More evidence chicxulub was too early

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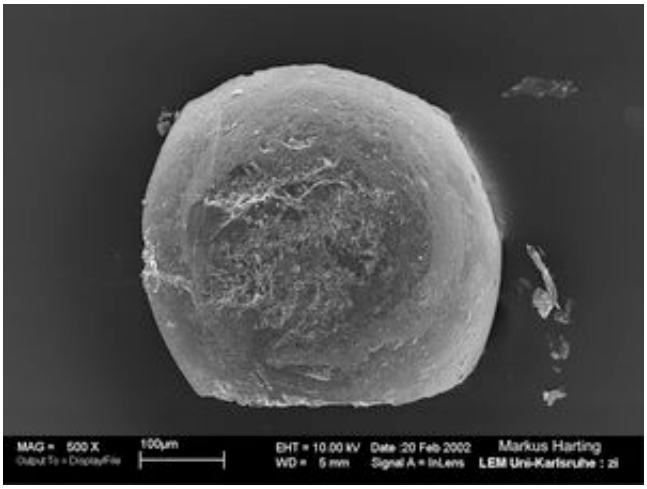

Scanning Electron Microscope picture of isolated, and well preserved Spherule from NE-Mexico (400 µm in diameter).

A new study of melted rock ejected far from the Yucatan's Chicxulub impact crater bolsters the idea that the famed impact was too early to have caused the mass extinction that killed the dinosaurs 65 million years ago.

A careful geochemical fingerprinting of glass spherules found in multiple layers of sediments from northeast Mexico, Texas, Guatemala, Belize, and Haiti all point back to Chicxulub as their source. But the analysis places the impact at about 300,000 years before the infamous extinctions marking the boundary between the Cretaceous and Tertiary periods, a.k.a. the K-T boundary.

Using an array of electron microscopy techniques, Markus Harting of the University of Utrecht in the Netherlands has found that chemical compositions of the spherules all match what would be expected of rocks melted at the Chicxulub impact. The spherules are now found in several layers because after they originally hit the ground, they were "reworked" by erosion to create later layers of sediments, he said. It's this reworking long after the impact that has misplaced some of the spherules into sediments that, based on the fossils in the same sediments, are misleadingly close to the K-T boundary.

Harting is scheduled to present his latest findings on Monday, 3 April Backbone of the Americas-– Patagonia to Alaska. The meeting is co-convened by the Geological Society of America and the Asociación Geológica Argentina, with collaboration of the Sociedad Geológica de Chile. The meeting takes place 3-7 April in Mendoza, Argentina.

"The whole story is that it's a single impact event," said Harting of his analysis of the multiple spherule layers. In fact, the original spherule layer is not particularly hard to make out, since its spherules are not as abraded and damaged as those which were moved around and re-deposited in later, higher sediments. Above these, and younger still, Harting has also identified the famous layer of extraterrestrial iridium in sediments worldwide which was originally touted as the smoking gun for an impact somewhere on Earth at the K-T boundary.

"In most of the sections we found spherules we also found the iridium layer at or near the K-T boundary," said Harting. "That makes the mismatch with Chicxulub even more obvious."

The sediments from the region are also providing clues to what transpired during those 300,000 years between the impact and the K-T boundary die-offs. "Nothing happened between them," said Harting. "The K-T iridium layer is a totally different event."

Disconnecting the Chicxulub impact from the K-T boundary also helps make sense of some other oddities in the iridium layer. In the Gulf of Mexico, close to the impact site, iridium is found at a weak concentration, just one part per billion, says Harting. Yet farther away in Denmark, higher concentrations of iridium are found. "This doesn't really make sense," he said, unless, of course, the impact and iridium layer are not related.

All this begs the question: What, then, created the worldwide iridium layer, if not a humongous impact? One possibility is that Earth and perhaps the entire solar system were passing through a thick cloud of cosmic dust 65 million years ago.

"You probably have a time when lots of meteorites are coming down and never touching the ground," said Harting. Instead they burned up as "shooting stars," depositing their iridium in the atmosphere. There it was quickly rained out, washed into lakes and oceans and buried in contemporary sediments.

Another burning question is whether the massive impact - which undoubtedly occurred and was certainly catastrophic - is responsible for any extinction at all. Maybe, answers Harting. There is the case of the ammonites, the once ubiquitous nautilus-like sea creatures that died out at about the same time as the Chicxulub impact and before the K-T boundary, he said.

But whether the impact was the ammonite killer is not at all clear, according to Harting. Early models of the Chicxulub impact called on a "nuclear winter" scenario, in which a dust-shrouded world went cold and plant life died away for years, to cause mass extinctions. Yet sun-loving animals like crocodiles and turtles appear to have glided right through without any ill effects. And that is, perhaps the silver lining to Chicxulub's fall from the status of most-massive-of-all-murderers: Even

giant impacts aren't necessarily global catastrophes.

Source: Geological Society of America