

Thaxted Astronomical Society

News

Features

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Asteroid DID Wipe Out

The Dinosaurs

<https://www.dailymail.co.uk/sciencetech/article-8471463/Asteroid-slammed-Earth-66-million-years-ago-DID-wipe-dinosaurs.html>

Asteroid that slammed into Earth 66 million years ago DID wipe out the dinosaurs while volcanic eruptions from the Deccan Traps helped life recover, study shows

Daily Mail 29th June 2020 >

- **Researchers looked at the Chicxulub asteroid and Deccan Traps volcanic activity**
- **They created mathematical models and used climate data to compare the two**
- **This allowed them to prove that an asteroid impact had to be responsible for the death of dinosaurs as it would have wiped out all potential habitats**

An asteroid that hit the Earth 66 million years ago 'had to be responsible' for the demise of the dinosaurs, according to a new study into the effects of the impact.

Researchers from Imperial College London created mathematical models of the impact volcanic activity and a large asteroid would have on dinosaur habitats.

The space rock that slammed into Earth 66 million years ago created a global winter, destroying 'suitable environments' for the largest animals ever to roam the Earth.

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Some experts claim volcanic eruptions in a region of India known as the Deccan Traps led to their extinction but the researchers proved that wasn't the case.

They found the asteroid impact off the coast of Mexico would have destroyed all suitable habitats but volcanic activity would leave areas around the equator.

The research team say that the lava spews from the Deccan Traps volcanoes that lasted thousands of years actually helped life recover from the asteroid impact.

Lead author Dr Alessandro Chiarenza, of Imperial College London, said the asteroid environmental effects 'decimated suitable environments for dinosaurs'.

'In contrast, the effects of the intense volcanic eruptions were not strong enough to substantially disrupt global ecosystems,' he said.

'Our study confirms, for the first time quantitatively, the only plausible explanation for the extinction is the impact winter that eradicated dinosaur habitats worldwide.'

The asteroid gorged out a crater 120 miles wide in the Yucatan peninsula in the Gulf of Mexico. In minutes, everything within hundreds of miles was incinerated.

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Temperatures dropped, acid rain fell and the sun was blocked out for months - causing the extinction of 90 per cent of plants and 70 per cent of animals.

The team combined geological markers of climate and mathematical models with the rainfall and temperature each dinosaur species needed to thrive.

They were then able to map where these conditions would still exist in a world after either an asteroid strike or massive volcanism.

Only the asteroid strike wiped out all potential habitats - while volcanism left some viable regions around the equator, the team discovered from their models.

Co-lead author Dr Alex Farnsworth, of Bristol University, said instead of only using the geologic record to model the effect on climate the asteroid or volcanism might have caused worldwide, they added an 'ecological dimension'.

This allowed them to reveal how these climatic fluctuations severely affected ecosystems and better map the impact on the dinosaurs.

The city-sized asteroid sent an incandescent plume of vaporised rock into the atmosphere at speeds close to ten miles a second.

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Co-author Dr Philip Mannion, of University College London, said the asteroid impact on global habitats produced 'a blue screen of death for dinosaurs'.

Volcanoes also release Sun-blocking gases and particles but they also belch out carbon dioxide and it was the CO₂ that actually helped life return to the planet.

In the short term the particles and gases that block the Sun have a larger effect - triggering a 'volcanic winter' but long term they 'drop out of the atmosphere'.

Meanwhile CO₂, a greenhouse gas, lingers and builds up in the atmosphere, warming the planet, the British researchers said.

After the initial drastic freeze caused by the asteroid, volcanic warming restored many habitats - helping new life to evolve after the disaster.

Dr Chiarenza said volcanic eruptions happening around the time of the asteroid might have reduced the effects on the environment caused by the impact.

'Particularly in quickening the rise of temperatures after the impact winter,' he said.

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'This volcanic-induced warming helped boost the survival and recovery of the animals and plants that made through the extinction with many groups expanding in its immediate aftermath - including birds and mammals.'

The findings have been published in the journal Proceedings of the National Academy of Sciences.

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KILLING OFF THE DINOSAURS: HOW A CITY-SIZED ASTEROID WIPED OUT 75 PER CENT OF ALL ANIMAL AND PLANT SPECIES

Around 65 million years ago non-avian dinosaurs were wiped out and more than half the world's species were obliterated.

This mass extinction paved the way for the rise of mammals and the appearance of humans.

The Chicxulub asteroid is often cited as a potential cause of the Cretaceous-Paleogene extinction event.

The asteroid slammed into a shallow sea in what is now the Gulf of Mexico.

The collision released a huge dust and soot cloud that triggered global climate change, wiping out 75 per cent of all animal and plant species.

Researchers claim that the soot necessary for such a global catastrophe could only have come from a direct impact on rocks in shallow water around Mexico, which are especially rich in hydrocarbons.

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Within 10 hours of the impact, a massive tsunami waved ripped through the Gulf coast, experts believe.

This caused earthquakes and landslides in areas as far as Argentina.

But while the waves and eruptions were The creatures living at the time were not just suffering from the waves - the heat was much worse.

While investigating the event researchers found small particles of rock and other debris that was shot into the air when the asteroid crashed.

Called spherules, these small particles covered the planet with a thick layer of soot.

Experts explain that losing the light from the sun caused a complete collapse in the aquatic system.

This is because the phytoplankton base of almost all aquatic food chains would have been eliminated.

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It's believed that the more than 180 million years of evolution that brought the world to the Cretaceous point was destroyed in less than the lifetime of a Tyrannosaurus rex, which is about 20 to 30 years.