
2017 ECLIPSE

1
00:00:00,396 --> 00:00:02,996
>> What a great morning so
far over the Pacific Ocean.

2
00:00:03,446 --> 00:00:06,786
We're, we got to see the
first bites out of the sun

3
00:00:06,786 --> 00:00:09,536
from the moon, just an
incredible view so far.

4
00:00:09,866 --> 00:00:11,846
I really want to thank all the
teams that are out there all

5
00:00:11,846 --> 00:00:14,336
over the country helping
us to get the science,

6
00:00:14,336 --> 00:00:15,696
the most science we
can get from here.

7
00:00:16,176 --> 00:00:17,816
Really going to be
an inspirational day,

8
00:00:17,816 --> 00:00:19,946
and hopefully inspire the
next generation of scientists,

9
00:00:19,946 --> 00:00:22,616
engineers, like me, even,
in the current generation.

10
00:00:22,666 --> 00:00:24,176
Pretty inspirational,
from that standpoint.

11
00:00:24,506 --> 00:00:26,786
Volunteers everywhere, so we're
excited about what's going

12
00:00:26,786 --> 00:00:29,216
on and, you know,
I've got to turn it

13
00:00:29,216 --> 00:00:30,286
over to my buddy, Thomas, here.

14
00:00:30,286 --> 00:00:33,266
He, this is his field
of study, so Thomas,

15
00:00:33,266 --> 00:00:34,076
what do you think, so far?

16
00:00:34,436 --> 00:00:35,266
>> Oh, it's amazing.

17
00:00:35,266 --> 00:00:37,246
We're already seeing
it happening, right?

18
00:00:37,826 --> 00:00:39,586
Why do you think this
is important to NASA

19
00:00:39,586 --> 00:00:40,816
and the United States?

20
00:00:41,176 --> 00:00:44,096
>> Well, for us, it's a great
opportunity, the totality

21
00:00:44,096 --> 00:00:45,296
across the continent,
and we're going

22
00:00:45,296 --> 00:00:46,476
to learn as much as we can.

23
00:00:47,016 --> 00:00:49,666
We study heliophysics
and astrophysics in NASA,

24
00:00:49,666 --> 00:00:52,436
and this is a great opportunity
for us to learn even more,

25
00:00:52,796 --> 00:00:55,806
and have every instrument we
have out there available to us

26
00:00:56,246 --> 00:00:58,196
to try to understand
what we're going to see

27
00:00:58,196 --> 00:00:59,806
for the first time in 99 years.

28
00:00:59,806 --> 00:01:03,516
So, just very, very exciting
to see what we can do here,

29
00:01:03,516 --> 00:01:05,066
and the observations
that we're going to get.

30
00:01:05,356 --> 00:01:06,816
Can't wait to see
the science come in,

31
00:01:06,906 --> 00:01:08,906
and all the different science
we're going to get from here so,

32

00:01:08,906 --> 00:01:10,646
you know, everybody's
going to learn something,

33
00:01:10,936 --> 00:01:12,766
so you tell me what you think
you're going to learn, Thomas,

34
00:01:12,766 --> 00:01:14,856
having been studying this
for your whole career.

35
00:01:15,356 --> 00:01:17,396
>> Well look, my field
of study is the sun,

36
00:01:17,616 --> 00:01:21,916
and what's really unique about
this time is the opportunity

37
00:01:21,956 --> 00:01:24,866
to see the solar
corona, the atmosphere

38
00:01:24,866 --> 00:01:27,046
of the sun during
the entire time

39
00:01:27,046 --> 00:01:30,026
of the eclipse stitched together
for one and a half hours.

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00:01:30,386 --> 00:01:31,816
And, the sun, of
course, is important,

41
00:01:31,816 --> 00:01:33,006
because it's the
most important star.

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00:01:33,006 --> 00:01:36,046
Everything we learn about other
stars, we learn here, first,

43
00:01:36,336 --> 00:01:39,396
but it's also a source of
space weather and radiation.

44
00:01:39,396 --> 00:01:40,866
And actually, on
board this aircraft,

45
00:01:40,866 --> 00:01:44,256
we have two instruments,
one from Los Alamos and one

46
00:01:44,256 --> 00:01:45,976
from Space Environment
Technologies

47
00:01:45,976 --> 00:01:47,646
that make those very
measurements

48
00:01:47,916 --> 00:01:50,136
of how this radiation
affects us.

49
00:01:51,186 --> 00:01:53,286
>> Yeah, I think it's important,
the more we know about the sun,

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00:01:53,286 --> 00:01:54,736
more we know space
weather, we'll also,

51
00:01:54,856 --> 00:01:57,196
it'll help us protect our
own spacecraft in the future.

52

00:01:57,196 --> 00:01:59,596
It'll also help us
protect our astronauts

53
00:01:59,636 --> 00:02:01,896
as we send crew further,
and our home planet,

54
00:02:01,896 --> 00:02:02,856
in terms of what's
going on here.

55
00:02:02,856 --> 00:02:04,686
So, why don't you tell me
what you think we're going

56
00:02:04,686 --> 00:02:06,246
to see today, and what
we're going to learn today

57
00:02:06,246 --> 00:02:08,506
through this just
incredible event.

