Global fires after the asteroid impact probably caused the K-Pg extinction

March 26 2013

About 66 million years ago a mountain-sized asteroid hit what is now the Yucatan in Mexico at exactly the time of the Cretaceous-Paleogene (K-Pg) mass extinction. Evidence for the asteroid impact comes from sediments in the K-Pg boundary layer, but the details of the event, including what precisely caused the mass extinction, are still being debated.

Some scientists have hypothesized that since the ejecta from the impact would have heated up dramatically as it reentered the Earth's atmosphere, the resulting infrared radiation from the upper atmosphere would have ignited fires around the globe and killed everything except those animals and plants that were sheltered underground or underwater.

Other scientists have challenged the global fire hypothesis on the basis of several lines of evidence, including absence of charcoal-which would be a sign of widespread fires-in the K-Pg boundary sediments. They also suggested that the soot observed in the debris layer actually originated from the impact site itself, not from widespread fires caused by reentering ejecta.

Robertson et al. show that the apparent lack of charcoal in the K-Pg boundary layer resulted from changes in sedimentation rates: When the charcoal data are corrected for the known changes in sedimentation rates, they exhibit an excess of charcoal, not a deficiency. They also show that the mass of soot that could have been released from the impact site itself is far too small to account for the observed soot in the K-Pg

layer. In addition, they argue that since the physical models show that the radiant energy reaching the ground from the reentering ejecta would be sufficient to ignite tinder, it would thereby spark widespread fires. The authors also review other evidence for and against the firestorm hypothesis and conclude that all of the data can be explained in ways that are consistent with widespread fires.

More information: K/Pg extinction: Reevaluation of the heat/fire hypothesis, *Journal of Geophysical Research-Planets*, doi:10.1002/jgrg.20018 , 2013. http://onlinelibrary.wiley.com/doi/10.1002/jgrg.20018/abstract

Provided by American Geophysical Union

Citation: Global fires after the asteroid impact probably caused the K-Pg extinction (2013, March 26) retrieved 20 March 2024 from https://phys.org/news/2013-03-global-asteroid-impact-k-pg-extinction.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.