1
00:00:01,235 --> 00:00:03,871
We tend to think of Earth's
landmasses as being fixed in

2
00:00:03,871 --> 00:00:07,341
place, but in reality they
are attached to moving tectonic

3
00:00:07,341 --> 00:00:10,878
plates that constantly jostle
for position, and slide over the

4
00:00:10,878 --> 00:00:12,813
more viscous mantle beneath.

5
00:00:12,813 --> 00:00:15,148
Case in point: Iceland.

6
00:00:15,148 --> 00:00:18,552
Volcanic eruptions are common on
this young landmass, driven by

7
00:00:18,552 --> 00:00:21,922
the two tectonic plates that
divide it, and by its location

8
00:00:21,922 --> 00:00:25,292
above a hotspot - an upwelling
of magma that protrudes from

9
00:00:25,292 --> 00:00:27,828
deep in the mantle
up to the crust.

10
00:00:27,828 --> 00:00:31,765
This hotspot fuels Iceland's
eruptions today, but millions of

11
00:00:31,765 --> 00:00:35,736

years ago it was situated
beneath neighboring Greenland.

12
00:00:35,736 --> 00:00:39,606
Now, a NASA scientist and her
colleagues have used anomalies

13
00:00:39,606 --> 00:00:43,143
in Greenland's crustal magnetic
field to derive its geothermal

14
00:00:43,143 --> 00:00:44,778
heat flux.

15
00:00:44,778 --> 00:00:48,115
The researchers also
analyzed gravity data and other

16
00:00:48,115 --> 00:00:51,151
geophysical information to
effectively peer beneath

17
00:00:51,151 --> 00:00:55,055
Greenland's kilometers-thick ice
sheet and into the crust itself.

18
00:00:55,055 --> 00:00:58,525
What they found was a thermal
track in Greenland's bedrock

19
00:00:58,525 --> 00:01:02,696
that records the motions of a
continent over geologic time.

20
00:01:02,696 --> 00:01:05,799
Greenland is part of the
North American tectonic plate.

21
00:01:05,799 --> 00:01:08,635
For tens of millions of years,

the plate's movement pushed

22
00:01:08,635 --> 00:01:10,771
Greenland over the hotspot.

23
00:01:10,771 --> 00:01:13,941
When the hotspot emerged at the
Denmark Strait, it began raising

24
00:01:13,941 --> 00:01:16,476
the seafloor to form Iceland.

25
00:01:16,476 --> 00:01:19,913
Today, a channel of warm bedrock
marks the ancient path of the

26
00:01:19,913 --> 00:01:23,216
hotspot - a reminder that
nothing stands still over

27
00:01:23,216 --> 00:01:26,520
geologic time, and that even
the largest landmasses are

28
00:01:26,520 --> 00:01:30,023
constantly being
reshaped by our dynamic planet.

29
00:01:30,023 --> 00:01:33,226
[Music]