

Earth hit by double asteroids 458 million years ago

October 23 2014



Preserved bodies of crystalline ejecta. Credit: Jens Ormö

Some 458 million years ago, Earth was whacked in a double asteroid strike, leaving craters visible in Sweden today, space scientists reported on Thursday.

The event, they said, can be traced to "one of the largest cosmic catastrophes" in the history of the Solar System—a mighty collision in the asteroid belt around 12 million years earlier.

That smashup caused a 200-kilometre- (120-mile-) asteroid to break up,

scattering large chunks of rock, some of which later crossed Earth's orbit.

Two of these pieces slammed into shallow seas that covered modern-day Scandinavia, according to the study.

With uplift of the Earth's crust, the signature of that event lies in central Sweden—the 7.5-km Lockne crater, located around 20 kms south of the city of Oestersund, and a 700-metre (yard) crater at nearby Malingen.

The study, published in the journal *Scientific Reports*, backs long-standing suspicions that these craters, just 16 kms apart, were caused by a "doublet", an extremely rare double whammy caused by asteroids travelling in pairs.

The team, led by Jens Ormoe of the Centre for Astrobiology in Madrid, Spain, carried out drilling into the craters, looking for traces of sediment altered by impact shock.

They also mapped the halo of ejecta—a ring of debris hurled up by the smash, which landed up to tens of kilometres away from the inner crater.

The Lockne impact was created by an object about 600 metres long, while the Malingen impactor was about 150 m long, the experts said.

They were so-called "rubble pile" asteroids, or fragments travelling in a cluster.

"Doublets" are a debated area of astrophysics.

Modelling of asteroids that come close to Earth suggest that about 16 percent of these objects travel in pairs.

But of the 188 known craters on Earth, only 10—in Canada, Russia, Germany, Finland and Brazil—are considered to be serious candidates as doublets.

The twin impact 458 million years ago would be part of a "shower" of meteors that pummelled Earth after the big breakup in the main asteroid belt.

Some experts theorise that this had dramatic consequences for Earth's climate and ecosystems, encouraging an explosion in species called Great Ordovician Biodiversification Event.

More information: First known Terrestrial Impact of a Binary Asteroid from a Main Belt Breakup Event, *Scientific Reports* 4, Article number: 6724 [DOI: 10.1038/srep06724](https://doi.org/10.1038/srep06724)

© 2014 AFP

Citation: Earth hit by double asteroids 458 million years ago (2014, October 23) retrieved 24 April 2024 from <https://phys.org/news/2014-10-earth-asteroids-million-years.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.