



1
00:00:00,740 --> 00:00:04,150

[Music]

2
00:00:10,250 --> 00:00:07,550

we need to understand his Sun because

3
00:00:11,780 --> 00:00:10,260

the Sun changes our lives every day we

4
00:00:14,150 --> 00:00:11,790

all know that the Sun makes the weather

5
00:00:17,000 --> 00:00:14,160

but when we're flying things in space

6
00:00:20,060 --> 00:00:17,010

astronauts satellites the Sun affects

7
00:00:22,550 --> 00:00:20,070

them even more directly the Sun puts out

8
00:00:24,560 --> 00:00:22,560

what we call space weather space weather

9
00:00:27,019 --> 00:00:24,570

causes problems with our satellites our

10
00:00:29,269 --> 00:00:27,029

astronauts our communication systems

11
00:00:31,849 --> 00:00:29,279

here on earth and our navigation systems

12
00:00:34,010 --> 00:00:31,859

we need to know more about how the Sun

13
00:00:36,410 --> 00:00:34,020

works where the magnetic field of the

14

00:00:38,110 --> 00:00:36,420

Sun comes from and how that magnetic

15

00:00:40,900 --> 00:00:38,120

field is converted in the space weather

16

00:00:44,510 --> 00:00:40,910

HMI is the helioseismic and magnetic

17

00:00:46,310 --> 00:00:44,520

imager very long words for something

18

00:00:49,400 --> 00:00:46,320

that's very useful to look at on the Sun

19

00:00:51,319 --> 00:00:49,410

the helioseismic refers to the sound

20

00:00:53,000 --> 00:00:51,329

waves that we can measure the surface of

21

00:00:56,240 --> 00:00:53,010

the Sun that when we carefully analyze

22

00:00:57,799 --> 00:00:56,250

them we can look inside the Sun and see

23

00:00:59,869 --> 00:00:57,809

what's happening under the surface of

24

00:01:01,939 --> 00:00:59,879

the Sun and even what's happening on the

25

00:01:03,709 --> 00:01:01,949

other side of the Sun it's much like how

26

00:01:05,270 --> 00:01:03,719

we use the waves from earthquakes to

27

00:01:08,149 --> 00:01:05,280

know where the earthquake happened how

28

00:01:10,940 --> 00:01:08,159

big it was to learn about what's inside

29

00:01:13,730 --> 00:01:10,950

the earth from earthquakes at the same

30

00:01:15,890 --> 00:01:13,740

time HM I will produce map of the

31

00:01:17,539 --> 00:01:15,900

magnetic field of the Sun we're all

32

00:01:19,700 --> 00:01:17,549

familiar with the magnetic field of the

33

00:01:22,580 --> 00:01:19,710

earth we use our compasses to point our

34

00:01:24,289 --> 00:01:22,590

way with that on the Sun the magnetic

35

00:01:26,870 --> 00:01:24,299

field is much more complicated and it

36

00:01:29,330 --> 00:01:26,880

comes up as little tiny pieces at

37

00:01:31,010 --> 00:01:29,340

magnetic field all over the Sun when

38

00:01:33,300 --> 00:01:31,020

they get together it can be called

39

00:01:35,190 --> 00:01:33,310

active regions very strong magnetic

40

00:01:37,920 --> 00:01:35,200

but nonetheless there's a magnetic field

41

00:01:40,649 --> 00:01:37,930

all over the Sun for many years people

42

00:01:41,880 --> 00:01:40,659

studied only the active regions that was

43

00:01:43,980 --> 00:01:41,890

the thing that people really were

44

00:01:46,020 --> 00:01:43,990

worried about we now understand it you

45

00:01:48,090 --> 00:01:46,030

have to worry about all the magnetic

46

00:01:50,290 --> 00:01:48,100

field of the Sun and that's what sto was