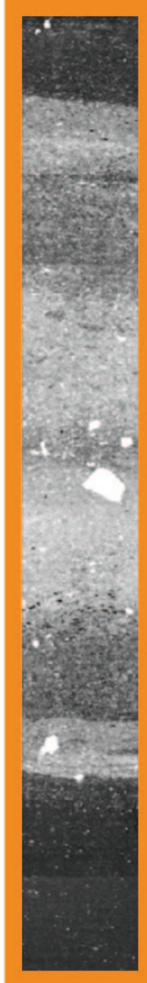
IN SEARCH OF EARTH'S SECRETS
A Pop-Up Science Encounter

DRILL DOWN DEEPER INTO WHAT IS A CORE?

What are some of the coolest cores ever drilled?



The Catastrophic Flood Core

Drilled in the Inside Passage off the coast of western Canada, this core contains evidence of a huge glacial flood in British Columbia that occurred about 10,600 years ago.

The darker layer at the bottom of the core contains the tiny fossils of ocean creatures that we would expect to see in an ocean core.

The slate gray layer above it, though, contains pollen from land plants and fossils from freshwater creatures. These materials were carried to the ocean by a flood that rapidly drained an inland lake about 125 miles away.

The Acid Ocean Core

This core was drilled in the southern Atlantic Ocean near the Namibian coast in Africa. It is from a time about 55 million years, called the Paleocene-Eocene Thermal Maximum (PETM), when the ocean became so acidic that tiny creatures with chalky shells, like forams, practically disappeared.

The light layers at the top and bottom of the core are filled with tiny fossil shells from ocean creatures like forams. The dark layer between them, though, has almost no fossils and is primarily clay. This dark layer was deposited during PETM when the ocean was so acidic that the water dissolved almost all of the chalky shells.

The Ice Age Core

This core was drilled south of Greenland in the Atlantic Ocean. It helped build a timeline of climate change over the last several million years of Earth's history.

This data has provided invaluable insight into the most recent "Ice Ages" or glacial periods of cold climate with a lot of land and sea ice, and warmer periods of little to no ice called interglacial periods.

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Learn more glacial floods, ice ages, acidic oceans, and cool cores at www.insearchofearthssecrets.com.

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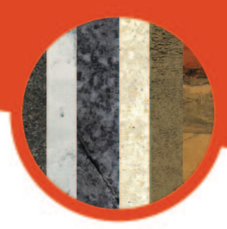

Collect your *What is a Core?* passport sticker

Why do scientists study the magnetic minerals in cores?

Magnetic Cores

The Earth is a giant magnet. You can see this by looking at a compass. The magnetic pull of the Earth makes the needle in your compass always point north. This would not happen if you were able to go back to 800,000 years ago. At that time, your compass needle would have pointed south. But go back 1,000,000 years ago and your compass would point north again.

The magnetic pole has switched back and forth between the North and South Poles throughout Earth's history. Cores drilled from the seafloor contain records of these magnetic pole reversals. When magma cools into seafloor rock, the magnetic iron particles in the magma freeze in place. They remain forever pointing in the direction of wherever the magnetic pole was the day they turned into rock. Some areas of the seafloor point north while others point south.

Today

800,000 years ago

1,000,000 years ago

Scientists laying a core onto the track of a magnetometer

Tools of the Trade

Scientists use an instrument called a magnetometer to detect which direction the magnetic particles in a core are pointing. This provides useful information in a lot of different ways. Scientists know when all the magnetic polar reversal in the past occurred, so looking at which direction the magnetic particles are pointing can help them determine the age of the core. These magnetic particles also help scientists understand how the seafloor spreads.

Try this!

Check out the "What is a Core?" backpack from the front desk to learn more about magnetic properties. See if a compass always points north and then use a magnet to make it point south. See if you can use a magnet to get iron filings to all point in the same direction, like they do in seafloor rock.

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Learn more the magnetic properties of the seafloor, and when the next magnetic reversal may occur, at www.insearchofearthssecrets.com