



MAGNETIC
FIELD

X: -33
Y: -20
Z: -5

1
00:00:08,200 --> 00:00:04,120

[silence]

2
00:00:08,220 --> 00:00:12,310

[music] Narrator: You're probably more familiar with magnetic fields than you realize.

3
00:00:12,330 --> 00:00:16,420

If you have a compass and a map, you can use the Earth's magnetic

4
00:00:16,440 --> 00:00:20,520

field to help you find your way. You've probably also seen what a magnetic field looks

5
00:00:20,540 --> 00:00:24,600

like. Drop iron filings around a bar magnet, and the field shows itself as a series

6
00:00:24,620 --> 00:00:28,670

of lines. If you take the filings away, you can still get an idea of what the field

7
00:00:28,690 --> 00:00:32,710

looks like by flying a tiny compass around the magnet. The compass points in the direction of

8
00:00:32,730 --> 00:00:36,740

the magnetic field, allowing you to draw its shape. But how do you find

9
00:00:36,760 --> 00:00:40,760

out what a planet's magnetic field looks like? You basically do the same thing.

10
00:00:40,780 --> 00:00:44,920

However, instead of flying a simple compass around the planet, NASA scientists

11
00:00:44,940 --> 00:00:49,050

use satellites carrying a much more sensitive device called a magnetometer. Mounted

12
00:00:49,070 --> 00:00:53,160

far away from the spacecraft, a magnetometer uses electric currents to measure the magnetic

13
00:00:53,180 --> 00:00:57,260

field of the planet. By flying this "electronic compass" around the planet, scientists

14

00:00:57,280 --> 00:01:01,360

can draw an accurate model of what its magnetic field looks like. And magnetometers

15

00:01:01,380 --> 00:01:05,460

have helped scientists discover more than just the shape of the Earth's magnetic field. Other planets

16

00:01:05,480 --> 00:01:09,550

in our solar system, such as Jupiter, have magnetic fields that are similar to ours.

17

00:01:09,570 --> 00:01:13,630

The Sun also generates its own magnetic field that affects the entire solar system.

18

00:01:13,650 --> 00:01:17,690

But not every planet in our solar system has a magnetic field.

19

00:01:17,710 --> 00:01:21,730

For example, we've discovered that, unlike Earth, Mars doesn't have a global magnetic field at all.

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00:01:21,750 --> 00:01:25,750

Instead, it has small pockets of local magnetic fields.

21

00:01:25,770 --> 00:01:29,770

But after all is said and done, even with all the advanced technology, the most

22

00:01:29,790 --> 00:01:33,920

amazing thing is that we've made all these discoveries using something that's essentially

23

00:01:33,940 --> 00:01:38,020

an upgraded compass.

24

00:01:38,040 --> 00:01:42,170

[music fading, beeping]

25

00:01:42,190 --> 00:01:46,280

[beeping]

