

## Is the demise of the dinosaurs by a Yucatán impact a myth?

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### Do iridium anomalies date the K/T boundary?

We have all heard the story that the dinosaurs and many other biota became extinct at the Cretaceous/Tertiary (K/T) boundary due to the impact of an asteroid on the northern Yucatán Peninsula, Mexico. This impact is also supposed to have generated the worldwide iridium (Ir) anomaly or spike at the K/T boundary. A wide variety of evidence has been brought forth in a vast literature to support this story. However, according to a provocative article by two dinosaur paleontologists, this simple story is a myth.<sup>1</sup> The myth is so ingrained into the imagination that it has become a fact:

‘It is a colourful, dramatic concept. For many people—yes, even many scientists—it has become an article of faith, so firmly accepted, as to be no longer questioned.’<sup>2</sup>

The paleontologists assert that four questions need to be considered before the scientific community can claim that the asteroid caused the extinctions.<sup>2</sup> Was there an impact at the K/T boundary? Was the catastrophic effect on the biota worldwide? Did dinosaurs truly go extinct at the K/T boundary? If so, did the impact coincide with the time of extinction? In the process of answering these questions, they also reveal that the Ir spikes, as well as other methods, for dating the K/T boundary are unsound.

### Did the impact occur at the K/T boundary?

In attempting to answer the first question, the authors admit that the fossil and radiometric dating systems are not precise enough to pinpoint

the timing of the Yucatán impact and other impact related events to the K/T boundary:

‘However, its [iridium-enriched anomaly] relation to the Chicxulub impact cannot be considered established beyond doubt, since the stratigraphical control for dating the impact is insufficient to prove its exact age ...’<sup>3</sup>

In order to relate the impact to the K/T boundary, scientists need to know the precise date of the impact. Apparently, they do not know the uniformitarian age of the Yucatán impact with enough precision. So they really cannot say there was even an impact at the K/T boundary. The authors also consider that volcanoes that burst forth around the K/T boundary may be responsible for the extinctions, as advocated by a small minority of geologists.<sup>4</sup>

### Could the impact cause worldwide extinctions?

The second question is whether the Chicxulub impact would have caused worldwide extinctions of dinosaurs and many other terrestrial and marine animals. This question is especially doubtful within the evolutionary/uniformitarian paradigm. The main reason for this is that the Yucatán crater is now believed to have been significantly smaller than previously thought. Early estimates of the size of the crater were around 300 km in diameter. The estimate of the transient crater (the crater size immediately after impact) has been recently scaled down to about 100 km in diameter: ‘There is now general agreement that the transient cavity at Chicxulub was 80–110 km in diameter.’<sup>5</sup> This is not much larger than the Eocene Chesapeake Bay impact with a buried crater 85 km in diameter that apparently caused little if any extinctions.<sup>6,7</sup> Geoscientists not only do not know the precise date of the Yucatán impact, the impact now is much too small to have caused any extinctions. Of course, this does not rule out the possibility that the Chicxulub impact is one of many large

impacts at the same time. Finding and dating such multiple large impacts and relating them to worldwide extinctions greatly compounds the uniformitarian difficulty.

### Did dinosaurs disappear at the K/T boundary?

The third question, whether dinosaurs really became extinct at the K/T boundary, is surprisingly answered in the negative. One of the reasons for this is because the authors believe that birds are dinosaurs! For practical purposes, however, the authors concede that the beasts everyone recognizes as dinosaurs are currently extinct. (I will use ‘dinosaur’ as referring to these beasts.) The authors claim that some ‘dinosaurs’ died out *after* the K/T boundary—a claim that has been made in the past but without much of a following. Furthermore, some of these K/T survivors, in the west-central United States and the Canadian provinces of Saskatchewan and Alberta, even lived relatively close to the impact site.<sup>8</sup> There are other cases of dinosaurs surviving the evolutionary/uniformitarian defined K/T boundary.<sup>9,10</sup>

### Did the impact coincide with the time of the extinctions?

The fourth question, whether the impact coincided with the time of the majority of dinosaur extinctions, is dependent on the complex dating methods. The authors believe that few types of dinosaur went extinct at the K/T boundary, and that most of them gradually died out *before* the boundary:

‘... most vertebrate palaeontologists now concur that the decline of the dinosaurs was gradual and that, by the late Maastrichtian [very late Cretaceous], only a low number of genera and species (ceratopsians, ankylosaurs, and theropods) survived.’<sup>8</sup>

This is surprising since one of the main definitions of the K/T boundary has been the last occurrence

of dinosaurs:

