1
00:00:09,530 --> 00:00:06,800
what's up for me two huge solar system

2
00:00:11,749 --> 00:00:09,540
highlights mercury transits the Sun and

3
00:00:14,570 --> 00:00:11,759
Mars is closer to Earth than it has been

4
00:00:16,250 --> 00:00:14,580
in 11 years hello and welcome I'm Jane

5
00:00:20,120 --> 00:00:16,260
Houston Jones from NASA's Jet Propulsion

6
00:00:22,429 --> 00:00:20,130
Laboratory in Pasadena California on May

7
00:00:24,859 --> 00:00:22,439
9th wake up early on the west coast or

8
00:00:26,929 --> 00:00:24,869
step out for coffee on the East Coast to

9
00:00:29,750 --> 00:00:26,939
see our smallest planet cross the face

10
00:00:31,609 --> 00:00:29,760
of the Sun the transit will also be

11
00:00:34,600 --> 00:00:31,619
visible for most of South America

12
00:00:37,040 --> 00:00:34,610
Western Africa and Western Europe a

13
00:00:39,319 --> 00:00:37,050

transit occurs when one astronomical

14
00:00:41,660 --> 00:00:39,329
body appears to move across the face of

15
00:00:45,139 --> 00:00:41,670
another as seen from Earth or from a

16
00:00:47,000 --> 00:00:45,149
spacecraft but be safe you'll need to

17
00:00:48,319 --> 00:00:47,010
view the Sun and mercury through a solar

18
00:00:50,930 --> 00:00:48,329
filter when looking through a telescope

19
00:00:54,139 --> 00:00:50,940
or when projecting the image of the

20
00:00:56,660 --> 00:00:54,149
solar disk onto a safe surface look a

21
00:00:58,430 --> 00:00:56,670
little south of the sun's equator it

22
00:01:01,010 --> 00:00:58,440
will take about seven-and-a-half hours

23
00:01:03,860 --> 00:01:01,020
for the tiny planets disk to cross the

24
00:01:06,170 --> 00:01:03,870
Sun completely since mercury is so tiny

25
00:01:08,000 --> 00:01:06,180
it will appear as a very small round

26
00:01:10,070 --> 00:01:08,010
speck whether it's seen through a

27
00:01:12,859 --> 00:01:10,080
telescope or projected through a solar

28
00:01:17,240 --> 00:01:12,869
filter the next mercury transit will be

29
00:01:21,530 --> 00:01:17,250
November 11th 2019 to other May

30
00:01:24,200 --> 00:01:21,540
highlights involve Mars on May 22nd Mars

31
00:01:26,090 --> 00:01:24,210
opposition occurs that's when Mars Earth

32
00:01:28,999 --> 00:01:26,100
and the Sun all line up with Earth

33
00:01:31,550 --> 00:01:29,009
directly in the middle eight days later

34
00:01:33,230 --> 00:01:31,560
on May 30th Mars and Earth are nearest

35
00:01:36,350 --> 00:01:33,240
to each other in their orbits around the

36
00:01:38,719 --> 00:01:36,360
Sun Mars is over half a million miles

37
00:01:40,819 --> 00:01:38,729
closer to Earth at closest approach than

38
00:01:42,740 --> 00:01:40,829

in opposition but you won't see much

39
00:01:45,380 --> 00:01:42,750
change in the diameter and brightness

40
00:01:47,690 --> 00:01:45,390
between these two dates as Mars comes

41
00:01:49,850 --> 00:01:47,700
closer to Earth in its orbit it appears

42
00:01:52,520 --> 00:01:49,860
larger and larger and brighter and

43
00:01:55,850 --> 00:01:52,530
brighter during this time Mars rises

44
00:01:57,620 --> 00:01:55,860
after the Sun sets the best time to see

45
00:01:59,990 --> 00:01:57,630
Mars at its brightest is when it's

46
00:02:02,780 --> 00:02:00,000
highest in the sky around midnight in

47
00:02:04,609 --> 00:02:02,790
May and a little earlier in June through

48
00:02:06,770 --> 00:02:04,619
a telescope you can make out some of the

49
00:02:09,109 --> 00:02:06,780
dark features on the planet some of the

50
00:02:11,479 --> 00:02:09,119
lighter features and sometimes polar ice

51
00:02:13,190 --> 00:02:11,489
and dust storm obscured areas showing

52
00:02:15,830 --> 00:02:13,200
very little detail

53
00:02:18,800 --> 00:02:15,840
after close approached earth sweeps past

54
00:02:21,320 --> 00:02:18,810
Mars quickly so the planet appears large

55
00:02:23,809 --> 00:02:21,330
and bright for only a couple weeks but

56
00:02:27,260 --> 00:02:23,819
don't worry if you miss 2016's close

57
00:02:29,900 --> 00:02:27,270
approach 2018 s will be even better as

58
00:02:32,720 --> 00:02:29,910
Mars as close approach will be well even

59
00:02:35,510 --> 00:02:32,730
closer you can find out about NASA's

60
00:02:38,120 --> 00:02:35,520
journey to Mars missions at Mars NASA

61
00:02:42,860 --> 00:02:38,130
gov and you can learn about all of