that the nepheloid layer rarely rises to depths of 75 m. The 80-m depth contour marks a major boundary between biologic communities. That depth separates the turbid water fauna below from the clear water fauna and flora above.

The east and west Flower Garden Banks serve as modern analogs of Tertiary reefs, such as the Oligocene reef at Damon Mound, Brazoria County, Texas. The sediment facies are similar, even to the muddy *Porites* gravels and *Heterostegina* sands that were deposited under an Oligocene nepheloid layer.

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Foraminiferal Stratigraphy and Paleoecology of Blufftown Formation (Santonian-Campanian) of Georgia and Eastern Alabama

Fifty-two species of Foraminifera belonging to 35 genera are recorded from Georgia and Alabama. Of these, one species and one genus are new. Two distinctive foraminiferal assemblages are recognized: one consists mostly of benthic species (upper and lowermost middle Blufftown); the other contains associated benthic and common planktonic Foraminifera (middle and upper part of middle Blufftown). Some benthic individuals represent the arenaceous families Lituolidae and Ataxophragmoidae, but most belong to the calcareous families Anomalinidae, Cibicididae, and Nodosariidae.

Absence of foraminiferal assemblages in the lower Blufftown sands indicate a marginal marine environment of deposition. The fossiliferous clayey middle Blufftown represents deposition in a middle neritic environment of a transgressive sea. The silty upper Blufftown member represents a regressive marine deposit. Because of the fluctuating marine conditions, only the more tolerant species could survive so foraminiferal distribution is not uniform throughout the section. The presence of few species but abundant individuals supports this interpretation.

On the basis of the planktonic Foraminifera and diagnostic megafossils, the Blufftown Formation is Santonian to early Campanian in age.

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Diagenesis by Kohout Convection in Carbonate Platform Margins

Kohout convection is a large-scale, long-lived ground-water flow system in the margins of steep-sided active carbonate platforms. It was first postulated to occur in the subsurface of Florida by Francis Kohout in the 1960s. The flow is driven by buoyancy arising from subsurface differences in salinity, temperature, or both. Temperature differences alone drive Kohout convection in isolated platforms. Cold, dense seawater surrounding a platform at depth migrates inward, displacing warmer pore waters at the same elevation. This inflowing density current is, in turn, warmed within the platform and is buoyed upward to discharge on the platform shelf or margin. The result is a giant convective "half-cell" of circulating seawater occupying the platform margin. In carbonate shelves, where regional meteoric ground-water flow may be present, the meteoric water mixes by dispersion with the convecting seawater, resulting in an increase of buoyancy enhancing the flow rate. Kohout convection may be modeled by systems of differential equations governing the fluid flow, heat transfer, and dispersive mass transfer. Approximate analytical and numerical solutions of these equations in the isolated platform setting show the effects of platform margin geometry and subsurface permeability on flow rates and flow patterns of Kohout convection.

Kohout convection may be an important agent of mesogenetic diagenesis because it affects rocks deeply buried in a stratigraphic sense. Porosity may be developed and modified by dissolution by inflowing seawater undersaturated with respect to calcium carbonate phases, by cementation as the seawater warms and rises, and by dolomitization (if possible in these waters), leading to reservoir conditions in platform margins.

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Environments of Sand Deposition, Southwest Louisiana Continental Shelf

A synthesis of approximately 20,000 km of high-resolution seismic profiles, coupled with vibracores and industrial platform borings, shows that various large sand bodies are present in the late Pleistocene and Holocene sediments of the southwest Louisiana continental shelf. Sand-deposition patterns have been largely controlled by glacio-eustatic sea level fluctuations, paleogeomorphology, subsidence, and salt tectonism.

Sand deposits of the area fall into two categories: (1) those associated with sea level lowstands, or regressive deposits, and (2) those associated with rising sea levels, or transgressive deposits. Regressive facies include fluvial and deltaic sands, whereas transgressive sands are largely formed by the reworking of regressive deposits.

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Petrology and Sedimentology of Mississippi Fan Cores, DSDP Leg 96

Pleistocene sediments were cored at nine middle and lower Mississippi fan sites, in water depths from 2,500 to 3,300 m (8,200 to 10,825 ft). Radiography, thin-section, SEM, and XRD studies provided data from which the fan's major depositional environments can be described.

Sands and minor gravels are concentrated in middle and lower fan channel fills, and in lower fan channel-mouth deposits. Silts and clays occur in overbank deposits, passive channel fills, and interbeds associated with coarser facies. Graded bedding of varying thickness is the dominant sedimentary structure in all environments.

Granule and pebble gravels are composed of well-rounded chert and polycrystalline quartz, with minor metamorphic and igneous rock fragments. Moderately to well-sorted sands are mainly fine and very fine feldspathic litharenite, sublitharenite, and subarkose. Sands commonly have thin-section porosities between 20 and 35%; woody organic contents range from 0.7 to 7.9 total organic carbon.

Authigenic minerals occur in sands and muds, but are most abundant in silts and clays. Smectite, illite, dolomite, calcite, pyrite, and gypsum are the main authigenic phases.

At this stage in their depositional history, the sands are clean, have high porosities and permeabilities, show only minor pore-reducing diagenetic effects, and thus have excellent hydrocarbon reservoir potential.

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Effects of Diagenesis on Reservoir Properties and Log Response, Upper Jurassic Taylor Sandstone, Cotton Valley Group

The Taylor Sandstone in Terryville field, Lincoln Parish, Louisiana, is one of many tight gas-bearing sandstones of the Upper Jurassic Schuler Formation, Cotton Valley Group. This coastal strand-plain sandstone is fine to very fine grained, well sorted, with grains that are subrounded to well rounded. It is highly quartzose with an abundance of carbonate cement and lesser concentrations of quartz cement, clay precipitates, and pyrite.

Mechanical compaction has caused a 10% reduction in primary porosity with increasing overburden. Chemical diagenesis has altered the texture and composition of the sandstone and has affected porosity and permeability through cementation, dissolution, and authigenic clay precipitation. Early stages of diagenesis included pyritization, mechanical compaction, and hinderance of compaction by precipitation of quartz cement at grain contacts. The middle stages were dominated by carbonate cementation, which replaced large amounts of detritus and quartz cement and reduced primary porosity to irreducible limits. Finally, the latest stages of diagenesis included development of secondary porosity by localized dissolution of replacive and interstitial carbonate and reduction of porosity by precipitation of pore-lining and pore-filling illite and illite/smectite clays. Poor permeabilities in the sandstone are a direct consequence of incomplete dissolution of carbonate in pore throats and the obstruction of voids by the late clay precipitates.

The conductive property of authigenic pyrite has affected the response of the deep induction resistivity log, consequently causing abnormally high calculated water-saturation values in the Taylor Sandstone. The effect pyrite has on formation resistivity can be clearly seen on R_t-ϕ plots (Pickett method). Formation resistivity is affected even at low percentages of pyrite, and shows an exponential decrease with increasing pyrite concentration. A correction of resistivity was made possible by determin-