South American paleontology supports a Neogene-Quaternary (N-Q) Flood boundary

Jeffrey P. Tomkins and Timothy L. Clarey

Determining where the global Flood of Genesis terminated in the sedimentary rock record is of great importance in developing a credible overall model of the Flood. If the Flood is terminated too low, as is the case with proposing a Cretaceous-Paleogene (K-Pg, formerly K-T) boundary, then it becomes necessary to introduce rather wild speculative ideas to explain Cenozoic fossils. For example, one K-Pg boundary proponent has claimed that legged proto-whale creatures walked off Noah's Ark and then somehow morphed into the diversity of marine mammals we know as extant whales within 200 years post-Flood.[1] Then, these hyper-evolved whales somehow became buried and fossilized in local post-Flood catastrophes. However, a global map of Cetacean fossil locations (all Cenozoic) demonstrates that whale fossils cover nearly all continental margins and the breadth of Europe—fully negating this contention of localized post-Flood burials (figure 1).[2]

Another problem with an early K-Pg flood boundary is that it must explain all the global Cenozoic strata with local-to-regional post-Flood catastrophes. However, the recent mapping of global megaseqeunces has shown how utterly untenable this assertion is. The latest stratigraphic data from North America, South America, Africa, and Europe indicates that approximately 30% of all Flood sediments are Cenozoic, specifically the Tejas Megasequence.[3–7] And in many places in the world, the bulk of the Tejas section is dominated by marine deposits,[6,7] contrary to the claims made by Whitmore.[8] Local catastrophes cannot explain these extensive marine post–K-Pg deposits found globally, especially in the Middle East and Turkey.[7] Nor can they explain the 105,000 km^2, 400 m-thick, Whopper Sand found 300+ km offshore, in the deep Gulf of Mexico, in water 2,100 m to 3,000 m deep.[6] This basal Tejas sand deposit is best explained as a product of the initial massive runoff of the Flood.[6] How could such a massive offshore sandstone and 30% of the sedimentary rock record be realistically attributed to local post-Flood catastrophes?

Not only does stratigraphy and sedimentary geology strongly support a late Flood boundary at the top of the Cenozoic, near the Neogene-Quaternary (N-Q), but so does the extensive paleontology of the Cenozoic.[9] An analysis of plant and animal fossils from South America also fully supports an upper Cenozoic N-Q Flood boundary.

Central Andean Plateau

In 2020, paleontologists reported that fossil pollen, leaf and fruit

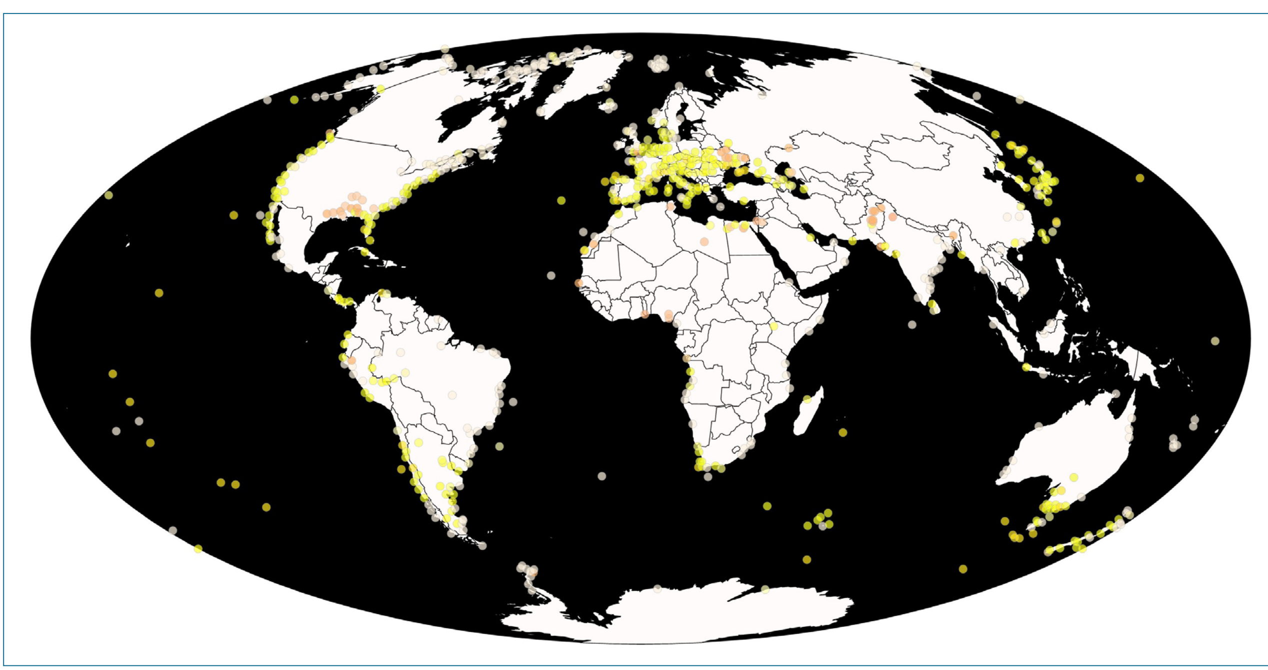

Figure 1. Global map of all known Cetacea fossil locations using the Paleobiology Database (paleobiodb.org). All occurrences are listed as Cenozoic.

