assess because the record of such events may be very subtle. This is especially true if a deposit has been thoroughly bioturbated or if the record of an event is simply an erosional surface. It has now become possible to evaluate quantitatively ancient episodic sedimentation using modern-process rates as well as refined biostratigraphic and isotopic dating. I predict that such evaluation will necessitate revision of our favorite depositional models, which have become so important for exploration as well as for research.

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West Florida Continental Margin: A Major Carbonate Deposit Which is Not Dominated by Active Reefs

The West Florida continental margin is a vast accumulation of over 500,000 km of Mesozoic to Recent carbonates and evaporites. Carbonate and evaporite domination is primarily due to the fact that the region has been cut off from clastic sedimentation since the Jurassic. Surface facies are now being deposited under semitropic and temperate climates. A relict quartz-dominated sand band which makes up the beaches and innermost shelf is the product of lower stands of sea level when the Tertiary terrace deposits of the central Florida hinterland were eroded by rejuvenated streams which carry little load during highstands. The band is gradually undergoing carbonatization as it is now cut off from any clastic source and the only components being added are mollusk shells and fragments. The shelf is dominated by molluscan shell hash with few corals or coralline algae. Even the few active patch reefs like the Florida Middle Ground have sediments dominated by molluscan debris and are barely surviving.

The slope facies resembles a deep-sea foraminiferal ooze. Transition from the margin to the deep Gulf of Mexico is from shallower ooze to deeper clastic lutite. Slope sediments are accumulating at the relatively rapid rate of about 20 cm/1,000 years. Mass wasting has occurred on the slope and karstification is evident in the stratigraphy of the shelf. While the West Florida margin surface facies are different from those of the more intensively studied coral reefs and banks, they may have many significant analogs in the ancient and warrant more attention.

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Bahamian Subtidal Stromatolites (Oolitic!)

Subtidal oolitic stromatolites are forming in normal marine waters (1-5 m) in the high energy oolitic sand environment on Eleuthera Bank, Bahamas. Penecontemporaneous marine cementation transforms these stromatolites into hardgrounds, some of which may localize subsequent reef development.

Accretion of oolitic stromatolites results from trapping and binding of ooids by various algae. Direct precipitation from seawater of aragonite and/or high magnesium calcite, calcification of algal filaments by high magnesium calcite, or commonly a combination of both processes lithify these stromatolites to create hardground substrates. Degree of marine cementation increases downward from stromatolite surfaces. Stromatolites themselves are localized on other low-relief oolitic hardgrounds.

Morphologies of oolitic stromatolites are strikingly similar to some Shark Bay algal stromatolites. Bahamian stromatolites originate as small pinnacles which can evolve into mounds over a meter in height. Individual pinnacled stromatolites also coalesce laterally into continuous elongated ridges which develop preferred orientations in response to local hydrographic conditions. Internal crude algal laminations often are destroyed by macroborers.

Oolitic stromatolite growth is ephemeral, apparently controlled by the rate of burial by shifting oolitic sand. This physical stress, therefore, sufficiently excludes grazers and encrusters, permits algal binding of ooids and explains stromatolite development in normal marine waters. Buried stromatolites that become exposed are recolonized by algae and begin accreting upward. Where physical stresses are removed for longer periods of time, oolitic stromatolites become susceptible to colonization by coralgal organisms and represent an early stage of reef development.

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Facies Control of Cementation and Porosity, Pennsylvanian Fan-Delta Sandstones, Texas Panhandle

Interbedded fan-delta sandstones and limestones were deposited on a shallow carbonate shelf in the southern Anadarko basin during Missourian time. Hydrocarbon production from the fan-delta sandstones at Mobeetie field, Wheeler County, is controlled both by structure and facies-determined porosity distribution. Distal margins of some fan-delta lobes were reworked by marine processes, and carbonate fossil fragments and oolites were mixed with terrigenous clastics. Diagenetic history of the distal, marine-reworked sandstones was strikingly different from that of the more proximal, non-reworked sandstones.

The first cement to precipitate in the reworked sandstones was a thin, isopachous rim of Mg-calcite cement that probably precipitated in the submarine environment soon after deposition. Next, establishment of a freshwater, phreatic environment in the sediments resulted in extensive calcite cementation in the calcareous sandstones. Dissolution of aragonitic oolites and fossils provided the source of the calcite that occluded primary porosity. In contrast, the non-reworked sandstones were not cemented because they lacked a calcite source, and so they retained high porosity. Rims of authigenic chlorite, which reduced porosity by only a few percent, were the earliest cements to precipitate in the non-reworked facies.

With increasing burial, porosity in both the reworked and non-reworked fan-delta sandstones was reduced by precipitation of authigenic quartz, feldspar, kaolinite, Fe-calcite, and ankerite. These cements are generally minor in volume and do not influence porosity distribution. Generation of secondary porosity by dissolution of feldspars and rock fragments occurred in all sandstones but was more extensive in non-reworked facies. However, the main control of present porosity distribution is the presence or absence of early, freshwater calcite cement.

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Preliminary Statistical Analysis of Large Sample of *Lepidocyclina*, an Eocene Orbitoid Foraminifer from Isla de Margarita, Venezuela

A statistically large sample of *Lepidocyclina (Lepidocyclina)* sp. from the upper orbitoid beds of the Punta Carnero Group, at Punta Mosquito, Isla de Margarita, Venezuela, was analyzed to determine the amount and nature of morphologic variation and to provide a basis for evaluation of present lepidocyclinid