

RESEARCH NOTE**● All the Earth's a Magnet**

As you are reading this, you are moving around at 1,670 km/h. Sound impossible? It's true. That's how fast Earth rotates on its axis. Deep inside the planet, Earth's core is also spinning. But did you know that Earth's inner core rotates faster than the rest of the planet? If you stood in the same spot on the equator for a year, Earth's inner core would travel more than 20 km farther than you would! But the inner core is 5,150 km below Earth's surface. What makes scientists think they know what's going on down there?

The Core of the Matter

Scientists start looking for answers by asking questions. For instance, scientists have wondered if there is some relationship between Earth's core and Earth's magnetic field. To build their hypothesis, scientists started with what they knew: Earth has a dense, solid inner core and a molten outer core. They then created a computer model to simulate how Earth's magnetic field is generated. The model predicted that Earth's inner core spins in the same direction as the rest of the Earth but slightly faster than the surface. If that theory is correct, it might explain how Earth's magnetic field is generated. But how could the researchers test the theory?

Because scientists couldn't drill down to the core, they had to get their information indirectly. They decided to track seismic waves created by earthquakes.

Catch the Waves

Scientists analyzed 30 years' worth of earthquake seismic data. They knew that seismic waves traveling through the inner core along a north-south path travel faster than waves passing through it along an east-west line. Scientists searched seismic data records to see if the orientation of the "fast path" for seismic waves changed over time. They found that in the last 30 years, the direction of the "fast path" for seismic waves had indeed shifted. This is strong evidence that Earth's core does travel faster than the surface, and it strengthens the theory that the spinning core creates Earth's magnetic field.

Now That We Know . . .

This discovery will lead to more research into how Earth's magnetic field changes and how the north and south poles "wander" and even occasionally reverse. The new information may also lead to a better understanding of the flow of planetary heat that moves the tectonic plates on Earth's surface.

Write About It

Imagine what would happen if the magnetic poles were suddenly reversed or if magnetism disappeared completely. How would you be affected personally? How would it affect our civilization? Write a funny story describing a world with no magnetism.