



1
00:00:00,010 --> 00:00:05,050
(music)

2
00:00:05,050 --> 00:00:10,140
What comes to mind when you think of Halloween? Trick-or-treating,

3
00:00:10,140 --> 00:00:13,190
jack-o'-lanterns, ghouls and goblins?

4
00:00:13,190 --> 00:00:16,210
(Screeching) But the sun? Probably not.

5
00:00:16,210 --> 00:00:19,330
But, just five years ago, in the weeks surrounding Halloween,

6
00:00:19,330 --> 00:00:22,410
the sun sent us some tricks and treats of

7
00:00:22,410 --> 00:00:25,500
its own. The tricks were a series of some of

8
00:00:25,500 --> 00:00:28,550
the most powerful solar storms ever measured,

9
00:00:28,550 --> 00:00:31,720
storms that disrupted power grids, communication lines and satellites.

10
00:00:31,720 --> 00:00:34,880
But the treats were some extraordinary

11
00:00:34,880 --> 00:00:37,990
auroras, seen as far south as Florida and Texas.

12
00:00:37,990 --> 00:00:41,050
Holly Gilbert: The effects of these storms on

13
00:00:41,050 --> 00:00:44,060

the Earth were ghoulish enough that we had to

14

00:00:44,060 --> 00:00:47,230

re-route aircraft, it affected satellite

15

00:00:47,230 --> 00:00:50,370

systems and communications, and it also caused a power

16

00:00:50,370 --> 00:00:53,450

outage in Sweden for about an hour.

17

00:00:53,450 --> 00:00:56,480

Generally the public was very excited to see the

18

00:00:56,480 --> 00:00:59,660

ghostly aurora that were ignited in the night sky.

19

00:00:59,660 --> 00:01:02,800

The aurora are normally limited to the higher latitudes,

20

00:01:02,800 --> 00:01:05,860

so these storms were so powerful they created aurora

21

00:01:05,860 --> 00:01:08,890

that could be seen as far south as Florida. So you can imagine

22

00:01:08,890 --> 00:01:12,020

seeing the ghostly figures haunting the night sky.

23

00:01:12,020 --> 00:01:15,130

In all, nearly 17 major

24

00:01:15,130 --> 00:01:18,210

flares erupted on the Sun during those two weeks in

25

00:01:18,210 --> 00:01:21,250

2003, the result of energy building

26
00:01:21,250 --> 00:01:24,260
up in the Sun's magnetic field lines until they became

27
00:01:24,260 --> 00:01:27,390
strained enough to suddenly snap like an overstretched rubber

28
00:01:27,390 --> 00:01:30,460
band. The results were coronal mass

29
00:01:30,460 --> 00:01:33,490
ejections, the largest explosions in the solar system,

30
00:01:33,490 --> 00:01:36,680
able to launch up to 10 billion tons of electrified

31
00:01:36,680 --> 00:01:39,820
gas into space, and cause some of the ghoulish

32
00:01:39,820 --> 00:01:43,130
effects we felt here on Earth.

33
00:01:43,130 --> 00:01:47,250
These storms were also eerie because they came at such a surprising time.

34
00:01:47,250 --> 00:01:51,320
Gilbert: These storms were spooky because of the timing of which they occurred.

35
00:01:51,320 --> 00:01:55,400
That is to say that it did not occur in a stage where most of the activity occurs.

36
00:01:55,400 --> 00:01:59,470
In fact it occurred about 3 and a half years after solar maximum occurred, so it was

37
00:01:59,470 --> 00:02:03,560
spooky in that respect. And it was also spooky in the intensity

38
00:02:03,560 --> 00:02:07,660

of the storms. These were some of the largest storms ever observed.

39

00:02:07,660 --> 00:02:12,120

So can we expect to see any ghostly-looking auroras in this night sky

40

00:02:12,120 --> 00:02:16,270

this Halloween? Gilbert: I don't think we're going to see a repeat this Halloween

41

00:02:16,270 --> 00:02:20,400

on the 5 year anniversary because we're at a time when there are very little active regions

42

00:02:20,400 --> 00:02:24,540

on the sun. However, we're going to be ascending to greater period

43

00:02:24,540 --> 00:02:28,720

of solar activity. We may see some large storms in the next

44

00:02:28,720 --> 00:02:32,920

few years. Still think the Sun isn't so scary?

45

00:02:32,920 --> 00:02:36,930

Hopefully this spooky tale will make you think again.