of sea level.

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Exploration Potential of Georges Bank

No abstract available.

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Exploration Results from Baltimore Canyon

No abstract available.

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Biostratigraphic Age Control for Paleo-Oceanographic Study of Atlantic Margin Miocene Diatomites from Planktonic Siliceous Microfossils

Miocene diatomaceous units are known from various outcrop and subsurface studies of the Atlantic continental margin. These are generally thought to reflect depositional environments dominated by nearshore processes. Many sections, however, contain microfossil assemblages with abundant pelagic forms, suggesting strong oceanic influence on the deposition of certain intervals.

Radiolarians and silicoflagellates are among pelagic microfossils valuable in providing biostratigraphic age information where calcareous forms are sparse. Lower and middle Miocene radiolarians (*Calocycletta costata* and *Dorcadospyris alata* zones) are present in the Calvert Formation (Maryland), whereas only lower Miocene (*C. costata* zone) forms occur in the Kirkwood Formation (New Jersey). Silicoflagellates from the *Corbisema triacantha* zone occur in both sections.

This biostratigraphic information is useful in analyzing the marine influence on the Atlantic margin in terms of Miocene paleo-oceanography. The diatomaceous interval falls within the major Miocene high stand of sea level on the Vail et al curve. Furthermore, the third-order cycles proposed on this sea-level curve appear to be consistent with the depositional history of the Calvert Formation. The earlier termination of diatomaceous sedimentation in the Kirkwood is possibly due to local detrital influx.

The effect of enhanced circulation in the northwestern Atlantic following closure of eastern Tethys at Arabia and western Tethys at Gibraltar, in the early and middle Miocene, is possibly reflected in the deposition of the diatomaceous units as well.

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Pre-Lease Geohazard Evaluation of Mid-Atlantic Slump Features, Sale 49 Area

A detailed review and analysis of published and unpublished geologic, geophysical, and geotechnical data, including regional bottom and subbottom conditions was conducted prior to Lease Sale 49 to evaluate potential geohazards within the 109 blocks located within the lease sale area. A preliminary slope-stability analysis was developed considering gravity, storm wave, and earthquake loading to aid in determining the stability of soils near exploratory well sites. Guidelines for estimating slope stability in areas of potential sea-floor instability were developed for those blocks in which areas have been, and may still be, subject to mass sediment movement. Also, recommendations have been provided for supplemental geotechnical studies intended to satisfy U.S. Geological Survey (USGS) regulatory stipulations which require a lessee to demonstrate that mass movement of sediment is unlikely, or that exploratory operations can be safely designed to protect the environment if mass movement should occur.

A detailed summary of potential geohazards (slope instability, slump deposits, gas-charged sediments), for the 49 lease blocks in the USGS Stipulation Categories 2, 3, and 4 has been prepared, with a series of interpretive maps detailing the generalized sea-floor slope, potential geohazards, subsurface reflectors, and buried slump masses. A generalized stratigraphic soils model for the shelf-slope break area was developed and summarized together with key engineering properties of Holocene, Pleistocene, Pliocene, and Miocene strata.

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Late Cretaceous–Tertiary Marine Cycles and Paleo-Environments in Gulf of Guinea, Eastern Equatorial Atlantic Margin