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Preliminary Chemostratigraphic and Stable Isotopic Records from Aptian-Albian and Cenomanian-Turonian Sequences of South Texas

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Drill cores recovered from South Texas, USA, preserve records of carbonate-rich strata that accumulated on the northern margin of the Gulf of Mexico during Cretaceous "Hot-House" climates. Geochemical and stable isotopic records from the Albian(?)-Aptian Pearsall Formation preserved in a drill core from far West Texas reveal broad changes in carbonate content and δ^{13}C of organic matter (-27 to -24‰) and an astounding range in δ^{15}N of total nitrogen (-12 to +4‰).While much of the core is dominated by moderate enrichment factors of the redox-sensitive trace element molybdenum (EFs of 10-25), the lowermost zone in the core is punctuated by Mo enrichment factors exceeding 100, suggesting short intervals of water mass euxinia. Collectively, these stratigraphic signatures can be used to subdivide the Pearsall sub-members into geochemically- and isotopically-distinct units that will hopefully be traceable across the study area, and will provide stronger linkages between lithology and paleoceanographic setting. Similarly, geochemical and stable isotopic records from the Cenomanian-Turonian(?) Eagle Ford Formation, preserved in several cores, identify well-defined carbon isotopic shifts, but more interestingly define the fine-scale changes in redox-sensitive and/or productivity-driven elements such as Mo, U, and Zn. The ongoing development of these records and their potential linkages to global records of paleoceanographic change will be presented and discussed.