



1
00:00:00,500 --> 00:00:01,370
Voice off Screen: Scientists around the

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00:00:01,370 --> 00:00:05,290
world have their eyes turned to the sun this
week as it reveals as massive active

3
00:00:05,290 --> 00:00:09,490
region that could affect us here on Earth.
And here joining us from NASA's Goddard

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00:00:09,490 --> 00:00:13,469
Space Flight Center, in Greenbelt, Maryland
is Dr. Holly Gilbert. Thank you

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00:00:13,469 --> 00:00:16,110
for joining us. Dr. Gilbert: Thank you for
having me. Voice off Screen: So what is a

6
00:00:16,110 --> 00:00:17,170
sunspot and what

7
00:00:17,170 --> 00:00:21,359
makes this one so special. Dr. Gilbert: Sunspots
are these dark regions on the sun

8
00:00:21,359 --> 00:00:25,590
where magnetic fields are bundled together
and it creates such a strong magnetic

9
00:00:25,590 --> 00:00:29,199
field that light and heat cannot cross it,
so it appears

10
00:00:29,199 --> 00:00:33,610
dark relative to the surrounding area. And
the particular sunspot region

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00:00:33,610 --> 00:00:37,450

that we're interested, right now is the largest
that we've seen

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00:00:37,450 --> 00:00:38,840
in twenty-four years.

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00:00:40,180 --> 00:00:41,540
Voice off Screen: Fascinating,
so

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00:00:41,540 --> 00:00:45,469
why do we want to learn more from this sunspot?
Dr. Gilbert: Sunspots are regions where

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00:00:45,469 --> 00:00:49,629
solar storms originate, so basically where
space weather originates. It's

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00:00:49,629 --> 00:00:54,059
important to study these things because they
have flares that are associated with them

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00:00:54,059 --> 00:00:57,570
and these bigger storms called coronal mass
ejections. So by

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00:00:57,570 --> 00:01:01,879
studying the sunspot region itself, and how
it evolves we will understand

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00:01:01,879 --> 00:01:05,449
more about how solar flares are created and
when they will

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00:01:05,449 --> 00:01:06,569
impact the Earth.

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00:01:07,700 --> 00:01:09,980
Voice off Screen: So will
this affect us here on Earth ?

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00:01:10,200 --> 00:01:13,820

Dr. Gilbert: We don't know yet. It's possible that it will in the next week cause it's

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00:01:13,830 --> 00:01:17,820

still going to be on the side of the sun facing us. It maybe associated

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00:01:17,820 --> 00:01:21,930

with these mass ejections, and if they are directed towards the Earth they can

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00:01:21,930 --> 00:01:25,960

interact with the Earth's magnetic field and cause problems with our

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00:01:25,960 --> 00:01:30,310

satellites, our power grids, our technology. We're protected on the surface

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00:01:30,310 --> 00:01:34,000

from that magnetic field of the Earth and the atmosphere. But our technology is susceptible

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00:01:34,000 --> 00:01:35,540

to these types of storms.

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00:01:35,540 --> 00:01:36,040

Voice off Screen:
Neat.

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00:01:36,480 --> 00:01:38,420

So what is NASA doing to

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00:01:38,420 --> 00:01:42,100

study sunspots? Dr. Gilbert: Well we have our eye on the sun all the time

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00:01:42,110 --> 00:01:46,220
and so we're watching this particular sunspot
along with our partners at NOAA,

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00:01:46,220 --> 00:01:50,110
we have a mission called the Solar Dynamics
Observatory which images the sun

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00:01:50,110 --> 00:01:53,950
all the time and we also have a fleet of missions
that

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00:01:53,950 --> 00:01:57,899
not only look at the sun, but study what's
happening here near

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00:01:57,899 --> 00:02:01,990
the Earth as well as throughout the solar system.
In fact we have a new mission that we're

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00:02:01,990 --> 00:02:06,149
about to launch next year, that are four identical
spacecraft. This is

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00:02:06,149 --> 00:02:10,190
called MMS and those four spacecraft will
be inside the

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00:02:10,190 --> 00:02:14,030
Earth's magnetic field, basically taking measurements
of these

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00:02:14,030 --> 00:02:17,870
processes that create the solar flares on
the sun. But these

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00:02:17,870 --> 00:02:22,590
processes happen near the Earth they also
happen on the sun and throughout the universe,

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00:02:22,590 --> 00:02:26,170

near us in our laboratory of the Earth we can understand better

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00:02:26,170 --> 00:02:29,819

how they happen. Voice off Screen: Great. Where can we go to learn more?

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00:02:29,819 --> 00:02:33,810

Dr. Gilbert: You can go to are website to find a lot more about our missions and

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00:02:33,810 --> 00:02:37,130

lots of images nasa.gov/sunearth.