



## Update on the Paleogene Water-Level Drawdown Hypothesis, Gulf of Mexico

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### ABSTRACT

We provide an update on the Gulf of Mexico Paleogene water-level drawdown hypothesis by revising and augmenting the original observations to provide new grounds for the continuing assessment of this concept, which has important implications for hydrocarbon exploration. This paper assimilates information on 7 issues from a variety of sources that suggests attention should be focused on the 56 Ma sequence boundary as the most likely time of drawdown, just before the Paleocene-Eocene Thermal Maximum (PETM), rather than mid-Paleocene as was first thought. The younger timing downplays the possible association between the Paleocene “Whopper Sandstone” and drawdown, and provides the time necessary for the Cuban Arc to begin collision with the Bahamas Platform and close the Florida Straits, a necessary part of the hypothesis. We highlight data from other authors that appear to show that the fastest rate of clastic deposition for all Wilcox time was at about 56 Ma. We also focus on evidence that there may have been Paleogene evaporative conditions in the Gulf, and whether evaporites are even necessary for the viability of the hypothesis. We highlight and discuss evidence from a selection of more than 33 paleo-canyons around the Gulf rim, most of which could have been formed at ~56 Ma given current dating, and we consider the apparent formation of a Gulf-wide unconformity at this time, just before the PETM. The magnitude of the proposed drawdown is estimated from evidence along the thalweg of the Chicotepec paleo-canyon in eastern Mexico. Evidence for subaerial exposure and erosion along the margins of western Florida and northern Yuca-

tán, including at Chicxulub, is also reviewed. Finally, the enigmatic Georgia Channel System is highlighted, and we call for detailed work to confirm if short-lived interruptions in circulation between the Gulf and the Atlantic Ocean during the Paleogene might have occurred, particularly at ~56 Ma. Another good thesis topic would be to deconstruct the last stages of the Cuban orogen and further test the required continuity of a land bridge from southern Florida to Yucatán at ~56 Ma, using comprehensive seismic and well databases in the Yucatán and Florida Straits and the western Bahamas.

Ed. Note: This abstract was extracted from a full paper published in the 2021 volume of the *GCAGS Journal*. The *Journal* papers are currently available in open-access format online at [www.gcags.org](http://www.gcags.org).