



1
00:00:09,030 --> 00:00:05,349
here comes solar maxima

2
00:00:11,749 --> 00:00:09,040
presented by science at nasa

3
00:00:13,910 --> 00:00:11,759
only 93 million miles from earth a

4
00:00:14,950 --> 00:00:13,920
certain g-type star is beginning to act

5
00:00:17,189 --> 00:00:14,960
up

6
00:00:18,870 --> 00:00:17,199
every 11 years or so the solar cycle

7
00:00:20,230 --> 00:00:18,880
brings a period of revved up solar

8
00:00:23,429 --> 00:00:20,240
activity

9
00:00:24,950 --> 00:00:23,439
giant islands of magnetism sunspots

10
00:00:26,710 --> 00:00:24,960
break through the stellar surface in

11
00:00:28,630 --> 00:00:26,720
increasing numbers

12
00:00:31,029 --> 00:00:28,640
sometimes they erupt like a billion

13
00:00:32,950 --> 00:00:31,039

atomic bombs going off at once producing

14

00:00:35,030 --> 00:00:32,960

intense flares of x-rays and uv

15

00:00:36,870 --> 00:00:35,040

radiation and hurling massive clouds of

16

00:00:39,590 --> 00:00:36,880

plasma toward earth

17

00:00:41,590 --> 00:00:39,600

this is happening right now

18

00:00:44,709 --> 00:00:41,600

only a few years ago the sun was in a

19

00:00:46,470 --> 00:00:44,719

state of deep quiet but as 2012 unfolds

20

00:00:48,389 --> 00:00:46,480

the pendulum is swinging

21

00:00:50,470 --> 00:00:48,399

strong flares are becoming commonplace

22

00:00:51,990 --> 00:00:50,480

as sunspots once again pepper the solar

23

00:00:54,069 --> 00:00:52,000

disk

24

00:00:56,069 --> 00:00:54,079

forecasters expect the cycle to peak in

25

00:00:58,389 --> 00:00:56,079

mid to late 2013.

26

00:01:01,430 --> 00:00:58,399

fortunately earth is defended from solar

27

00:01:03,750 --> 00:01:01,440

storms by a strong global magnetic field

28

00:01:05,590 --> 00:01:03,760

researchers call it the magnetosphere a

29

00:01:07,350 --> 00:01:05,600

bubble of magnetism that springs from

30

00:01:10,469 --> 00:01:07,360

the planet's core and extends at least

31

00:01:12,870 --> 00:01:10,479

80 000 kilometers in all directions

32

00:01:14,390 --> 00:01:12,880

in march 2012 those magnetic defenses

33

00:01:16,149 --> 00:01:14,400

were tested

34

00:01:18,149 --> 00:01:16,159

at the very beginning of the month a

35

00:01:19,670 --> 00:01:18,159

remarkable sunspot appeared on the sun's

36

00:01:22,950 --> 00:01:19,680

eastern limb

37

00:01:24,870 --> 00:01:22,960

ar 1429 as experts called it was an

38

00:01:26,789 --> 00:01:24,880

angry looking region almost as wide as

39

00:01:28,789 --> 00:01:26,799

the planet jupiter

40

00:01:30,230 --> 00:01:28,799

almost as soon as it appeared it began

41

00:01:32,230 --> 00:01:30,240

to erupt

42

00:01:35,030 --> 00:01:32,240

during the period of march 2nd to march

43

00:01:37,590 --> 00:01:35,040

15th it rotated across the solar disk

44

00:01:39,590 --> 00:01:37,600

and fired off more than 50 flares

45

00:01:41,429 --> 00:01:39,600

three were x-class flares the most

46

00:01:43,190 --> 00:01:41,439

powerful kind

47

00:01:45,109 --> 00:01:43,200

as the eruptions continued earth's

48

00:01:47,910 --> 00:01:45,119

magnetosphere was buffeted by coronal

49

00:01:49,910 --> 00:01:47,920

mass ejections or cmes

50

00:01:51,990 --> 00:01:49,920

one of those clouds hit so hard the

51
00:01:53,830 --> 00:01:52,000
magnetosphere was sharply compressed

52
00:01:55,510 --> 00:01:53,840
leaving geosynchronous satellites on the

53
00:01:57,749 --> 00:01:55,520
outside looking in

54
00:02:00,310 --> 00:01:57,759
for a while the spacecraft were directly

55
00:02:01,910 --> 00:02:00,320
exposed to solar wind plasma

56
00:02:04,149 --> 00:02:01,920
charged particles propelled by the

57
00:02:06,230 --> 00:02:04,159
blasts swirled around earth producing

58
00:02:06,830 --> 00:02:06,240
the strongest radiation storm in almost

59
00:02:48,949 --> 00:02:06,840
a

60
00:02:50,949 --> 00:02:48,959
world

61
00:02:53,030 --> 00:02:50,959
these concerns are prompted in part by

62
00:02:55,509 --> 00:02:53,040
stories about the ancient mayan calendar

63
00:02:56,710 --> 00:02:55,519

which supposedly ends on december 21st

64

00:02:58,390 --> 00:02:56,720

2012

65

00:03:00,710 --> 00:02:58,400

in fact the mayan calendar doesn't

66

00:03:03,509 --> 00:03:00,720

really end in 2012 but that's another

67

00:03:05,750 --> 00:03:03,519

story the key point is solar flares

68

00:03:07,670 --> 00:03:05,760

cannot destroy the earth

69

00:03:10,869 --> 00:03:07,680

our planet has been orbiting the sun for

70

00:03:13,190 --> 00:03:10,879

about 4.5 billion years weathering solar

71

00:03:15,110 --> 00:03:13,200

storms that entire time

72

00:03:17,110 --> 00:03:15,120

anyone older than the age of 11 has

73

00:03:18,949 --> 00:03:17,120

lived through at least one solar maximum

74

00:03:20,309 --> 00:03:18,959

and most retirees have lived through

75

00:03:22,390 --> 00:03:20,319

five or six

76

00:03:24,710 --> 00:03:22,400

as powerful as solar flares are our

77

00:03:27,190 --> 00:03:24,720

planet's defenses are equal to them

78

00:03:29,110 --> 00:03:27,200

solar max is coming in 2013.

79

00:03:31,190 --> 00:03:29,120

enjoy the show

80

00:03:32,789 --> 00:03:31,200

for more news about solar activity and