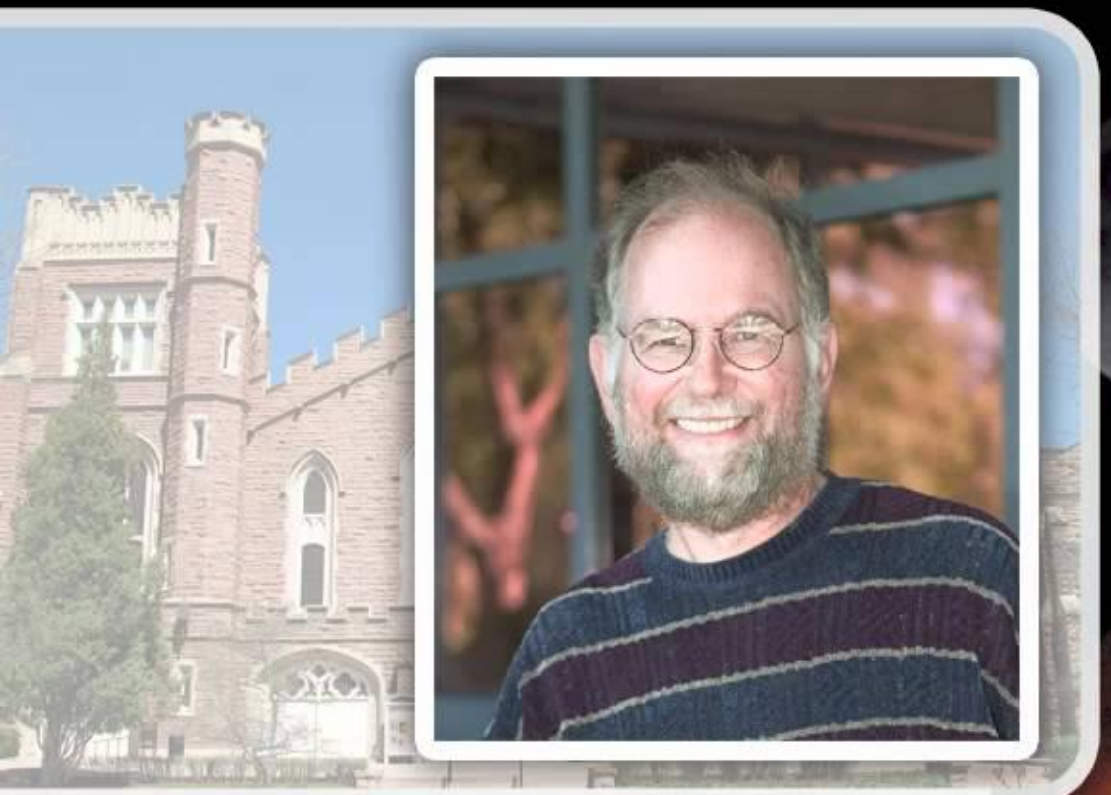

Richard Keen

1
00:00:10,230 --> 00:00:07,749
a super-sized lunar eclipse presented by

2
00:00:12,470 --> 00:00:10,240
science at nasa

3
00:00:13,190 --> 00:00:12,480
waking up before sunrise can be tough to

4
00:00:15,509 --> 00:00:13,200
do

5
00:00:17,830 --> 00:00:15,519
especially on a weekend

6
00:00:19,990 --> 00:00:17,840
on saturday december 10th many of us

7
00:00:21,750 --> 00:00:20,000
will be glad that we did

8
00:00:23,670 --> 00:00:21,760
a total eclipse of the moon will be

9
00:00:26,070 --> 00:00:23,680
visible in the early morning skies of

10
00:00:28,630 --> 00:00:26,080
western northern america

11
00:00:30,470 --> 00:00:28,640
the action begins around 4 45 a.m

12
00:00:32,069 --> 00:00:30,480
pacific standard time

13
00:00:33,910 --> 00:00:32,079

when the red shadow of earth falls

14
00:00:36,950 --> 00:00:33,920
across the lunar disk

15
00:00:39,430 --> 00:00:36,960
by 605 am pacific time the moon will be

16
00:00:42,069 --> 00:00:39,440
fully engulfed in red light

17
00:00:43,750 --> 00:00:42,079
this event the last total lunar eclipse

18
00:00:45,510 --> 00:00:43,760
until 2014

19
00:00:46,790 --> 00:00:45,520
is visible from the pacific side of

20
00:00:49,110 --> 00:00:46,800
north america

21
00:00:51,029 --> 00:00:49,120
across the entire pacific ocean to asia

22
00:00:53,270 --> 00:00:51,039
and eastern europe

23
00:00:55,670 --> 00:00:53,280
for people in the western united states

24
00:00:58,310 --> 00:00:55,680
the eclipse is deepest just before local

25
00:01:00,389 --> 00:00:58,320
dawn face west to see the red moon

26
00:01:02,229 --> 00:01:00,399
sinking into the horizon as the sun

27
00:01:05,030 --> 00:01:02,239
rises behind your back

28
00:01:06,710 --> 00:01:05,040
it's a rare way to begin the day

29
00:01:07,510 --> 00:01:06,720
not only will the moon be beautifully

30
00:01:09,590 --> 00:01:07,520
red

31
00:01:11,190 --> 00:01:09,600
it will also be inflated by the moon

32
00:01:13,109 --> 00:01:11,200
illusion

33
00:01:15,830 --> 00:01:13,119
for reasons not fully understood by

34
00:01:17,990 --> 00:01:15,840
astronomers or psychologists low-hanging

35
00:01:20,390 --> 00:01:18,000
moons look unnaturally large when they

36
00:01:22,230 --> 00:01:20,400
beam through trees buildings and other

37
00:01:25,350 --> 00:01:22,240
foreground objects

38
00:01:27,990 --> 00:01:25,360

in fact a low moon is no wider than any

39
00:01:30,710 --> 00:01:28,000
other moon cameras prove it but the

40
00:01:32,390 --> 00:01:30,720
human brain insists otherwise

41
00:01:34,390 --> 00:01:32,400
to observers in the western united

42
00:01:35,990 --> 00:01:34,400
states the eclipse will appear

43
00:01:37,590 --> 00:01:36,000
supersized

44
00:01:39,429 --> 00:01:37,600
it might seem puzzling that the moon

45
00:01:40,550 --> 00:01:39,439
turns red when it enters the shadow of

46
00:01:43,109 --> 00:01:40,560
the earth

47
00:01:45,510 --> 00:01:43,119
aren't shadows supposed to be dark

48
00:01:47,670 --> 00:01:45,520
in this case the delicate layer of dusty

49
00:01:49,830 --> 00:01:47,680
air surrounding our planet reddens and

50
00:01:52,230 --> 00:01:49,840
redirects the light of the sun filling

51
00:01:53,510 --> 00:01:52,240
the dark behind earth with a sunset red

