Palynology Across a Sequence Boundary in the Wilcox Group, Central Texas

Dickey, Regina L.[1]; Yancey, Thomas [1] (1) Texas A&M University, College Station, TX.

Palynological sampling within shoaling-upward regressive deposits in the upper Calvert Bluff Fm and overlying transgressive deposits of the Carrizo Fm, exposed beside the Colorado River near Bastrop, Texas, reveals a rich assemblage of well-preserved palynomorphs. This section contains an unconformity equivalent to the sequence boundary between the Lower-Middle Wilcox and Upper Wilcox of the subsurface, probably corresponding to the Paleocene Eocene Thermal Maximum. Regressive deposits are shallow marine and shorezone in origin, later eroded and channeled during lowstand exposure, covered with fluvial channel fill deposits and capped with shallow marine shorezone sheet sands of the Carrizo Fm. Sedimentation rates were high and large amounts of plant material were deposited, resulting in the destruction of calcareous fossils due to production of acids from decaying plant material. Thus, palynology remains the key to understanding these deposits. Palynological processing included HCL, HF, acetolysis and heavy density separation. Kerogen slides were produced prior to acetolysis.

The diversity of palynomorphs is highest in sediments deposited in deeper and quieter waters, lower in the section. The Calvert Bluff section is entirely late Paleocene in age. The late Paleocene - late Eocene zonal indicator Thompsonipollis magnificus is present throughout the section and Paleocene palynomorphs Triporopollenites aroboratus, Nyssapollenites (?), Maceopolipollenites, Momipites, Caryapollenites, pre-Symplocoipollenites (?), Cicatricosisporites, Tetracolporopollenites and fungal spores Brachisporisporites and Diporisporites (D. hamenii) are present. Pollen in fluvial channel deposits is mostly reworked and poorly preserved, although plant tissue and trichomes are plentiful and well preserved. Plant spores, fugal spores and freshwater algae occur throughout the channel fill.

No dinoflagellate cysts have been identified in this sample set, but previous sampling in the section obtained sparse dinoflagellates and foram chamber linings. The plethora of pollen and spores and scarcity of dinoflagellates can be attributed to the large amounts of sediment and plant detritus flushed into this area.