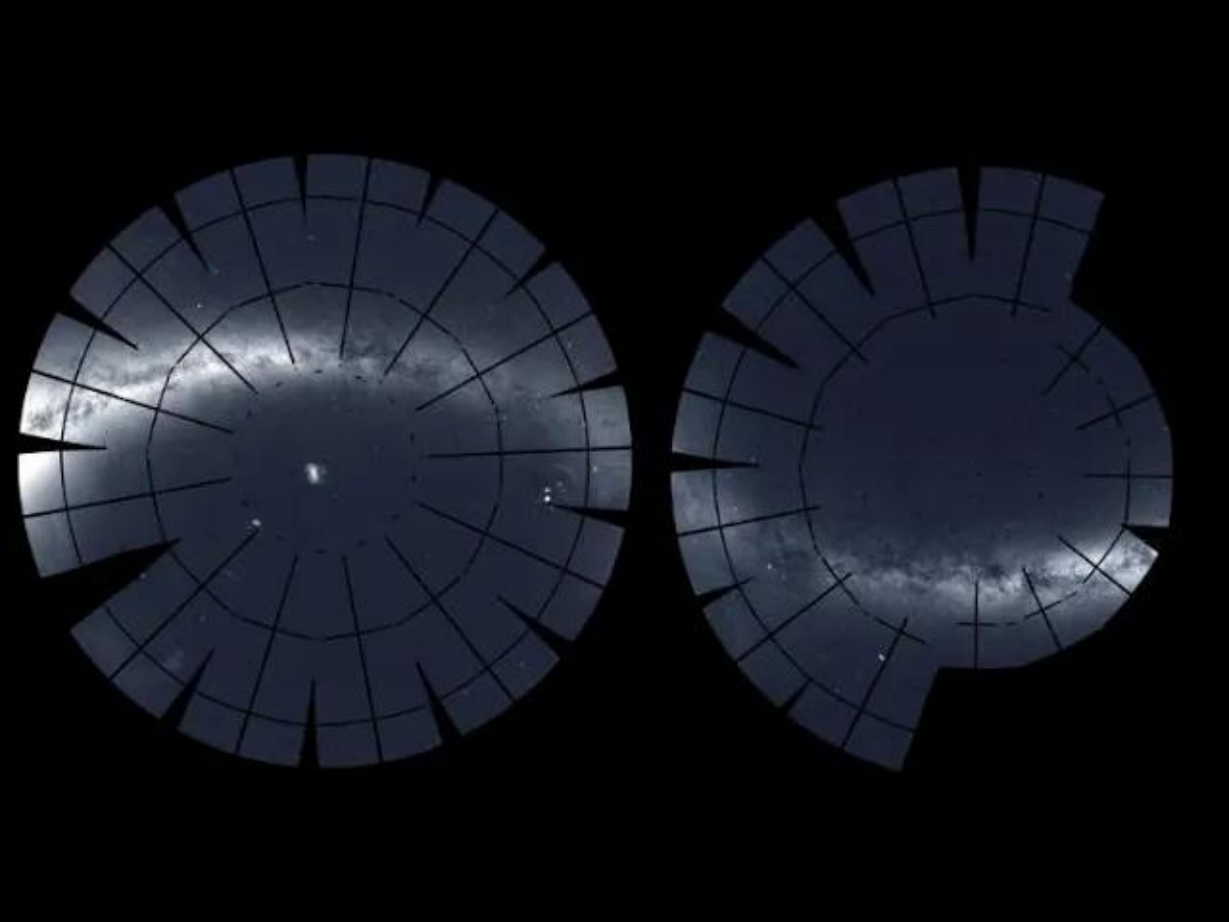

1
00:00:09,270 --> 00:00:07,269
tess the transiting exoplanet survey

2
00:00:11,830 --> 00:00:09,280
satellite has completed its survey of

3
00:00:13,589 --> 00:00:11,840
the northern sky marking the end of its

4
00:00:16,070 --> 00:00:13,599
primary mission

5
00:00:18,870 --> 00:00:16,080
to do this tess divided the northern sky

6
00:00:22,470 --> 00:00:18,880
into 13 sectors and its four cameras

7
00:00:25,109 --> 00:00:22,480
monitored each sector for nearly a month

8
00:00:27,269 --> 00:00:25,119
with these extended views tess looks for

9
00:00:29,269 --> 00:00:27,279
slight dips in starlight when distant

10
00:00:30,470 --> 00:00:29,279
planets pass in front of their host

11
00:00:32,790 --> 00:00:30,480
stars

12
00:00:34,709 --> 00:00:32,800
but it also caught short-lived events

13
00:00:37,830 --> 00:00:34,719

such as a black hole tearing apart a

14
00:00:40,150 --> 00:00:37,840
star that wandered too close

15
00:00:42,150 --> 00:00:40,160
it took a full year of test imagery to

16
00:00:45,270 --> 00:00:42,160
build this beautiful panorama of the

17
00:00:47,670 --> 00:00:45,280
northern sky the bright band to the left

18
00:00:49,750 --> 00:00:47,680
is the milky way our home galaxy viewed

19
00:00:51,670 --> 00:00:49,760
edge on

20
00:00:54,709 --> 00:00:51,680
a large swath of the northern sky

21
00:00:56,630 --> 00:00:54,719
remains unmapped for six sectors tess

22
00:00:58,549 --> 00:00:56,640
tipped its cameras further north to

23
00:01:02,389 --> 00:00:58,559
avoid regions where stray light from the

24
00:01:04,469 --> 00:01:02,399
earth and the moon would hamper the view

25
00:01:07,590 --> 00:01:04,479
at the center is the continuous viewing

26
00:01:10,870 --> 00:01:07,600
zone here the view of one test camera

27
00:01:12,789 --> 00:01:10,880
overlaps across all 13 sectors which

28
00:01:15,109 --> 00:01:12,799
means tess monitored the region for

29