52
00:01:55,109 --> 00:01:53,520
glow

53
00:01:57,270 --> 00:01:55,119
the exact hue

54
00:01:59,670 --> 00:01:57,280
anything from bright orange to blood red

55
00:02:01,350 --> 00:01:59,680
is possible depends on the unpredictable

56
00:02:02,709 --> 00:02:01,360
state of the atmosphere at the time of

57
00:02:04,950 --> 00:02:02,719
the eclipse

58
00:02:07,429 --> 00:02:04,960
as jack horkheimer of the miami space

59
00:02:09,669 --> 00:02:07,439
transit planetarium love to say

60
00:02:11,589 --> 00:02:09,679
only the shadow knows

61
00:02:13,589 --> 00:02:11,599
atmospheric scientist richard keane of

62
00:02:14,790 --> 00:02:13,599
the university of colorado might know

63
00:02:16,949 --> 00:02:14,800

too

64
00:02:19,030 --> 00:02:16,959
for years he has studied lunar eclipses

65
00:02:20,949 --> 00:02:19,040
as a means of monitoring conditions in

66
00:02:22,630 --> 00:02:20,959
earth's upper atmosphere and he has

67
00:02:23,830 --> 00:02:22,640
become skilled at forecasting these

68
00:02:26,070 --> 00:02:23,840
events

69
00:02:27,910 --> 00:02:26,080
i expect this eclipse to be bright red

70
00:02:29,910 --> 00:02:27,920
with a possible hint of turquoise at the

71
00:02:32,150 --> 00:02:29,920
edge he predicts

72
00:02:34,550 --> 00:02:32,160
earth's stratosphere is the key

73
00:02:36,470 --> 00:02:34,560
during a lunar eclipse most of the light

74
00:02:38,150 --> 00:02:36,480
illuminating the moon passes through the

75
00:02:40,309 --> 00:02:38,160
stratosphere where it is reddened by

76
00:02:42,229 --> 00:02:40,319
scattering he explains

77
00:02:44,630 --> 00:02:42,239
if the stratosphere is loaded with dust

78
00:02:46,790 --> 00:02:44,640
from volcanic eruptions the eclipse will

79
00:02:49,750 --> 00:02:46,800
be dark a clear stratosphere on the

80
00:02:51,910 --> 00:02:49,760
other hand produces a brighter eclipse

81
00:02:53,830 --> 00:02:51,920
at the moment the stratosphere is mostly

82
00:02:55,350 --> 00:02:53,840
clear with little input from recent

83
00:02:56,790 --> 00:02:55,360
volcanoes

84
00:02:59,110 --> 00:02:56,800
that explains the brightness of the

85
00:03:01,030 --> 00:02:59,120
eclipse but what about the hint of

86
00:03:02,309 --> 00:03:01,040
turquoise

87
00:03:04,869 --> 00:03:02,319
light passing through the upper

88
00:03:06,790 --> 00:03:04,879

atmosphere penetrates the ozone layer

89
00:03:09,509 --> 00:03:06,800
which absorbs red light and actually

90
00:03:11,830 --> 00:03:09,519
makes the passing light ray bluer

91
00:03:14,470 --> 00:03:11,840
this can be seen as a soft blue fringe

92
00:03:15,830 --> 00:03:14,480
around the red core of earth's shadow

93
00:03:17,589 --> 00:03:15,840
look for the turquoise near the

94
00:03:19,509 --> 00:03:17,599
beginning of the eclipse when the edge

95
00:03:21,910 --> 00:03:19,519
of earth's shadow is sweeping across the

96
00:03:25,190 --> 00:03:21,920
lunar terrain he advises

97
00:03:26,710 --> 00:03:25,200
a bright red soft turquoise super-sized

98
00:03:29,670 --> 00:03:26,720
lunar eclipse

99
00:03:32,869 --> 00:03:29,680
it's coming on saturday december 10th

100
00:03:34,630 --> 00:03:32,879
wake up and enjoy the show for more news

101
00:03:35,750 --> 00:03:34,640
about eye-opening events in the night