

L43 — Earth as a Magnet

Read Aloud Passage

The Earth itself behaves like a giant magnet, and a compass needle aligns with its magnetic field, pointing approximately toward magnetic north. This happens because of a swirling liquid iron and nickel core deep inside the Earth, a process called the geodynamo.

Magnetic North isn't exactly true North; the gap between them, called declination, is different depending on where you stand, and both drift over time. Cooling rocks lock in the direction of the magnetic field at the moment they form, which is how scientists know the poles have completely flipped many times in Earth's history.

The Earth's magnetic field shields us from the sun's charged particles (the solar wind) and creates the aurora near the poles. Losing a global magnetic field is thought to be one important reason Mars lost much of its atmosphere over time. Some animals, like birds and sea turtles, navigate using Earth's field directly.

Activity 1

Match each word from the word box to its definition. Write the word in the blank.

Word Box: *geodynamo declination paleomagnetism solar wind aurora*

1. ____ — The process by which the Earth's swirling liquid iron and nickel outer core generates the planet's magnetic field.
2. ____ — The angle between the direction a compass points (magnetic North) and true geographic North, which varies by location.
3. ____ — The magnetic direction locked into rock as it forms, used by scientists to study the Earth's ancient magnetic field.
4. ____ — A stream of charged particles constantly blasted out by the sun, mostly deflected around Earth by its magnetic field.
5. ____ — The glowing lights near the poles caused by charged solar particles colliding with gases in the upper atmosphere.

Activity 2

Each phrase below is a fragment, not a full sentence. Add what is missing to make a complete sentence.

1. *the process by which the Earth's swirling liquid iron and nickel outer core generates the planet's magnetic field*

2. *which varies by location*

Activity 3

Combine the short sentences below into one smooth sentence.

1.

- Losing a global magnetic field is thought to be one important reason Mars lost much of its atmosphere over time.
- The Earth itself behaves like a giant magnet, and a compass needle aligns with its magnetic field, pointing approximately toward magnetic north.

Combined sentence:

2.

- This happens because of a swirling liquid iron and nickel core deep inside the Earth, a process called the geodynamo.
- The Earth's magnetic field shields us from the sun's charged particles (the solar wind) and creates the aurora near the poles.

Combined sentence:

Activity 4

Each sentence below is a run-on. Rewrite it correctly.

1. The Earth itself behaves like a giant magnet, and a compass needle aligns with its magnetic field, pointing approximately toward magnetic north this happens because of a swirling liquid iron and nickel core deep inside the Earth, a process called the geodynamo.

Correction:

2. Magnetic North isn't exactly true North; the gap between them, called declination, is different depending on where you stand, and both drift over time cooling rocks lock in the direction of the magnetic field at the moment they form, which is how scientists know the poles have completely flipped many times in Earth's history.

Correction:
