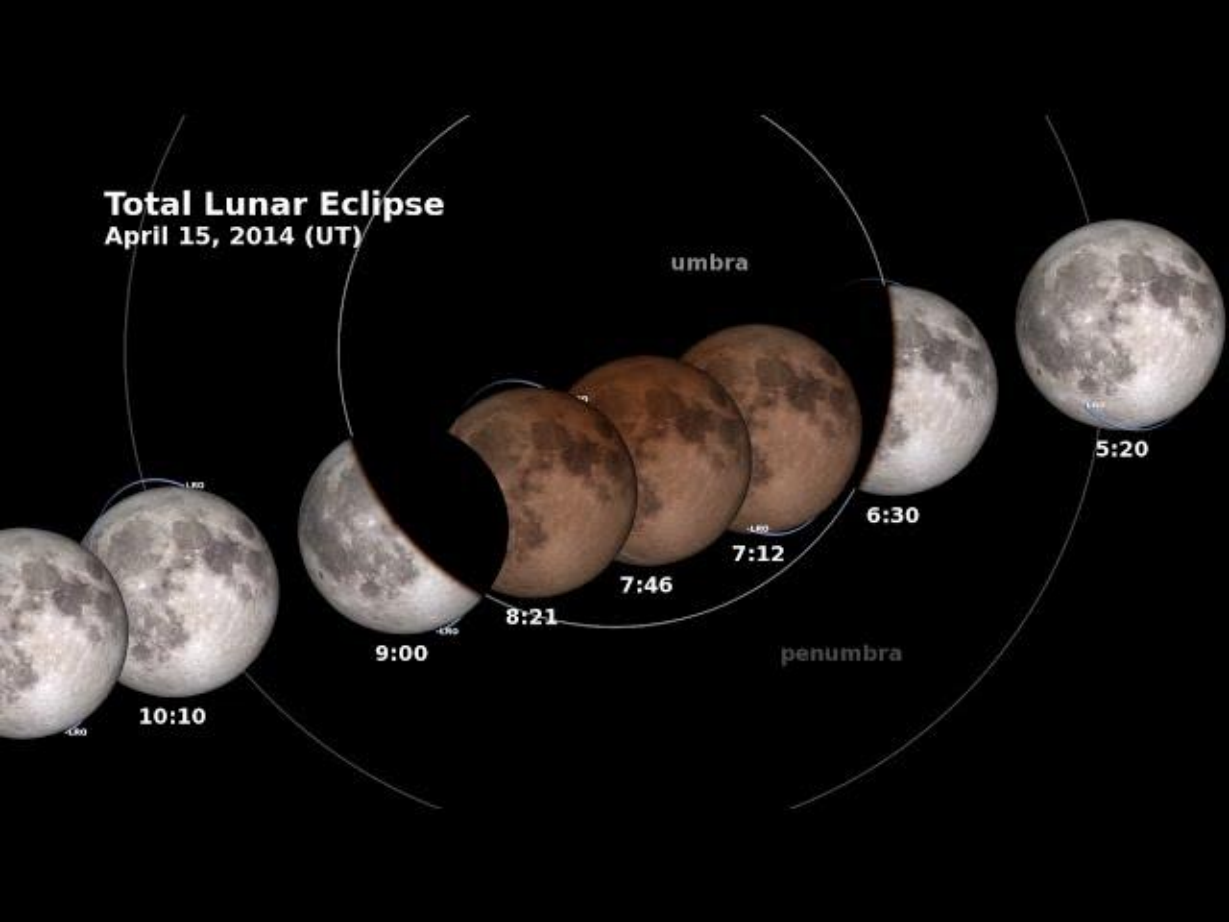
Total Lunar Eclipse
April 15, 2014 (UT)
umbra
penumbra
10:10
9:00
8:21
7:46
7:12
6:30
5:20

1
00:00:00,010 --> 00:00:04,010
(Music)

2
00:00:16,120 --> 00:00:20,130
For those that don't know, LRO is the

3
00:00:20,150 --> 00:00:24,160
Lunar Reconnaissance Orbiter. It's a NASA spacecraft that's been orbiting the moon since

4
00:00:24,180 --> 00:00:28,180
June of 2009. Taking take high resolution pictures of the surface,

5
00:00:28,200 --> 00:00:32,190
measuring the precise topography of the lunar surface, thermo physicall

6
00:00:32,210 --> 00:00:36,220
properties of the surface, the radiation environment, the abundance of hydrogen

7
00:00:36,240 --> 00:00:40,240
on the surface; basically creating a high-resolution 3D archive

8
00:00:40,260 --> 00:00:44,290
the properties of the surface of the moon.

