Paleoclimatological Analysis of Upper Eocene Core, Manning Formation, Brazos County, Texas

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A core of the basal part of the Manning Formation was drilled to provide a baseline for paleoclimate analysis of the expanded section of siliciclastic rocks of late Eocene age in the outcrop belt. The interdeltaic Jackson Stage deposits of this area include more than 20 cyclic units containing both lignite and shallow-marine sedimentary rocks. Depositional environments can be determined with precision, and the repetitive nature of cycles allows comparisons of the same environment throughout, effectively removing depositional environment as a variable in interpretation of climate signal. Underlying Yegua strata contain similar cycles, providing more than 35 equivalent environmental transects within a 6-m.y. time interval of Jackson and Yegua section, when additional cores are taken.

The core is from a cycle deposited during maximum flooding of the Jackson Stage. Deposits range from shoreface (carbonaceous) to midshelf, beyond the range of storm sand deposition. Rocks are leached of carbonate but contain foraminifer test linings, agglutinated foraminifers, fish debris, and rich assemblages of terrestrial and marine palynomorphs. All samples examined contain marine dinoflagellates, which are most abundant in transgressive and maximum flood zones, along with agglutinated foraminifers and fish debris. This same interval contains two separate pulses of reworked palynomorphs. The transgressive interval contains *Glaphyrocysta intricata*, normally present in Yegua rocks. Pollen indicates fluctuating subtropical to tropical paleoclimates, in three short cycles of cooler temperatures, indicated by abundance peaks of alder pollen (*Alnus*) in transgressive, maximum flood, and highstand deposits.