impressions, and petrified wood were found in multiple locations in Cenozoic strata across the massive Central Andean Plateau in South America.[10] The fossils were collected from both Pliocene and Miocene layers in the Descanso Formation of the Descanso-Yauri Basin in southern Peru. This extensive sedimentary basin covers an approximate area of 1,242 km^2. These thick Cenozoic basin deposits developed during the late Flood as mountain ranges were being uplifted, shedding massive amounts of sediment as the floodwaters drained off the continents. Plants and animals living at higher pre-Flood elevations became trapped and buried in these sediments. In addition, these late-Flood deposits had an obvious propensity to collect in large basins that would have formed at the base of the newly uplifted mountain ranges. A striking example of this sort of scenario in North America would be the Cenozoic basins within the interior region of the Rocky Mountains. Likewise, the Descanso-Yauri Basin in South America and its fossil assemblage developed as the Andes Mountains were uplifted.

Uniformitarian researchers who documented the Central Andean Plateau paleontology claimed that an ancient lush and rainy ecosystem existed 'in-place' in the basin during the Miocene and Pliocene because the plants were semi-tropical. The problem is that these reconstructed hypothetical ecosystems stand in direct contrast to the present harsh environment in which the fossils now exist and have existed since the Paleocene and Eocene, when the Andes were formed. At present, the Central Andean Plateau has an average annual temperature of 8°C and an average annual precipitation of only 500–760 mm. The region is also inundated by cold and strong winds throughout the year along with extreme temperature fluctuations on both a daily and seasonal basis. As a result, the only type of vegetation that currently grows there consists of high-altitude hardy grasses and shrubs. Of course, this whole ecological discrepancy is easily explained by the model of the global Flood, which predicts that a generally lush environment existed globally in the pre-Flood world. These Miocene and Pliocene plant fossils were merely transported from their previous pre-Flood verdant locations and buried in the newly developed basins late in the receding phase of the Flood. Claims that local catastrophes in a warmer post-Flood world can explain these semi-tropical plant fossils are precluded by the high elevation of the Andes in place since the Eocene (prior to the Miocene and Pliocene).

An Amazon inland sea or global Flood deposition

Over the past 15 years, evolutionists have claimed that a massive marine wetland twice the size of Texas was trapped east of the Andes Mountains and westernmost Brazil, spilling over into Peru and Colombia and covering the western Amazon drainage basin.[11] However, paleontological studies of Miocene fossils in the region reveal a very different and conflicting story. Fossils have been discovered representing both freshwater and saltwater environments in the same sedimentary layers. Thus, evolutionists are confused as to how these fossils got mixed together.

In a 2019 *Journal of Biogeography* paper, the authors reported finding fossil mangroves and associated coastal plants in the middle of the Amazon which they thought conclusively showed various marine incursions in South America.[12] In an earlier 2017 study, scientists discovered fossilized shark teeth along with marine mantis shrimp in the same Miocene strata.[13] In 2006, a study reported the presence of anchovies, sharks, herring, marine invertebrates, and stingrays, also suggesting a saltwater origin for the rocks.[14] However, the same rocks also contained a large number of diverse freshwater mollusks.[14] In fact, for the past 40 years scientists have been finding over 50 different species of freshwater mollusks in these sediments.[14] Taken as a whole, the rich diversity of plant and animal (land and marine) fossils appears to represent a combination of mixed environments revealing a diversity of life not normally found together.

Evolutionists explain the mixing of these marine and non-marine fossils using multiple marine incursions during the Miocene, when the ocean allegedly surged into the western Amazon, creating a continuous inland sea. Then, it is claimed that saltwater currents from the north would have mixed with fresh water from torrential rains. It is also believed that the marine flooding periods would have been relatively brief and that for most of the epoch the ocean receded, leaving a huge inland freshwater wetland of interconnected lakes and channels connecting to the Caribbean to the north.

However, the evolutionary explanation does not account for the necessary rise and fall of the land surface during the Miocene, nor do they offer a mechanism for these ocean incursions. Physical evidence for this 'yo-yoing' of the land as a possible mechanism is currently lacking. A better explanation that settles the debate involves the Miocene strata forming as part of the receding phase of the global Flood. As the Flood reached its highest level on Day 150, it washed away all sorts of upland plants and animals from interior regions, including some from freshwater environments.[6] The Guiana and Brazilian Shields east of the 'Amazon sea' study area were the closest pre-Flood uplands and likely sources for these Miocene fossils (figure 2).[15] Massive tsunami-like wave pulses generated by plate movement continued through the Tejas Megasequence (which includes Miocene strata), transporting these