9
00:00:44,310 --> 00:00:48,310
An eclipse

10
00:00:48,330 --> 00:00:52,350
is a unique event that happens few times every year. It's

11
00:00:52,370 --> 00:00:56,450
when the Earth the moon and the sun are in precise alignment. So during a lunar eclipse

12
00:00:56,470 --> 00:01:00,470
Earth passes between the moon and the sun and the Earth's shadow is cast upon the surface

13
00:01:00,490 --> 00:01:04,500

of the moon. So it looks like the moon disappears into darkness for

14
00:01:04,520 --> 00:01:08,540
a brief period of time. They're special because they only happen a few times every year

15
00:01:08,560 --> 00:01:12,570
and you have to be in a very special location on the surface of the earth to be able to see it,

16
00:01:12,590 --> 00:01:16,580
so not everybody gets to see an eclipse when they happen.

17
00:01:16,600 --> 00:01:20,590
(music)

18
00:01:20,610 --> 00:01:24,630
So on April 15, there's going to be a lunar eclipse, it's going to happen very

19
00:01:24,650 --> 00:01:28,670
early in the morning and it's going to be a total lunar eclipse, so the moon will pass

20
00:01:28,690 --> 00:01:32,680
completely into the shadow of the earth. And as it does that

21
00:01:32,700 --> 00:01:36,710
the moon will appear a certain hue of red which is the projection

22
00:01:36,730 --> 00:01:40,740
of all of the sunsets on the earth projected onto the surface of the moon. It's going to be

23
00:01:40,760 --> 00:01:44,760
quite spectacular and very beautiful. What we see in this animation is a re-creation of

24
00:01:44,780 --> 00:01:48,780
LRO orbiting the moon during the upcoming eclipse. When the moon passes

25
00:01:48,800 --> 00:01:52,820
into the Earth's umbra, or the Earth's shadow that's when it is completely

26
00:01:52,840 --> 00:01:56,830
blocked from the sun, and we see the effective Earth's sunsets being projected onto

27
00:01:56,850 --> 00:02:00,850
lunar surface that's why it turns a hue of red. When the moon comes out of the

28
00:02:00,870 --> 00:02:04,890
Earth's umbra it begins to look, as we've always seen it, this beautiful,

29
00:02:04,910 --> 00:02:08,900
bright, grey orb in the sky.

30
00:02:08,920 --> 00:02:12,930
(music)

31
00:02:12,950 --> 00:02:16,940
So the eclipse is going to effect LRO in one very important way. LRO's

32
00:02:16,960 --> 00:02:20,960
batteries are charged by solar energy, and so during the eclipse the moon and the

33
00:02:20,980 --> 00:02:24,990
LRO spacecraft are going to be in darkness for a very long period of time, so the battery won't get

34
00:02:25,010 --> 00:02:29,020
recharged. So we're going to be turning off all of the instruments on LRO so we don't

35
00:02:29,040 --> 00:02:33,040
drain the battery. We'll be monitoring real-time. how the battery

36
00:02:33,060 --> 00:02:37,060
is doing during the eclipse but we won't be making any scientific observations during

37
00:02:37,080 --> 00:02:41,100
this eclipse. When the spacecraft comes out of the eclipse the battery will slowly

38
00:02:41,120 --> 00:02:45,120

charge back up again and then we can turn the instruments back on.

39
00:02:45,140 --> 00:02:49,150
(music)

40
00:02:49,170 --> 00:02:53,180
The best way to prepare for this eclipse is to first find out when it's going

41
00:02:53,200 --> 00:02:57,220
to be happening in your local area, and then find an area that is

42
00:02:57,240 --> 00:03:01,250
free of obstructions; tall trees, buildings, in an open field that has

43
00:03:01,270 --> 00:03:05,260
a clear view of the sky. Bring a chair, something warm to keep you

44
00:03:05,280 --> 00:03:09,270
comfy during the night hours and prepare yourself for

45
00:03:09,290 --> 00:03:13,300
a beautiful show.