

Environmental Perturbation Caused By A Large Meteorite Impact And Its Implications To The K/Pg Mass Extinction.

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In this talk, we review mechanics and environmental effects of large-scaled meteorite impacts, using the dinosaur-killing meteorite impact as an example. The Cretaceous–Palaeogene (K–Pg) mass extinction event at 65.5 Ma is now widely believed to be triggered by a meteoritic impact. Many mechanisms of environmental perturbation and mass extinctions have been proposed, such as sunlight blockage by silicate dust, soot and sulfuric acid aerosols, but the actual mechanism of the extinctions caused by the impact remains highly controversial. We show that sulfur trioxide-rich impact vapor was released during the K–Pg impact and resulted in the sudden onset of globally extensive acid rainfall and severe ocean acidification. Sudden severe ocean acidification can account for many geologic records at the K–Pg boundary, including the severe extinction of planktonic foraminifera. This extinction mechanism requires impact degassing of sulfate, which is not necessarily found at impact sites other than Chicxulub, suggesting that the degree of mass extinction was controlled greatly by target lithology.