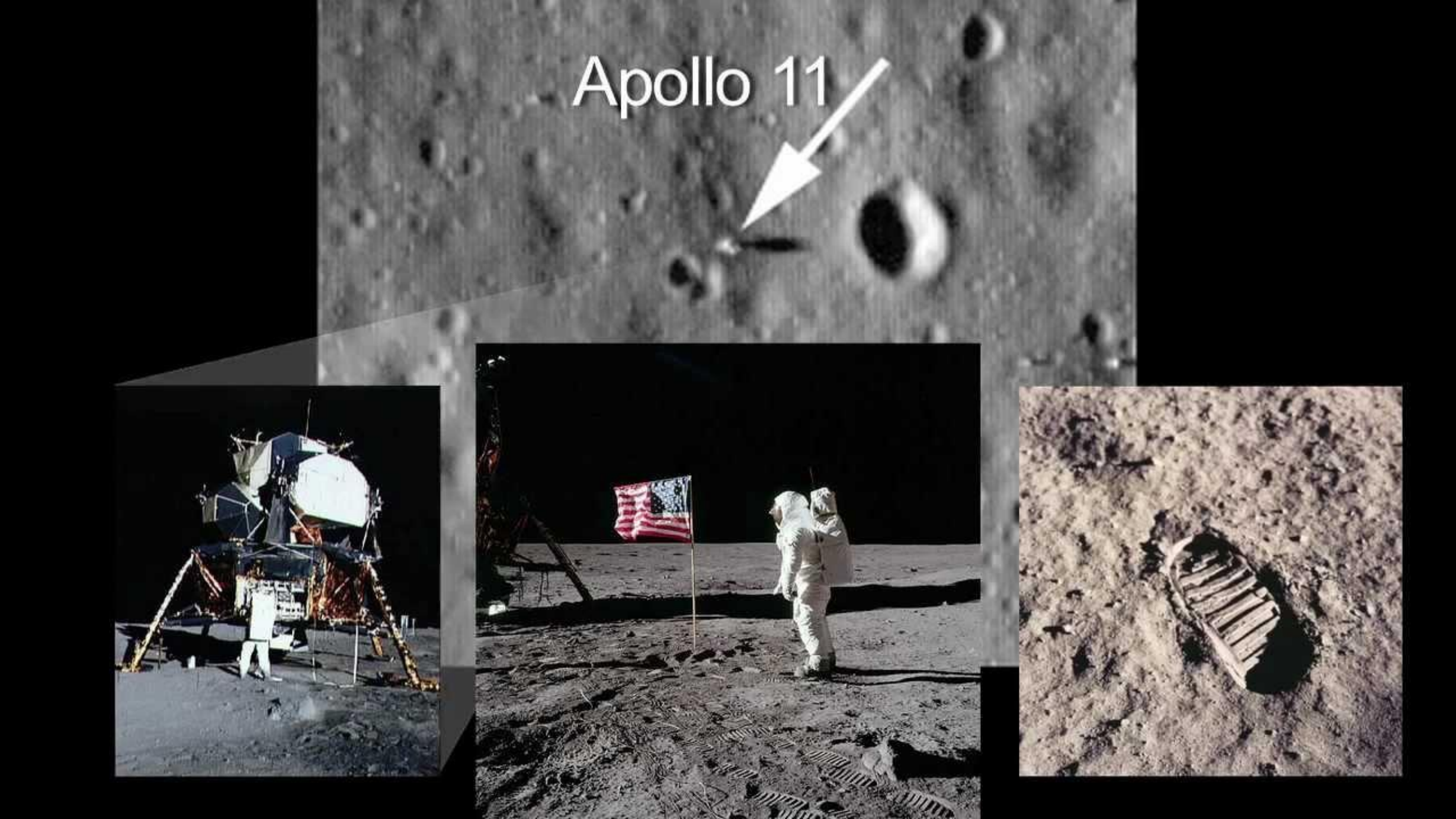
Apollo 11

1
00:00:07,519 --> 00:00:04,820
what's up 4 sep tember enjoy a tour of

2
00:00:09,669 --> 00:00:07,529
lunar landing sites as NASA's Grail

3
00:00:12,200 --> 00:00:09,679
mission launches to the moon this month

4
00:00:14,539 --> 00:00:12,210
hello and welcome I'm Jane Houston Jones

5
00:00:17,840 --> 00:00:14,549
at NASA's Jet Propulsion Laboratory in

6
00:00:19,910 --> 00:00:17,850
Pasadena California the moon is easily

7
00:00:22,550 --> 00:00:19,920
visible in everyone's night sky in the

8
00:00:24,349 --> 00:00:22,560
first part of September look for the

9
00:00:27,200 --> 00:00:24,359
areas where all six of the Apollo

10
00:00:29,689 --> 00:00:27,210
missions landed on the moon you won't

11
00:00:31,730 --> 00:00:29,699
see the Landers flag or footprints but

12
00:00:33,860 --> 00:00:31,740
it's fun and easy to see these historic

13
00:00:36,920 --> 00:00:33,870

areas with your own eyes or with

14
00:00:40,700 --> 00:00:36,930
binoculars on the 6th look for three

15
00:00:42,680 --> 00:00:40,710
dark smooth Marya or sees the middle one

16
00:00:45,979 --> 00:00:42,690
is the Sea of Tranquility or Mar a

17
00:00:47,990 --> 00:00:45,989
tranquil atortoise Apollo 11 landed very

18
00:00:52,790 --> 00:00:48,000
near a bright crater on the edge of the

19
00:00:55,310 --> 00:00:52,800
Samar a in 1969 the Apollo 15 16 and 17

20
00:00:57,260 --> 00:00:55,320
landing areas formed the points of a

21
00:01:00,380 --> 00:00:57,270
triangle above and below the Apollo 11

22
00:01:03,139 --> 00:01:00,390
site on the 7th you'll be able to see

23
00:01:05,179 --> 00:01:03,149
the bright crater Copernicus just below

24
00:01:11,060 --> 00:01:05,189
it are the landing sites of Apollo 12

25
00:01:13,700 --> 00:01:11,070
and 14 NASA's twin lunar probes Grail a

26
00:01:17,120 --> 00:01:13,710
and Grail be will launch on September

27
00:01:20,250 --> 00:01:17,130
eight Grail stands for Gravity Recovery

28
00:01:22,170 --> 00:01:20,260
and interior laboratory

29
00:01:23,820 --> 00:01:22,180
the two Grail spacecraft will be

30
00:01:25,950 --> 00:01:23,830
launched together and then we'll fly

31
00:01:27,750 --> 00:01:25,960
similar but separate trajectories to the

32
00:01:31,860 --> 00:01:27,760
moon after they separate from the launch

33
00:01:34,080 --> 00:01:31,870
vehicle it took astronauts about three

34
00:01:35,760 --> 00:01:34,090
