
NASA

1
00:00:03,669 --> 00:00:02,070
so if the moon looks red to you when you

2
00:00:05,030 --> 00:00:03,679
look outside in the early hours of

3
00:00:07,269 --> 00:00:05,040
tomorrow morning it's not your

4
00:00:09,509 --> 00:00:07,279
imagination we're actually going to get

5
00:00:11,110 --> 00:00:09,519
to experience a total lunar eclipse and

6
00:00:13,270 --> 00:00:11,120
here to tell us more about what to

7
00:00:14,629 --> 00:00:13,280
expect is dr michelle thaller from

8
00:00:16,070 --> 00:00:14,639
nasa's goddard space flight center

9
00:00:17,430 --> 00:00:16,080
thanks for joining us hey great to be

10
00:00:18,950 --> 00:00:17,440
here thank you

11
00:00:19,990 --> 00:00:18,960
so tell us what happens during an

12
00:00:21,990 --> 00:00:20,000
eclipse

13
00:00:23,349 --> 00:00:22,000

yes well when you see the moon shining

14
00:00:25,269 --> 00:00:23,359
in the night sky you're actually seeing

15
00:00:26,630 --> 00:00:25,279
reflected sunlight and tonight

16
00:00:28,390 --> 00:00:26,640
everything is going to be lined up

17
00:00:29,910 --> 00:00:28,400
perfectly so that the moon is going to

18
00:00:31,830 --> 00:00:29,920
pass through the shadow of the earth and

19
00:00:34,310 --> 00:00:31,840
that will block the sunlight so what you

20
00:00:36,310 --> 00:00:34,320
will see is this curved shadow moving

21
00:00:37,910 --> 00:00:36,320
across the full moon and during the

22
00:00:39,750 --> 00:00:37,920
deepest part of the eclipse the moon

23
00:00:41,910 --> 00:00:39,760
will actually look red it's a beautiful

24
00:00:44,389 --> 00:00:41,920
thing now the reason that happens that

25
00:00:45,910 --> 00:00:44,399
the only sunlight reaching the moon is

26
00:00:47,990 --> 00:00:45,920
light that's being scattered through the

27
00:00:50,229 --> 00:00:48,000
atmosphere of the earth and the earth's

28
00:00:51,750 --> 00:00:50,239
atmosphere scatters away blue light but

29
00:00:53,750 --> 00:00:51,760
lets red light through in a much more

30
00:00:56,069 --> 00:00:53,760
direct manner it's actually the reason a

31
00:00:59,830 --> 00:00:56,079
sunrise or a sunset looks red to us that

32
00:01:01,990 --> 00:00:59,840
red light is bouncing off the moon

33
00:01:03,430 --> 00:01:02,000
so what do we need to do to see this

34
00:01:04,549 --> 00:01:03,440
eclipse tomorrow

35
00:01:05,750 --> 00:01:04,559
well you know the wonderful thing about

36
00:01:06,950 --> 00:01:05,760
a lunar eclipse is you don't need

37
00:01:09,270 --> 00:01:06,960
anything special you don't need a

38
00:01:11,350 --> 00:01:09,280

telescope or eclipse glasses just go

39
00:01:12,789 --> 00:01:11,360
outside and find the full moon and if

40
00:01:15,030 --> 00:01:12,799
you're on the east coast it'll begin

41
00:01:17,030 --> 00:01:15,040
around 2 a.m you'll see the shadow pass

42
00:01:19,830 --> 00:01:17,040
across the moon and then the deepest

43
00:01:21,350 --> 00:01:19,840
reddest part will be about 3 45 a.m so

44
00:01:23,830 --> 00:01:21,360
i'm going to set my alarm clock for

45
00:01:26,950 --> 00:01:23,840
about 3 a.m get a cup of coffee and sit

46
00:01:29,270 --> 00:01:26,960
back for a beautiful free celestial show

47
00:01:31,429 --> 00:01:29,280
now tell us will this eclipse affect any

48
00:01:33,749 --> 00:01:31,439
nasa spacecraft well yes actually it

49
00:01:35,510 --> 00:01:33,759
does our spacecraft around the moon use

