1
00:00:00,000 --> 00:00:04,000
tone

2
00:00:04,020 --> 00:00:08,000
Hi, folks, I'm Joe Gurman, the STEREO project scientist

3
00:00:08,020 --> 00:00:12,030
at NASA's Goddard Space Flight in Greenbelt, MD.

4
00:00:12,050 --> 00:00:16,040
STEREO, or the Solar Terrestrial Relations Observatory,

5
00:00:16,060 --> 00:00:20,050
is a NASA mission consisting of 2 spacecraft, orbiting the sun in orbits just

6
00:00:20,070 --> 00:00:24,090
inside and outside the Earth, with the objective of learning more

7
00:00:24,110 --> 00:00:28,130
about solar activity and how it propagates through the heliosphere.

8
00:00:28,150 --> 00:00:32,130
Today, we are talking about what is going with the STEREO mission.

9
00:00:32,150 --> 00:00:36,160
over the next year and a half or so, that includes both a period of superior

10
00:00:36,180 --> 00:00:40,170
conjunction, when the spacecraft on the other side of the sun from the Earth,

11
00:00:40,190 --> 00:00:44,180
and also a longer period on the other side of that, when the Earth

12
00:00:44,200 --> 00:00:48,200
the high gain antennae will have to off-pointed for once

13
00:00:48,220 --> 00:00:52,220

opting toward the Earth because of a thermal problem.

14
00:00:52,240 --> 00:00:56,240
During those weeks of superior conjunction for each spacecraft, the noise level

15
00:00:56,260 --> 00:01:00,260
of getting their signals back will be too high, simply because

16
00:01:00,280 --> 00:01:04,270
the antennae here on Earth will be looking at the sun as well as the spacecraft.

17
00:01:04,290 --> 00:01:08,300
During that period, we won't be able to communicate with the spacecraft,

18
00:01:08,320 --> 00:01:12,320
and after about 3 days, there's a timer on the spacecraft that will go off

19
00:01:12,340 --> 00:01:16,340
and put it in safe mode. It will also turn off the power

20
00:01:16,360 --> 00:01:20,350
to the instruments. And that's a period of about 15 weeks on the ahead spacecraft

21
00:01:20,370 --> 00:01:24,360
and 9 weeks on the behind spacecraft. Fortunately,

22
00:01:24,380 --> 00:01:28,370
those periods don't overlap. In August 2014,

23
00:01:28,390 --> 00:01:32,390
we will reach a situation where the high gain antennae on the STEREO spacecraft

24
00:01:32,410 --> 00:01:36,410
will be pointing back toward Earth, but seeing too much of the sun.

25
00:01:36,430 --> 00:01:40,420
That means that the feed of the focus of that antennae will be getting too

26
00:01:40,440 --> 00:01:44,440
hot, and we will have to start off-pointing the antennae, and using the weaker

27
00:01:44,460 --> 00:01:48,460
so-called side lobes to communicate with the Earth. That means we can't

28
00:01:48,480 --> 00:01:52,460
get back as much data in the given amount of time as we could before.

29
00:01:52,480 --> 00:01:56,480
We are going to be carefully cherry-picking the which data we send back

30
00:01:56,500 --> 00:02:00,500
during that period. That's a period of about 16 months on the ahead spacecraft

31
00:02:00,520 --> 00:02:04,530
and 14 months on the behind spacecraft, and it will take us

32
00:02:04,550 --> 00:02:08,560
to approximately the beginning of 2016 when we can resume

33
00:02:08,580 --> 00:02:12,600
normal operations on the main lobe of the antennae. During those periods of

34
00:02:12,620 --> 00:02:16,610
time, we will be down to about 7.4 kilobits a second

35
00:02:16,630 --> 00:02:20,620
and 1.7 kilobits a second science telemetry.

36
00:02:20,640 --> 00:02:24,640
It's worth noting that even the smaller of the 2 numbers is a

37
00:02:24,660 --> 00:02:28,680
factor of 10 greater than the rate we currently get back from Voyager 2,

38
00:02:28,700 --> 00:02:32,690

which is at the outer limits of the solar system. Those data are certainly

39
00:02:32,710 --> 00:02:36,720
worth taking, and we believe the data from STEREO are worth taking too

40
00:02:36,740 --> 00:02:40,740
as STEREO gives us the only view of what's going at the far side of the sun

41
00:02:40,760 --> 00:02:44,750
and in the heliosphere on that side as well.