

Numerical simulation of dust production by impact cratering on the earth

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Impact cratering and the following dust production in the stratosphere are simulated by using the Smoothed Particle Hydrodynamics (SPH) method. The code includes material strength and it is tested in several test models.

We assume that the impact velocity is 5 km/s and the diameter of meteoroid is 30 km. Results of simulations indicate the excavated mass is approximately 10^{18} kg, and the size of final crater is 150 km. The mass of dust lofted to the stratosphere in the long term is estimated as 3×10^{14} kg, that might be enough to activate the global climate change.