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"A Midwestern Province"

Abstract

One of the most important tectonic features of the Southwest United States is the Ouachita Structural Province. The known length of the folded eugeosyncline is 1350 miles, with much of the Pennsylvanian and Mississippian prism of sediments which comprise it buried, although extensive outcrops occur in the Ouachita area of Oklahoma and in the Marathon area of Texas. A regional gravity assembly delineates the trend of the basic feature, and regional magnetic maps assist in further interpretation. The feature has had a controlling effect on the subsequent deformation of overlying sediments; the rocks of the Ouachita feature are complexly faulted and folded and constitute a productive province.

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Abstract

MODERN CARBONATE SEDIMENTS OF SOUTH FLORIDA

by

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The shallow sea off southern Florida is the site of deposition for a complex suite of carbonate sediments, but the area has not received as much recognition as the Bahamian Banks and Batabano Bay. An arcuate chain of islands, the Florida Keys, separate the area into two major sedimentary environments: Florida Bay, which lies between the Keys and the mainland; and the Florida reef tract, which is a shallow open shelf between the Keys and the Florida Straits.

Florida Bay is a semirestricted shelf lagoon having little tidal communication with the open sea. Consequently, the water chemistry fluctuates strongly with climatic changes. The biota is restricted to hardy species and varies radically in different subenvironments of the bay. The sediments consist of carbonate muds with a small amount of included skeletal debris. They are deposited in peculiar linear and sinuous, often interconnected, mud banks that are dotted with mangrove islands.

The Florida reef tract contains a complex and varied biota and has unrestricted tidal exchange with the northward flowing Florida Current. The outer margin of the shallow shelf hosts discontinuous coral reefs that provide considerable protection to the four- to five-mile wide reef tract. Skeletal and pelletoidal carbonate sands are deposited adjacent to the reefs and in elongate offshore bars immediately landward and parallel to the reef trend. The inner reef tract is characterized by muddy carbonate sediments that fill in the topographic depressions and locally build into banks. These carbonate mud build-ups resemble many ancient bioherms but grow in shallow well-protected waters. The modern bioherms differ from reefs in that they are accumulating in the absence of vigorous wave action, there is no rigid organic framework, and there is no active organic cementing or binding process. Muddy carbonate banks of this type may provide some insight into the problems of fossil "reefs" that have no rigid organic frame.