MAKE AN IMPACT

Simulate the crashing and smashing of a meteor impact

What you'll need:

- A shallow container at least 20 cm across
- A light-coloured powder, such as sand, flour, salt or cornstarch
- Cocoa powder
- Small rocks, marbles or frozen peas
- A sieve

1. Prepare materials

Pour the light-coloured powder in your container to a depth of 2-3 cm. Gently shift or shake the container until the surface of the powder is flat and level. Then, use your sieve to sprinkle a thin, even layer of cocoa powder on top.

2. Look out below!

Use your rocks, marbles or frozen peas as projectiles! Drop one projectile at a time into the powder to see what happens. What patterns do the materials produce upon impact? Try dropping projectiles from different heights to see how the impact changes.

3. Observe

After each throw, observe the pattern produced in the powder materials. Which powder is on top—the light, or the dark? Which powder is on the bottom? Does this change inside and outside the crater's edge (the **crater rim**)? How does throwing the projectile at different angles affect the shapes or layering?

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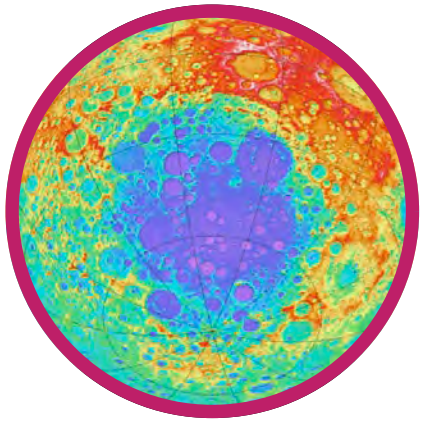
How does it work?

The solar system is full of small rocks called **meteoroids** that are constantly moving around the Sun. These rocks sometimes smash into objects such as planets, moons or asteroids, leaving behind pits called **craters**. When a crater is formed, the energy of the impact throws material out around it, creating an **ejecta blanket**. If you noticed that a light-coloured pattern formed around the crater in your container, you were observing the same effect. The ejecta blanket may also contain numerous **rays** formed by material travelling in clumps and streaks; this is due to uneven distribution of energy from the impact. The patterns of these features and the size of the crater depend on the mass, speed and angle of the projectile.

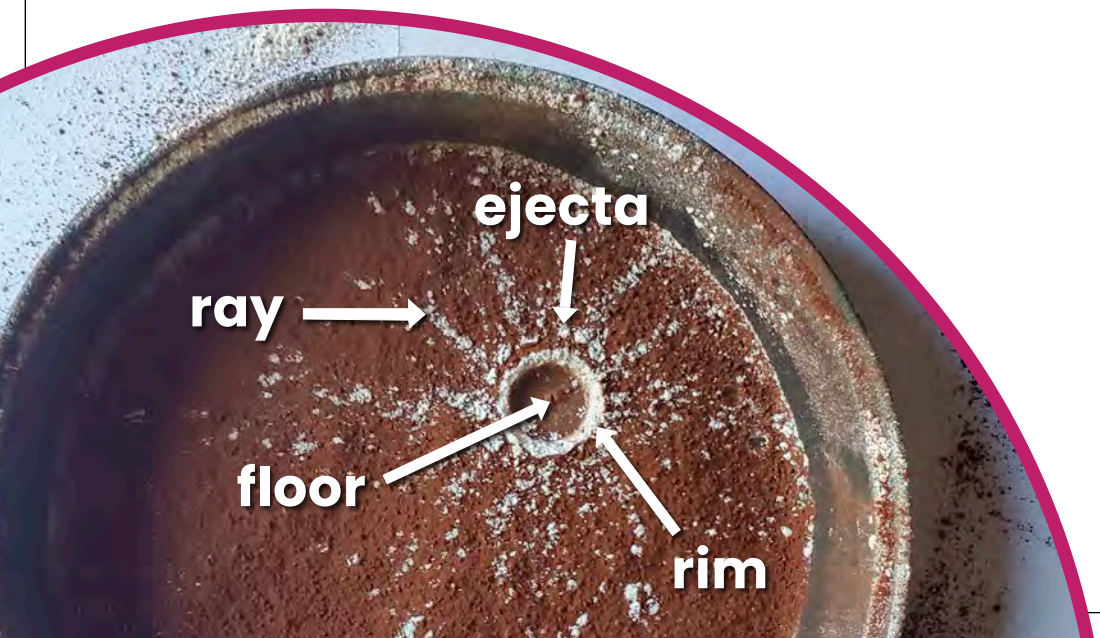
On Earth, we have an **atmosphere** that shields us from most small meteoroid impacts. Friction with the atmosphere heats any incoming meteoroids and causes them to burn up as shooting stars in the sky, also known as **meteors**. Very rarely, large rocks make it through the atmosphere and hit Earth. These are known as **meteorites**.

On the Moon, where there is no atmosphere, all the craters that have ever formed on the surface are visible—from giant craters like the ~2500 km South Pole-Aitken Basin to tiny ones no bigger than the head of a pin. This is why some people think the Moon looks like Swiss cheese!



The South-Pole Aitken basin on the Moon's far side. (**Credit:** NASA/LROC/Arizona State University)

A microcrater on a lunar rock sample returned by astronauts from the Moon. (**Credit:** Fechtig et al. 1977)



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