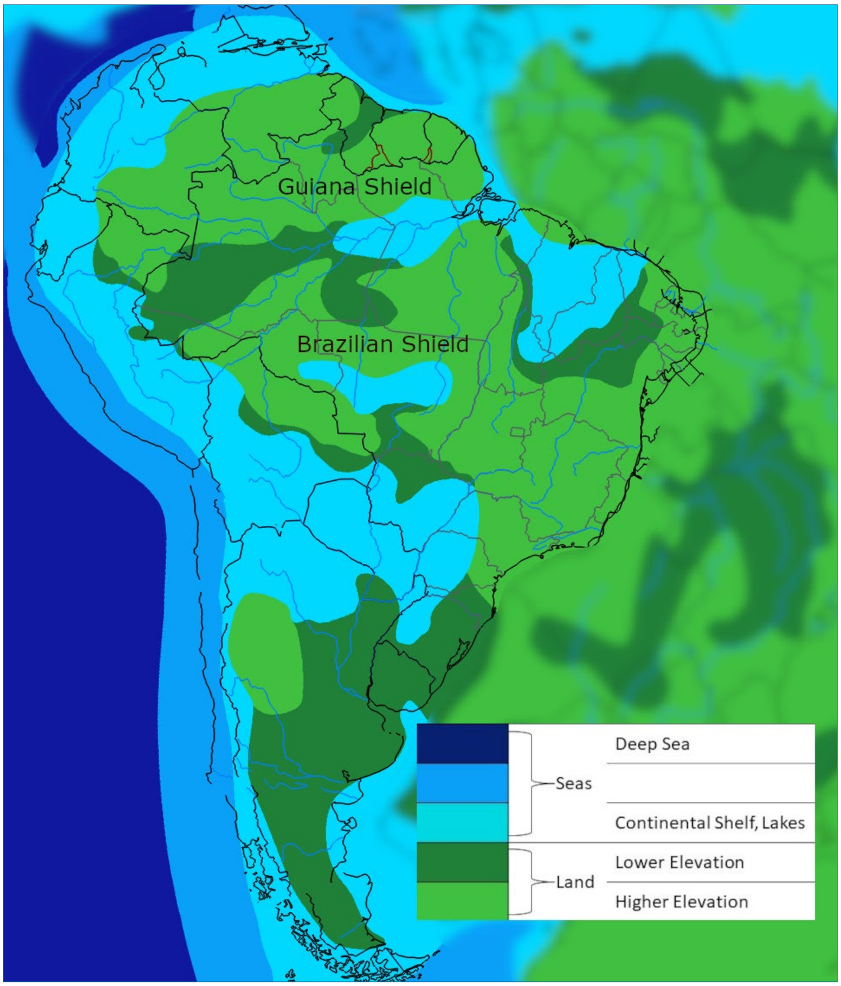

Figure 2. Pre-Flood map of South America showing interpreted environments. The Guiana and Brazilian shields are identified. The pre-Flood upland areas, which became the shields, are shown in light green and the lower elevation lowland areas in dark green. Courtesy of Davis J. Werner and ICR.

plants and animals to lower elevations as the water receded. In addition, these surges also transported marine plants and animals, producing a rich mix of biodiversity.

And as mentioned earlier, the Andes Mountains were actively rising at the same time, forming a barrier to the west. This scenario would have trapped many of these future fossils in swirling pools between the mountains and the pre-Flood uplands, depositing them in the Miocene sediments of western Amazonia. This model better explains the strange mix of plants and animals from fresh and saltwater environments we find fossilized together.

South American coal

Extremely large Cenozoic coal deposits directly point to a high Flood boundary (see Clarey, Werner, and Tomkins, this issue) and cannot be accounted for by localized post-Flood catastrophes. In South America, Cenozoic coal seams are the thickest and most extensive across the entire continent and comprise approximately one half of all coal deposits spanning all geologic ages.[15,16] The regional extent of South American Cenozoic coal deposits is also several times greater than the areal geographical extent of all other deposits from other geological ages.[16] Furthermore, the total tonnage of Cenozoic coal in South America is estimated to be much greater than that for any other geologic age or combination of ages.[15] Interestingly, most of the estimated tonnage of Cenozoic coal underlies the Amazon River drainage basin in Brazil, Peru, and Colombia—the region mentioned above in our discussion of an alleged inland Amazon Sea.[15] The remainder of the Cenozoic coal deposits appear to be fairly evenly distributed throughout the rest of the coal-bearing regions of the continent.[16]

Tying it all together with late-Flood runoff

The late-Flood runoff and transport model accurately predicts and explains the higher elevation ecosystem category of fossils we typically find in Cenozoic rock layers. In this model, plants that were ripped off the highest pre-Flood elevations along with animals living at higher elevations were moved and deposited in late-developing Cenozoic basins. These deposits are much too massive in both areal scope and depth to be attributed to localized post-Flood catastrophes as proposed in models that incorporate a premature Flood/post-Flood boundary at the Cretaceous-Paleogene. Thus, the Neogene-Quaternary (N-Q) boundary is the best choice to fit the emerging global geological and paleontological data.

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