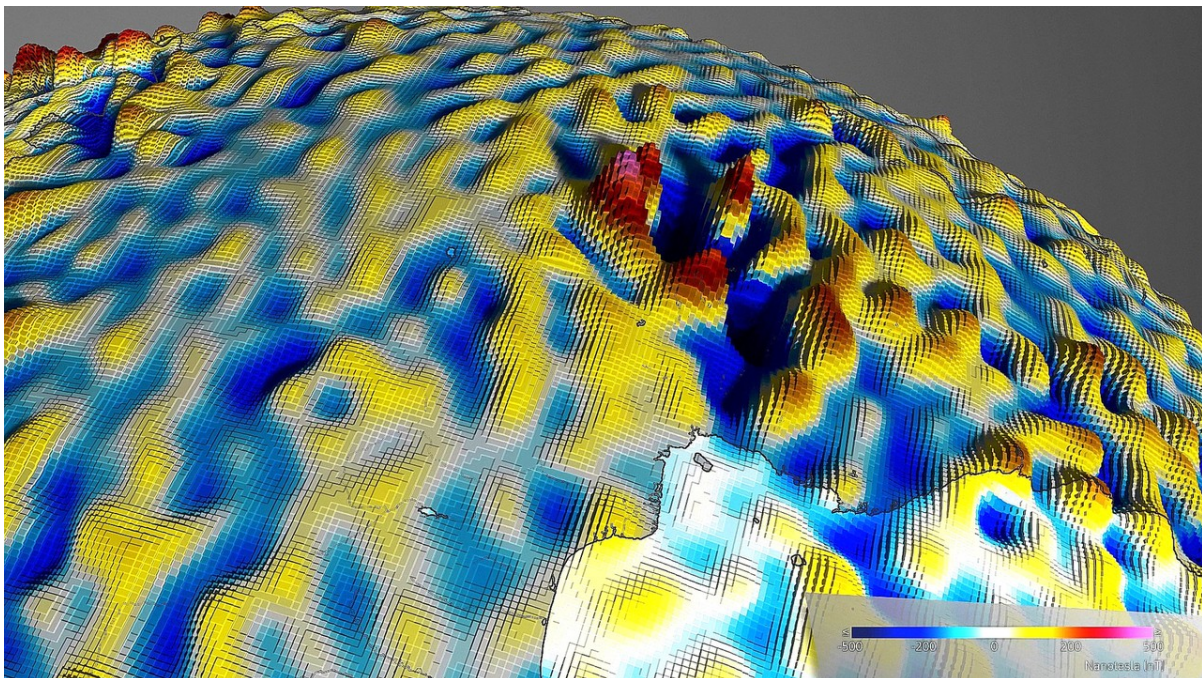




Mapping the Earth's Magnetic Crust

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Earth is surrounded by a huge cocoon that protects us from the dangerous cosmic radiation and particles that bombard our planet. Without it, life as we know it would not exist, yet it is totally invisible! This cocoon is a magnetic field.

Most of the magnetic field is created by Earth's molten iron core. However, a small part is created by magnetic rocks closer to the planet's surface, in the Earth's crust.

The crust is the solid rock layer of the Earth, which we live on. If the Earth were the size of an apple, the crust would be the skin – it's very thin compared to the other layers. Under the oceans it's about 10 kilometers thick, under the continents (land) it's up to 80 kilometers thick.

Learning about the crust of our home planet is no easy task. We can't simply drill through it to measure its shape and see what it's made of. But the Swarm satellites are up to the task.

Swarm is a group of three satellites orbiting our planet. Their job is to study the weak magnetic field created by Earth's crust and help us understand it better.

After three years of collecting data with Swarm, this image is the outcome. It's the most detailed map of the Earth's magnetic field ever made! The areas where the magnetic field is weaker are shown in blue, and the strongest regions are red. These differences are caused by the shape of Earth's crust.

Lots of interesting and peculiar spots have been discovered. One is located in a country called the Central African Republic, where the magnetic field is particularly strong. The cause is still unknown, but some scientists think it's the result of a meteorite impact more than 540 million years ago!



COOL FACT

One of the coolest features of this new map are the stripes across the ocean floor. These are evidence of times when our planet's magnetic field flipped, and the north and south poles switched position. This happens once every few hundred thousand years. When it next happens, your compass will point south instead of north!

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

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