



2013 Jun 2

1
00:00:08,160 --> 00:00:04,070
music

2
00:00:08,180 --> 00:00:12,170
The sun is a beautifully magnetically driven

3
00:00:12,190 --> 00:00:16,180
star, but we can't actually see magnetic field lines.

4
00:00:16,200 --> 00:00:20,190
They are essentially invisible, and so we have to turn to models

5
00:00:20,210 --> 00:00:24,190
in order for us to see the global magnetic structure of the

6
00:00:24,210 --> 00:00:28,200
sun. What we are looking at here is one such model.

7
00:00:28,220 --> 00:00:32,200
The color coding represents what we call open magnetic field lines,

8
00:00:32,220 --> 00:00:36,210
which means that they extend from within the sun, all the way out to

9
00:00:36,230 --> 00:00:40,270
really far out in space.

10
00:00:40,290 --> 00:00:44,460
The green and the purple have a north and a south polarity. The white lines are closed magnetic field

11
00:00:44,480 --> 00:00:48,460
lines. They come out of the surface of the sun, and they loop around and close

12
00:00:48,480 --> 00:00:52,470
near the solar surface.

13
00:00:52,490 --> 00:00:56,490

You can see how dynamic the sun is as well. Magnetic field lines interact with each other

14

00:00:56,510 --> 00:01:00,490

They cause big explosions to occur on the sun, and that's one reason

15

00:01:00,510 --> 00:01:04,500

it's extremely important to study the magnetic structure of the sun, especially

16

00:01:04,520 --> 00:01:08,500

on a global scale. And again, models are one way we can do this, especially on a global scale.

17

00:01:08,520 --> 00:01:12,510

because they allow us to model where the field lines are, how

18

00:01:12,530 --> 00:01:16,530

they are going to interact with each other when the sun rotates, and then

19

00:01:16,550 --> 00:01:20,540

how that causes solar storms, like coronal mass ejections and solar flares.

20

00:01:20,560 --> 00:01:24,550

Sometimes the sun is quiet, sometimes magnetic field lines aren't

21

00:01:24,570 --> 00:01:28,730

doing a whole lot, but other times, you see these bright regions on the sun

22

00:01:28,750 --> 00:01:32,750

where you have closed loops. That's where activity can occur,

23

00:01:32,770 --> 00:01:36,760

where the flares can occur. The whole thing is really magnetically connected.

24

00:01:36,780 --> 00:01:40,940

music

25

00:01:48,960 --> 00:01:44,950

tone

