

DUST CLOUD FROM ASTEROID COLLISION SHAPED LIFE ON EARTH 466 MILLION YEARS AGO, SAY SCIENTISTS

Relevant for: Geography | Topic: The Earth, its Evolution and Origin of Life on Earth

This artist's rendering provided by the Harvard-Smithsonian Center for Astrophysics shows an asteroid slowly disintegrating | Photo Credit: [AP](#)

The cataclysmic asteroid impact off Mexico's coast that doomed the dinosaurs 66 million years ago was not the only time an astronomical event shaped the history of life on Earth.

Scientists on Wednesday said dust spawned by a gigantic collision in the asteroid belt between Mars and Jupiter 400 million years earlier triggered an ice age on Earth that ushered in a significant increase in marine biodiversity.

The event, occurring when life was concentrated in the seas and far before vertebrates first walked on land, set in motion evolutionary changes in invertebrates fundamental to marine ecosystems as they adapted to global cooling, they said.

The inner solar system was filled with enormous amounts of dust after an asteroid more than 150 km in diameter was struck by a smaller object perhaps 20 km wide, the researchers said. It was the solar system's largest-known breakup event in the past 2 billion years.

Solar radiation reaching Earth's surface was reduced for at least 2 million years by the dust in space and in the planet's atmosphere, said study co-author Philipp Heck, an associate curator at the Field Museum in Chicago.

Another cooling mechanism was that the iron-rich meteoritic dust fertilized large parts of the ocean surface leading to increased plankton productivity and drawdown of atmospheric carbon dioxide, added Birger Schmitz, a geology professor at Lund University in Sweden and lead author of the [research published in the journal Science Advances](#).

"In the last few decades, researchers have begun to understand that evolution of life on Earth is dependent on astronomical events also," Mr. Schmitz said.

After noting the dinosaur-demise event caused by an asteroid perhaps 10 km wide, Mr. Schmitz added, "For the first time, scientists can now present another example of how an extraterrestrial event formed life on Earth."

The researchers found traces of dust in sedimentary rocks formed at the time containing special helium isotopes and rare minerals that revealed its extraterrestrial origin.

Invertebrate groups that experienced diversification included horseshoe crab-like trilobites, clams, clam-like brachiopods and a group called gastropods that included snails and slugs.

The cooling event unfolded gradually, enabling marine life during the Ordovician Period to adapt, unlike the sudden impact that erased the dinosaurs. Earth's climate changed from being tropical to semitropical worldwide to becoming divided into climate zones as it is today with frozen poles and tropical conditions at the equator.

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