50
00:01:37,670 --> 00:01:35,520
solar batteries they need solar panels

51
00:01:39,190 --> 00:01:37,680
and sunlight so the eclipse will block

52
00:01:41,190 --> 00:01:39,200
the sunlight meaning the batteries will

53
00:01:43,030 --> 00:01:41,200
run down and of course we at nasa are

54
00:01:44,870 --> 00:01:43,040
aware of this we prepared for this we're

55
00:01:46,870 --> 00:01:44,880
going to be monitoring the health of lro

56
00:01:48,469 --> 00:01:46,880
the lunar reconnaissance orbiter which

57
00:01:50,389 --> 00:01:48,479
is currently orbiting the moon taking

58
00:01:52,389 --> 00:01:50,399
wonderful pictures and exactly how the

59
00:01:54,069 --> 00:01:52,399
batteries respond to this darkness will

60
00:01:55,670 --> 00:01:54,079
even help us design better batteries in

61
00:01:56,789 --> 00:01:55,680
the future

62
00:01:58,149 --> 00:01:56,799
tell us what are some of the things

63
00:02:00,630 --> 00:01:58,159

we're learning about the moon from the

64
00:02:02,310 --> 00:02:00,640
spacecrafts that are orbiting it

65
00:02:03,990 --> 00:02:02,320
well the moon seems so familiar to us

66
00:02:06,630 --> 00:02:04,000
but it turns out there's a lot to learn

67
00:02:09,109 --> 00:02:06,640
about its past its evolution over time

68
00:02:11,029 --> 00:02:09,119
lro is returning gorgeous images of the

69
00:02:12,869 --> 00:02:11,039
entire surface of the moon and to me

70
00:02:15,190 --> 00:02:12,879
they almost look like art you can see

71
00:02:16,470 --> 00:02:15,200
all of the craters and the mountains the

72
00:02:18,309 --> 00:02:16,480
scale of the moon is something that

73
00:02:20,229 --> 00:02:18,319
really impresses me this is a crater

74
00:02:22,229 --> 00:02:20,239
called tycho crater and in the middle of

75
00:02:23,830 --> 00:02:22,239
the crater there's a mountain and if you

76
00:02:25,589 --> 00:02:23,840
look at this close-up of that mountain

77
00:02:27,110 --> 00:02:25,599
there's sort of a lit up by the sun

78
00:02:29,430 --> 00:02:27,120
there's a boulder right at the top of

79
00:02:30,869 --> 00:02:29,440
that mountain but that boulder it looks

80
00:02:32,790 --> 00:02:30,879
small it's actually the size of a

81
00:02:34,630 --> 00:02:32,800
football stadium so there are these

82
00:02:36,390 --> 00:02:34,640
gorgeous tall mountains dramatic

83
00:02:38,470 --> 00:02:36,400
landscapes we're also learning that

84
00:02:40,150 --> 00:02:38,480
there's more frozen water ice underneath

85
00:02:41,509 --> 00:02:40,160
the soil of the moon than we expected

86
00:02:42,869 --> 00:02:41,519
and we've recorded the coldest

87
00:02:45,430 --> 00:02:42,879
temperature ever seen in the solar

88
00:02:46,949 --> 00:02:45,440

system at the south pole of the moon

89
00:02:49,110 --> 00:02:46,959
and where can we learn more about the

90
00:02:50,710 --> 00:02:49,120
moon and also this eclipse

91
00:02:52,150 --> 00:02:50,720
we'll definitely go to our website

92
00:02:54,630 --> 00:02:52,160
nasa.gov

93
00:02:56,309 --> 00:02:54,640
lro for lunar reconnaissance orbiter and

94
00:02:58,229 --> 00:02:56,319
there you can see all of these beautiful

95
00:03:00,149 --> 00:02:58,239
images you can see learn more about when

96
00:03:01,270 --> 00:03:00,159
to view the eclipse and find out more

97
00:03:02,869 --> 00:03:01,280
about all the different things we're

98
00:03:04,869 --> 00:03:02,879
learning about the moon