Orbital forcing and carbon cycle variations in relation to changes in climate and ecosystem in late Paleocene.

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During the Late Paleocene (59 to 56 Mya), global surface temperature rose by 2–6°C and culminated in extreme transient global warming event (> 5°C) called the Paleocene-Eocene thermal maximum (PETM), characterized by a massive carbon input. While the PETM has been documented in exceptional detail, late Paleocene background trends did not receive much attention. Recent high-resolution work has shown significant carbon cycle dynamics on Milankovich timescales in deep sea sections. Such cycles yield the potential to correlate marginal marine sequences to the deep sea in unprecedented detail. Moreover, marginal marine sequences may reveal how the cycles related to climate. High accumulation rate Upper Paleocene shelfs deposits have been recovered in the Bass River core during Ocean Drilling Program Leg 174AX, on the New Jersey shelf. The lithology is siliciclastic sands and silts with biogenic carbonate and organic matter and is therefore very suitable for integrated palynological, organic and inorganic geochemical analyses. Here we will present preliminary dinoflagellate cyst assemblages and geochemical results across the Upper Paleocene to assess cyclicity and associated paleoecological changes.