abundant at the B-2 location, is absent at GE-1. Given the otherwise similar stratigraphic sections, these differences are believed mainly climatic in origin. Porosity in GE-1 Lower Cretaceous sands shows only slight decrease with depth.

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Two major current projects are focusing on processes and rates of marine sediment transport on the inner shelf, at the shelf edge, and on the continental slope. They are the Inner Shelf Sediment Transport Experiment (INSTEP) and the Marine Geotechnical Rational Use of the Sea Floor (RUSEF).

INSTEP is designed to investigate the rates and directions of sediment transport and the process by which sediments are resuspended from the bottom. Initial studies are on the inner Long Island, New York, shelf, a typical barrier-island coast. Suspended-sediment flux, bottom erosion versus deposition, and bottom characterization are integrated work units. The nucleus of the project is data collected from three "state of the art," bottom-boundary-layer sensing platforms which measure (1) suspended-sediment concentration and current 1 m off the bottom; (2) current-velocity and sediment-concentration profiles in the bottom 1 m of the water column, and (3) the current-velocity profile in the bottom 2 m and the suspended-sediment concentration 1 m above the bottom. The study is designed to measure, for the first time, the threshold of sediment transport with increasing current in the marine environment owing to the combination of unidirectional and wave-generated currents.

Marine Geotechnical RUSEF programs include seafloor-stability studies on the continental slope off the northeastern United States and on the shelf off the Mississippi delta, and a sediment-transport study along the northeastern United States shelf edge. Most of the northeastern continental slope north of Cape Hatteras has been mapped with shallow-penetration seismic reflection profiling and narrow-beam echo soundings. Extensive piston and hydroplastic gravity coring was done in both regional and site-specific areas. For the first time, several large slump blocks have been identified, one of which has been mapped in detail. A major effort is underway to identify by geotechnical methods the conditions (processes and mechanisms) leading to mass slumping and other types of seafloor instabilities.

The Mississippi delta research is a cooperative NOAA-Lehigh University seafloor-engineering study using in-situ instrumentation to determine and assess critical soil properties important in stability analyses.

Two other studies of interest to the petroleum industry are a geochemical study of hydrocarbon concentrations in the water column and in bottom sediments, and an extensive current-meter program, both in the New York Bight from the shelf edge to the inner shelf.

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Subaqueous Gravity-Displacement Products

All sediments deposited on subaqueous slopes are affected by the tangential component of the earth's gravity. Among the kinds of gravity-displacement processes are subaqueous rock falls, slumps, and debris flows. Turbidity currents are likewise processes affected by the slope, but are not a subject of discussion here.

Individual blocks of rock move down a slope from reefs and coastal cliffs; they result from bioerosion, the effects of storm, or ordinary gravity. Incoherent slumps generate a body of sediment so thoroughly mixed and churned that nearly all traces of stratification are obliterated. Debris-flow deposits containing large blocks are known as olistostromes. In places, such olistostromes have been mistaken for melanges, a mixture of huge blocks of diverse kind and provenance dispersed in pervasively sheared and fine-grained matrix which forms a special kind of tectonic breccia. Deep-water rubble of shallow-water carbonate rocks, usually angular, interstratified with dark deep-water marine shale is known as brecciola. Brecciolas accumulate at the toe of the slope. On the upper part of the slope accumulate sediments resulting from coherent slumps which have moved down a slope with their strata still preserved. Deposits of slope-influenced sediments may also result from contour-following currents (contourites) which travel along the lower parts of slopes.

Many examples of ancient gravity-displacement products have been reported from the rock record, among them the so-called melanges (in fact, olistostromes) of Turkey, slope-fan-basin-plain deposits of the Appalachians, and basinal deposits in the Delaware basin of west Texas. In the Taconic sequence of the Appalachians, as in many other hinge-line deposits, only the lower slope and base-of-slope portion of the early Paleozoic continental margin has been preserved.

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Dolomite is Evaporite Mineral—Evidence from Rock Record and from Sea-Marginal Pools of Red Sea

Despite recent pleas to consider dolomite a product involving fresh water, especially the reaction between fresh water and seawater, more recent work in the rock record and in sea-marginal pools of the Red Sea commands a return to the earlier hypothesis that most dolostones owe their origin to hypersaline brines and that dolomite is an evaporite mineral. Schizohaline dolostones, as well as other examples, commonly lack evaporites; yet these dolostones probably accumulated under hypersaline evaporitic conditions although the evaporite minerals have since vanished. However, the imprint of evaporite minerals and other evidence for hypersalinity have been preserved. Evidence includes (1) abundant authigenic feldspar; (2) calcitized anhydrite nodules; (3) euhedral quartz crystals; (4) solution-collapse breccias; (5) ghosts and pseudomorphs of former crystals of gypsum or anhydrite, now preserved as molds, calcite, or pyrite, in some places preserving the