‘Until the recognition of the iridium layer, this boundary had been established by different means in different regions, most often by the occurrence or nonoccurrence of dinosaur remains or by microfloristic evidence ...’<sup>11</sup>

Thus, the definition of the K/T boundary has always been fuzzy. The microfloral definitions stated above are actually regional to parts of the western U.S. Apparently, there is no global floral change at the K/T boundary that can be used to define that boundary.<sup>11</sup> Other supposed extinctions at the K/T boundary are also equivocal, since it is difficult to tell whether the extinction was sudden and whether these claimed extinctions are more the result of incomplete analysis.<sup>1</sup>

### Using iridium anomalies to define the K/T boundary

The previous definitions of the K/T boundary have been unsound and partly based on circular reasoning. However very few people would know it, because of the reinforcement syndrome that results in a high degree of seeming precision.<sup>10</sup> The evolutionists make such a case for ‘precise timing’ of dinosaur extinction, the occurrence of Ir anomalies, and the K/T boundary that their model seems believable. Because there are dozens of Ir anomalies that supposedly coincide with the K/T boundary, geoscientists now believe the Ir anomalies are a much better definition of the K/T boundary. However, there is evidence that this new definition of the K/T boundary, as well as the claimed synchrony, is as dubious as previous criteria. Sarjeant and Currie reveal that the Ir anomalies are not necessarily confined to a thin stratum (a spike that defines the K/T boundary) but are spread over a larger vertical layer that would represent hundreds of thousands, if not millions, of years:

‘First of all, there is not always a single, precisely defined iridium layer but *quite often*, instead, a

*broad* iridium-enriched zone in the sediments. Recent studies of the sites in Italy from which the iridium layer was originally reported ... have shown that there was not a single iridium ‘spike,’ but merely a horizon of peak values within a sequence of iridium-enriched clays approximately 4 m thick—a result scarcely supporting the concept of genesis resulting from impact’ [emphasis added].<sup>3</sup>

They state the significance of using Ir anomalies to define the K/T boundary:

‘Moreover, the existence in some regions of multiple layers calls into question the precision of the [Ir defined] boundary, as identified by this means.’<sup>11</sup>

A 4-m-thick horizon with multiple Ir spikes is not what we were originally led to believe! The Ir spike in Italy at the K/T boundary was reported to be only 1 cm thick.<sup>12</sup> This goes to show that more observations can result in a different conclusion. Many times in geology, it is the unreported data, which is the most crucial to a proper interpretation. This should spur creationist geologist to do field work.

Since an iridium anomaly is now

being used to define the K/T boundary, it is circular reasoning to say that the iridium anomalies and the K/T boundary are synchronous. This circular reasoning is evident when the new Ir defined boundary does not coincide with the K/T boundary defined by other criteria:

‘Despite a tacit international acceptance that the iridium layer could conveniently be employed to define the boundary in both terrestrial and the marine realms, the problem has eased only in regions where that layer can be identified with confidence. In such regions, moreover, the new boundary does *not* usually coincide with the one set earlier, being most often slightly or *considerably* higher than the last occurrence of dinosaur remains’ [emphasis added].<sup>11</sup>

Not only are some dinosaur fossils found much lower than an Ir anomaly, but also dinosaurs in some areas are located *above* the Ir anomaly:

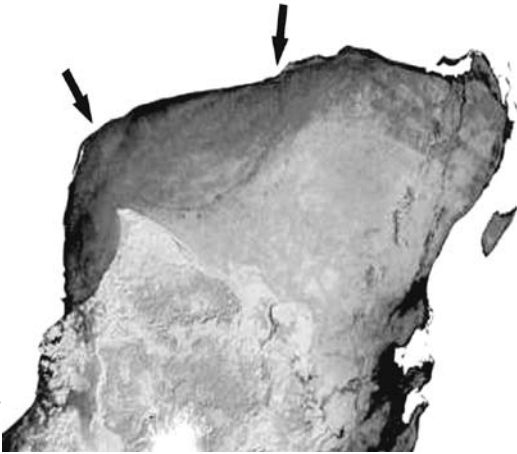
‘Elsewhere it seems that decline was not ended at the level of the iridium layers. In India, at least, there is good evidence that the theropod dinosaurs persisted past



Did an asteroid impact cause the demise of the dinosaurs?

Illustration by NASA.

Photo by NASA.



