Outcrops of the Paleocene/Eocene Chicontepec Formation in eastern Mexico provide a unique opportunity to study exposed time-equivalent sections of the deepwater Gulf of Mexico’s Wilcox Formation and their relationship to the Gulf of Mexico drawdown hypothesis of Rosenfeld and Pindell (2003). A 2012 study established a stratigraphic framework in the Tampico-Misantla Basin (TMB) and identified sequence boundaries that could not be correlated globally. Fieldwork in 2008 had also established a network of paleocanons in the basin associated with a particular “54 Ma” sequence boundary (Figure 1). Using the chronostratigraphic scheme from the 2012 study, coring, trenching, and micropaleontological studies were performed during 2015 on a unique outcrop containing a bitumen bed within the limits of one of these paleocanons (Figure 2). The presence, form, and evidence found associated with this fossilized oil seep suggest that the basin’s water level fell rapidly by at least 200 m, starting after 55.8 Ma, leading to subaerial exposure of the bathyal beds for a maximum of about 850,000 years prior to canyon refill. Evidence of rooting (limonite tubes) occurs in the bathyal turbidites below the bitumen bed. During this time, the paleocanons in the TMB were eroded by fluvial systems feeding directly into the central Gulf basin which was probably a land-locked sea (Figure 3). The shales just 18 cm above the bitumen bed contain in-place bathyal foraminifera indicating a rapid return to deep-water environments with transgressive and shallow marine facies being notably absent. This interpreted large and rapid fall and rise of water level at 55.8 – 54.95 Ma (between the Upper and Lower Wilcox) supports the “Gulf of Mexico drawdown hypothesis”, i.e., that the GoM may have been isolated from the world ocean due to the closure of the Florida Straits as the Cuban arc collided with the Bahamas and northeast Yucatán (Figure 3). Our studies show that the timing of the interpreted drawdown coincides with the Paleocene-Eocene Thermal Maximum (PETM), hinting that the PETM may have been caused or at least amplified by the release of methane from hydrates in the GOM margins and abyssal plain.