this area were analyzed for texture by standard laboratory technique.

The simplest model of sediment distribution applicable is one of increased grain size and decreased sorting with increased water depth. The correlation of this pattern and other lithologic attributes with a vertical stratigraphic section from an onshore boring suggests that the sampled area represents a subaerially eroded surface in which there has been limited modification by marine processes during the most recent rise in sea level. This modification consists of movement of the finer fraction onto the shoals with minor return movement to some of the deeper channels. The deposition of finer sediments on these previous topographic highs may have accentuated the original (subaerial) relief.

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LATE CENOZOIC STRUCTURAL MOVEMENT, NORTHERN FLORIDA[1]

Pleistocene and Plio-Pleistocene sediments in northern Florida have been studied to detect tectonic displacement. Previous studies in southeastern Georgia defined six prominent former coastlines which are essentially horizontal and have altitudes (oldest to youngest) of 95–100 ft, 70–75 ft, 40–45 ft, and approximately 24, 13, and 4.5 ft above present sea level. The heights of the former sea levels were determined from the upper limit of littoral trace fossils and the altitude of salt-marsh sediments associated with each coastline. Each coastline is marked by a series of barrier-island deposits consisting of well-sorted, fine-grained, angular sand, and by lagoonal salt-marsh sediments of fine-grained sand, silt, and clay which accumulated landward of the barriers.

The former coastlines have been traced southward from Georgia into northern Florida where the lagoonal salt-marsh sediments of the Wicomico Formation (sea level 95–100 ft in Georgia) are found at progressively higher altitudes. Maximum uplift is east of Starke along the northeast flank of the Ocala uplift where salt-marsh sediments have an altitude of approximately 166 ft or 65–70 ft higher than those in Georgia. The Penholoway salt-marsh sediments (sea level 70–75 ft in Georgia) reach an altitude of 95 ft in Florida. The Talbot salt-marsh sediments (sea level 40–45 ft in Georgia) are not well preserved but appear to be displaced 5–10 ft in the area of maximum uplift in Florida. Pamlico salt-marsh sediments (sea level approximately 24 ft in Georgia) are as high as 32 ft south of St. Augustine; thus, there is progressively less warping of the lower, younger coastlines. South of the Ocala uplift the five lower Pleistocene coastlines are approximately the same altitudes that they are in Georgia. The oldest coastline, which may be of either Pliocene or Pleistocene age, maintains an altitude of 140–150 ft for more than 150 mi south of the area of maximum uplift.

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RELATION BETWEEN *Globorotalia truncatulinoides* AND *G. tosaensis* IN PLIOCENE-PLEISTOCENE DEEP-SEA CORE FROM SOUTH PACIFIC

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Based on nannofossils, a carbonate core from the South Pacific (Eltanin 21–5; 36°41′S; 93°38′W; length 480 cm; depth 3,121 m) is late Pliocene to early Pleistocene in age. The Pliocene-Pleistocene boundary (325 cm) is placed at the last appearance of most discoaster species in the core including *D. pentaradiatus* and *D. surculus*. *Discoaster brouweri* extends higher, to 225 cm where it also becomes extinct. Above the top of the Pliocene, the presence of *D. brouweri* and absence of *Gephyrocapsa oceanica* indicate an earlier Pleistocene age; the middle Pleistocene and much of the late Pleistocene are missing in unconformity near the core top.

This core is significant in showing alternations of dominantly keeled and dominantly nonkeeled populations of the *Globorotalia truncatulinoides* – *G. tosaensis* plexus. The lower (425-480 cm) and upper (0-130 cm) core sections contain populations dominated (>78%) by keeled forms referable to *G. truncatulinoides*, whereas intermediate intervals between 198 and 400 cm contain populations dominated (>80%) by nonkeeled forms which agree well with topotypes of *G. tosaensis*. Transitional populations are present between 145 and 180 cm.

*Globorotalia truncatulinoides* is associated in the core only with marginal tropical foraminiferal faunas including *Globorotalia menardii*, *Globigerinoides conglobatus*, and "*Globigerina*" *dutertrei* whereas *G. tosaensis* is associated with a cooler water planktonic foraminiferal assemblage lacking these species and with higher frequencies of *Globorotalia inflata* and right coiling *Globigerina pachyderma*. Likewise, the coccolith *Unbilicosphaera leptopora* which prefers warm waters, exhibits marked increases in frequency in the upper and lower core sections containing *G. truncatulinoides*.

Although not decisive, this sequence suggests that during the late Pliocene–early Pleistocene, at least in this area, *G. truncatulinoides* and *G. tosaensis* were either phenotypic variants or separate subspecies or species with distinct environmental preferences. It also provokes speculation as to whether the *G. tosaensis* to *G. truncatulinoides* evolutionary bioseries near the Pliocene-Pleistocene boundary in tropical deep-sea areas, including the Gulf of Mexico, is the result of ecologic or oceanographic change.

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PLANKTONIC FORAMINIFERAL DATUMS AND LATE NEOGENE EPOCH BOUNDARIES IN MEDITERRANEAN, CARIBBEAN, AND GULF OF MEXICO

Late Neogene planktonic foraminiferal datums and epoch boundaries in Italy, as proposed by the Committee on Mediterranean Neogene Stratigraphy, are compared with those in the Caribbean and Gulf of Mexico. Datums recognizable in these regions include (1) appearance of *Globorotalia margaritae* in early Pliocene, (2) appearance of the *G. crassaformis* lineage in middle Pliocene, (3) appearance of *G. tosaensis* and *Sphaeroidinella dehiscens* in very late Pliocene, and (4) appearance of *Globorotalia truncatulinoides* within the early Pleistocene (middle or late Calabrian).

Initiation of the Pleistocene in these regions is recognized by abrupt onset of climatic deterioration, as indicated by marked changes in the planktonic and benthonic foraminiferal populations, and marked eustatic lowering of sea level, as demonstrated by regressive facies, nondeposition, or deep-water turbidites, de-