The semicircular outline of the southern half of the Chicxulub impact can be observed in the northwest corner of the Yucatán peninsula as seen in this computer-enhanced satellite photo.

that level, on the basis of eggshell fragments in sediments showing no evidences of reworking ...<sup>8</sup>

One gets the impression that much fudging goes into such claimed precision of Ir anomalies defining the K/T boundary. So, the demise of the dinosaurs, the extinction of other organisms claimed at the K/T boundary and the K/T boundary itself are *not* synchronous events in the evolutionary/uniformitarian paradigm.<sup>13,14</sup>

I lean toward the belief that there are many Ir anomalies in the sedimentary rocks, making it possible to find an anomaly close enough to define a ‘K/T boundary.’ Based on the number of impacts on other solar system bodies, the earth was apparently bombarded by thousands of impacts during the Flood, especially at the beginning.<sup>15</sup> So, I would expect iridium anomalies in locations of slow sedimentation and non-turbulent flow where the iridium falling from the atmosphere would have a chance to concentrate. This would occur only occasionally in the Flood. It is interesting that more and more Ir anomalies are being found in the sedimentary rocks. Many of these are usually at supposed great extinction periods within the evolutionary/uniformitarian model. These extinction horizons are where they especially look for Ir anomalies,

as well as shocked quartz, because of the desire to tie the other extinctions to meteorite impacts.

### Conclusion

I cannot improve on the conclusion stated by the two dinosaur paleontologists who do not believe there was a K/T extinction:

‘The evidence for an extraterrestrial impact in Yucatán appears conclusive. Whether or not this impact generated—or even coincided with—the very widespread iridium layer, or whether that layer was a product of volcanic activity, remains arguable, as does its suitability, as a means for recognizing the Cretaceous–Paleocene boundary’? ‘In contrast, the evidence from terrestrial and marine fossils affords no support for any worldwide holocaust. The patterns of extinction across the boundary are ... difficult to determine. However, whilst extinction rates fluctuate in different groups, they do so in such normal fashion that the concept of a “Great Extinction”—so dear to newspaper reporters and the uninformed general public—should be jettisoned.’<sup>16</sup>

If certain dinosaur specialist want to jettison an exact extinction time for dinosaurs and other creatures and to state that Ir spikes are not synchronous, I believe we creationist should oblige them and not hold all these events as synchronous within a flood model. From a diluvialist point of view, this uncertainty of geological chronology makes sense. In a catastrophic worldwide flood, massive deposits can be formed in a few days. Similar deposits in different parts of the world may have been created at the same time, or may be

offset by many days or weeks.

### References

1. Sarjeant, W.A.S. and Currie, P.J., The ‘Great Extinction’ that never happened: the demise of the dinosaurs considered, *Canadian J. Earth Sciences* **38**:239–247, 2001.
2. Sarjeant and Currie, ref. 1, p. 239.
3. Sarjeant and Currie, ref. 1, p. 240.
4. Officer, C. and Page, J., *The Great Dinosaur Extinction Controversy*, Addison-Wesley Publishing Co., New York, 1996.
5. Morgan, J., Warner, M. and Grieve, R., Geophysical constraints on the size and structure of the Chicxulub impact crater; in: Koerber, C. and MacLeod, K.G. (Eds.), *Catastrophic events and mass extinctions: impacts and beyond*, *Geological Society of America Special Paper* **356**, pp. 39–46, 2002.
6. Poag, C.W., Synimpact-postimpact transition inside Chesapeake Bay crater, *Geology* **30**:995–998, 2002.
7. Poag, C.W., Plescia, J.B. and Molzer, P.C., Ancient impact structures on modern continental shelves: the Chesapeake Bay, Montagnais, and Toms Canyon craters, Atlantic margin of North America, *Deep-Sea Research II* **49**:1081–1102, 2002.
8. Sarjeant and Currie, ref. 1, p. 243.
9. Oard, M.J., End-Mesozoic extinction of dinosaurs partly based on circular reasoning, *TJ* **15**(2):6–7, 2001.
10. Oard, M.J., Paleocene dinosaurs and the reinforcement syndrome, *TJ* **17**(3):5–8, 2003.
11. Sarjeant and Currie, ref. 1, p. 241.
12. Alvarez, L.W., Alvarez, W., Asaro, F. and Michel, H.V., Extraterrestrial cause for the Cretaceous-Tertiary extinction, *Science* **208**:1095–1108, 1980.
13. Oard, M.J., The extinction of the dinosaurs, *TJ* **11**(2):137–154, 1997.
14. Oard, ref. 9.
15. Spencer, W.R., Catastrophic impact bombardment surrounding the Genesis Flood in: Walsh, R.E. (Ed.), *Proceedings of the Fourth International Conference on Creationism*, Technical symposium sessions, Creation Science Fellowship, Pittsburgh, pp. 553–566, 1998.
16. Sarjeant and Currie, ref. 1, pp. 243, 244.