area of about 250,000 sq km, is the only major shelf of the continental United States which is presently dominated by carbonate sedimentation. The veneer of sediments which comprises the present surface of the shelf is called the West Florida Sand Sheet. It is composed of greater than 75% carbonate and is the latest expression of a 5 km thick accumulation of carbonate rocks and evaporites of Mesozoic and Tertiary ages which has been cut off from major clastic provenance since Jurassic time.

The West Florida Sand Sheet differs from many great carbonate banks such as those of the Bahamas, the Persian Gulf, and the Great Barrier reef in that it extends as far north as 29°30′ and is composed mostly of residual carbonate, specifically of patches of molluscan shell hash, foraminiferal, algal, and even oolitic sands. Only a few patch reefs and one relatively large deep-water (>20 m) tropical reef, called the Florida Middle Ground, are present. Sediments resemble more closely those of the shelf of the southeastern Atlantic United States, with the clastic components removed, than those in other carbonate banks.

Inshore of the carbonate sands and separated from them by a transition zone of mixed composition lies a mature fine quartz sand, which also comprises the beaches of southwest Florida. The quartz sand appears to have been deposited at lower sea-level stands and then to have been moved up and down the peninsula in a seasonally changing longshore current system.

Side-scan and seismic surveys of the West Florida shelf show that far from being a featureless plain beneath the relatively low-energy gulf, the sand sheet has a full suite of bed forms from giant sand waves to small-scale ripples. These suggest that the seafloor is undergoing major redistribution and reworking of sediments, probably primarily as the result of passage of major storms.

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Shallow-Marine Trace Assemblages in a Cambrian Tidal Sand Body

Two distinctive assemblages of biogenic structures are present in the Mt. Simon Formation, basal Upper Cambrian quartzarenite in western Wisconsin. A *Skolithos* trace assemblage is dominated by specimens of *Skolithos* and *Arenicolites*, which commonly occur in medium to very coarse-grained, cross-bedded sandstones. *Skolithos* traces are typically 10 to 100 mm in length, 1 to 5 mm in width, and are oriented normal or slightly inclined to bedding. Specimens are present throughout the formation, even in basal conglomeratic beds, and thus point to a marine origin for the entire unit. *Skolithos* density increases upward to concentrations of 5 to 7 burrows/sq cm. A *Cruziana* trace assemblage is dominated by specimens of *Cruziana, Rusophycus*, and *Planolites*, which commonly occur in thin beds of very fine to medium-grained, horizontal to ripple cross-laminated sandstones. *Rusophycus* specimens are typically 10 to 100 mm in length and 6 to 60 mm in width, and are preserved in convex hyporelief on the bases of sandstone beds.

Distribution of the two trace assemblages and the associated physical sedimentary structures points to two different environmental regimes present within a shallow subtidal to intertidal setting: (1) a higher-energy tidal channel environment in which coarser-grained, cross-bedded sandstones containing a *Skolithos* assemblage were deposited; (2) a lower-energy tidal flat environment in which finer-grained, horizontal and ripple cross-laminated sandstones containing a *Cruziana* assemblage were deposited. The two subenvironments coexisted within a complex environmental mosaic, because the two trace assemblages are observed to intergrade both laterally and vertically, probably the result of lateral migration of each subenvironment. The pronounced upward increase in trace fossil density indicates a significant upward decrease in energy conditions and a reduced sedimentation rate, probably due to tidal flat progradation.

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Paleotopography's Influence on Porosity Distribution in Lansing-Kansas City "E" Zone, Hitchcock County, Nebraska

The Lansing-Kansas City "E" zone consists of carbonate packstones and grainstones deposited during the shallowest parts of the marine phase of a complex marine–nonmarine sedimentary cycle. The packstones and grainstones are best developed on ancient positive seafloor features (15 to 30 ft or 4.6 to 9.1 m of paleorelief) which were subjected to more wave agitation than surrounding low-lying areas where mud-supported textures prevail.

Postdepositional processes during subaerial exposure (nonmarine phase of the "E" zone sedimentary cycle) led to porosity development on paleotopographic highs and porosity destruction in lows. The mild topographic variations resulted in two distinct diagenetic environments. Percolating meteoric waters dissolved aragonitic skeletal grains and intergranular carbonate mud in the packstones and grainstones on paleotopographic highs. Surface runoff and groundwater collected in topographic lows. Here, large-scale dissolution accompanied by infiltration of nonmarine silt and clay totally destroyed all original reservoir potential.

An isopachous map of the nonmarine terrigenous rocks directly overlying the marine "E" zone carbonate rock is believed to reflect paleotopography. All significant oil production occurs where this interval is thin. Porosity in the "E" zone carbonate rock is nearly nonexistent where overlying nonmarine sedimentary rocks are thick. Therefore, thickness maps of these nonmarine rocks should facilitate future oil exploration and production efforts in this area.

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Trap Spring Oil Field, Nye County, Nevada

Trap Spring oil field, located on the west side of Railroad Valley, Nevada, is a combination structural and stratigraphic trap in the Tertiary Pritchard's Station ignimbrite. The reservoir is mainly in fractures caused by