58
00:02:09,326 --> 00:02:12,506
>> So, one of the most
amazing parts of this is really

59
00:02:12,856 --> 00:02:15,376
to see the star as
a magnetic star,

60
00:02:15,616 --> 00:02:18,806
and what I'm showing here
is actually a prediction

61
00:02:18,946 --> 00:02:21,766
of the space environment
of the sun today

62

00:02:21,766 --> 00:02:25,406
by predictive scientists and
[inaudible] Applied Physics Lab.

63
00:02:25,746 --> 00:02:29,106
And, it basically shows that
these magnetic fields are there,

64
00:02:29,356 --> 00:02:32,356
and what's really going to
be great today is we're able

65
00:02:32,386 --> 00:02:36,026
to test these models using
observations from the ground

66
00:02:36,026 --> 00:02:38,156
that we normally don't have,

67
00:02:38,156 --> 00:02:40,636
and so this is really
exciting for us.

68
00:02:41,356 --> 00:02:41,736
>> Very good.

69
00:02:41,736 --> 00:02:45,006
We've got over 11 spacecraft,
and over 50 balloons going up.

70
00:02:45,056 --> 00:02:49,136
We've got airborne science, like
we're even doing here on the G3.

71
00:02:49,136 --> 00:02:51,286
Can you explain what
we expect to get

72
00:02:51,286 --> 00:02:52,636
out of the spectrograph

we're going

73
00:02:52,636 --> 00:02:54,316
to have here on the
plane, today?

74
00:02:54,886 --> 00:02:56,926
>> So, a spectrograph is
basically taking the light

75
00:02:56,926 --> 00:02:59,886
of the sun, which is white,
and spreads it into its colors,

76
00:03:00,126 --> 00:03:03,236
and what we're going to see
is during the time of now

77
00:03:03,606 --> 00:03:06,616
and partial totality,
we basically see,

78
00:03:06,696 --> 00:03:10,586
during a partial eclipse, we see
the radiation from the surface

79
00:03:10,586 --> 00:03:12,936
of the sun, the photosphere,
and all colors are there.

80
00:03:12,936 --> 00:03:14,966
Well, when we're in total
eclipse, what we're going

81
00:03:14,966 --> 00:03:17,056
to see is the radiation
from the atmosphere

82
00:03:17,056 --> 00:03:19,246
that we normally really

don't see that up close,

83
00:03:19,576 --> 00:03:22,916
and that radiation actually
has two predominant lines.

84
00:03:22,916 --> 00:03:26,866
One is really hot iron, and
the other one is, you know,

85
00:03:26,956 --> 00:03:28,806
it's hot, because it's
a million degrees,

86
00:03:28,806 --> 00:03:29,786
because of that magnetic field.

87
00:03:29,786 --> 00:03:31,516
The other one is
helium, called helium

88
00:03:31,516 --> 00:03:33,716
because of Helios,
the sun in Greek.

89
00:03:33,806 --> 00:03:36,056
So, it was actually
discovered during eclipse just

90
00:03:36,056 --> 00:03:36,906
like it today.

91
00:03:37,886 --> 00:03:38,436
>> Very cool.

92
00:03:38,436 --> 00:03:41,596
So, here we are, about 30
minutes away from totality,

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00:03:41,786 --> 00:03:45,206
but you can explain
to me what you think,

94
00:03:45,206 --> 00:03:46,486
from a spectrograph perspective.

95
00:03:46,486 --> 00:03:47,666
You're going to look
out the window,

96
00:03:47,666 --> 00:03:48,516
what are you going to see there?

97
00:03:49,416 --> 00:03:51,896
>> Well, so for me, the
amazing part, really,

98
00:03:51,896 --> 00:03:56,616
is that we're able to,
of course, see our star

99
00:03:56,766 --> 00:03:59,676
in its beauty, and I'm already
kind of emotionally touched,

100
00:03:59,676 --> 00:04:03,836
even now, but also, we're
going to see how that eclipse,

101
00:04:03,836 --> 00:04:06,646
that the lack of
radiation, this perfect cloud

102
00:04:06,896 --> 00:04:09,826
that the moon makes affects
the earth, and its turbulence,

103
00:04:09,826 --> 00:04:11,136
and I'm really going

to see what,

104
00:04:11,136 --> 00:04:12,416
are we going to feel it up here?

105
00:04:12,846 --> 00:04:12,996
>> Alright.

106
00:04:13,126 --> 00:04:13,536
Very cool.

107
00:04:13,946 --> 00:04:14,786
Alright. Thanks, Thomas,

108
00:04:14,786 --> 00:04:16,496
and thanks for sharing,
everybody out there.

109
00:04:16,526 --> 00:04:18,466
I tell you, about
30 minutes away.

110
00:04:18,706 --> 00:04:21,226
We're going to measure
as much as we can here,

111
00:04:21,306 --> 00:04:23,306
and I'm about to fight
this man for a window seat,

112
00:04:23,366 --> 00:04:24,936
so when you get on an
airplane and you look

113
00:04:24,936 --> 00:04:26,826
for a window seat,
get your glasses on.

114
00:04:26,826 --> 00:04:29,666

We're going to look out here,
and we're going to wrap up here