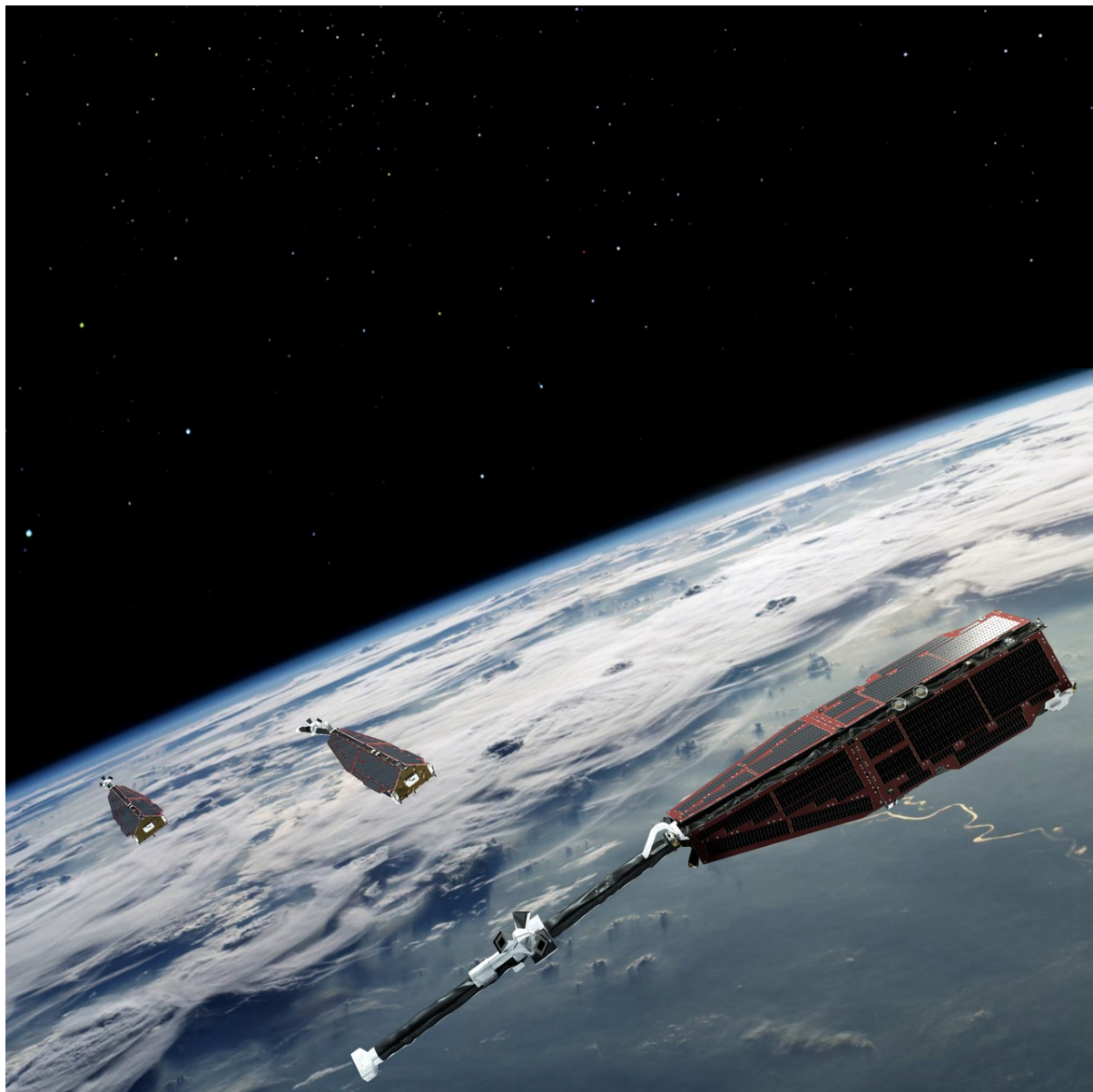




Using Magnets to Peer Deep into the Earth

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The Universe is a dangerous place, filled with scorching stars, harmful cosmic rays and giant, flying rocks. But have no fear, Earth is the Fort Knox of the Solar System. It has a whole host of incredible natural defenses that protect life. One of the best is Earth's magnetic field.

A magnetic field is an invisible force field that surrounds a magnet: in this case, the magnet is Earth's core. The magnetic field shields Earth from harmful cosmic rays that bombard us from the Sun.

To help us understand our cosmic shield, and allow us to predict its behaviour, a set of satellites called Swarm were launched into Space in 2013. SWARM is made up of three satellites that work together to study magnetic fields on Earth.

Within just a few years, Swarm has done some phenomenal science. It measured tiny magnetic fields created by oceans for the first time!

As the salty ocean water flows through the Earth's magnetic field, it generates its own magnetic field. But this isn't the end of the discovery.

MRI scanners in hospitals use magnetic fields to probe beneath our skin to study the inside of our bodies. In a similar way, Swarm used the oceans' magnetic fields to probe beneath the Earth's surface – 250 kilometers below the ocean floor!

We don't have many ways of probing deep under the surface of our planet, but Swarm is finally revealing mysteries deep below Earth's surface!

COOL FACT

The effect of Earth's magnetic field extends almost 60,000km out into space. That's seriously far!

This Space Scoop is based on a Press Release from [ESA](#).

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