days to get to the moon but the two

35
00:01:37,470 --> 00:01:35,770
Grail spacecraft will take more than

36
00:01:42,410 --> 00:01:37,480
three months and won't arrive until

37
00:01:45,390 --> 00:01:42,420
December 31st 2011 and january 1st 2012

38
00:01:47,730 --> 00:01:45,400

this longer flight path allows Grail to

39
00:01:49,470 --> 00:01:47,740
arrive with a lower velocity and reduces

40
00:01:51,300 --> 00:01:49,480
the amount of propellant needed to get

41
00:01:55,350 --> 00:01:51,310
the spacecraft into orbit around the

42
00:01:57,210 --> 00:01:55,360
moon the two spacecraft will orbit the

43
00:01:59,550 --> 00:01:57,220
moon in formation to determine the

44
00:02:02,640 --> 00:01:59,560
structure of the lunar interior from the

45
00:02:04,350 --> 00:02:02,650
moon's crust to its core each Grail

46
00:02:06,150 --> 00:02:04,360
spacecraft is about the size of a

47
00:02:08,070 --> 00:02:06,160
washing machine and they're not

48
00:02:10,260 --> 00:02:08,080
identical twins they have minor

49
00:02:12,270 --> 00:02:10,270
differences resulting from the need for

50
00:02:15,270 --> 00:02:12,280
Grail aid to follow grille be as they

51
00:02:17,640 --> 00:02:15,280
circle the moon this Gravity Recovery

52
00:02:19,920 --> 00:02:17,650
and interior laboratory mission will

53
00:02:23,880 --> 00:02:19,930
create the most accurate gravitational

54
00:02:25,440 --> 00:02:23,890
map of the moon to date accurate

55
00:02:27,870 --> 00:02:25,450
knowledge of how the moon's gravity

56
00:02:30,810 --> 00:02:27,880
varies from place to place will also be

57
00:02:33,369 --> 00:02:30,820
an invaluable navigational aid to future

58
00:02:35,199 --> 00:02:33,379
lunar spacecraft

59
00:02:37,550 --> 00:02:35,209
next month you can celebrate

60
00:02:40,250 --> 00:02:37,560
international observe the moon night on

61
00:02:42,259 --> 00:02:40,260
october eighth the moon will then appear

62
00:02:44,600 --> 00:02:42,269
exactly as it does on the 8th of this

63
00:02:48,320 --> 00:02:44,610

month you can read about gravity in the

64
00:02:52,339 --> 00:02:48,330
solar system at solar system NASA gov /

65
00:02:53,930 --> 00:02:52,349
y SS for year of the solar system you

66
00:02:57,440 --> 00:02:53,940
can learn about the Grail mission at

67
00:03:01,369 --> 00:02:57,450
Grail nasa gov and you can learn about

68
00:03:03,800 --> 00:03:01,379
all of NASA's missions at WWDC govt