00:01:18,390 --> 00:01:15,119
nearly an entire year

30
00:01:20,310 --> 00:01:18,400
at its center is the north ecliptic pole

31
00:01:22,390 --> 00:01:20,320
this is where the imaginary axis of

32
00:01:24,310 --> 00:01:22,400
earth's orbit around the sun meets the

33
00:01:28,149 --> 00:01:24,320
sky

34
00:01:29,749 --> 00:01:28,159
north celestial pole

35
00:01:33,109 --> 00:01:29,759
this is where the north end of our

36
00:01:35,030 --> 00:01:33,119
planet's spin axis intersects the sky

37
00:01:37,590 --> 00:01:35,040
the whole starry vault appears to

38
00:01:40,870 --> 00:01:37,600

revolve around this point conveniently

39
00:01:43,590 --> 00:01:40,880
marked by the nearby star polaris

40
00:01:45,590 --> 00:01:43,600
to find polaris follow a line set up by

41
00:01:46,630 --> 00:01:45,600
these two stars in the cup of the big

42
00:01:48,870 --> 00:01:46,640
dipper

43
00:01:51,030 --> 00:01:48,880
it's an easily recognized star pattern

44
00:01:55,030 --> 00:01:51,040
that forms the central part of the large

45
00:01:56,630 --> 00:01:55,040
constellation ursa major

46
00:01:59,030 --> 00:01:56,640
following the arc of the big dipper's

47
00:02:00,870 --> 00:01:59,040
handle leads to another prominent star

48
00:02:03,350 --> 00:02:00,880
arcturus

49
00:02:06,149 --> 00:02:03,360
located about 37 light years away in the

50
00:02:10,550 --> 00:02:06,159
constellation bootes arcturus is the

51
00:02:15,430 --> 00:02:13,110
new stars form in gas-rich clouds

52
00:02:17,670 --> 00:02:15,440
throughout our galaxy

53
00:02:19,670 --> 00:02:17,680
the north american nebula named for its

54
00:02:20,830 --> 00:02:19,680
resemblance to the continent is a

55
00:02:24,070 --> 00:02:20,840
prominent

56
00:02:26,710 --> 00:02:24,080
example located about 1700 light years

57
00:02:28,949 --> 00:02:26,720
away in the constellation cygnus it's

58
00:02:31,430 --> 00:02:28,959
part of a vast factory complex with

59
00:02:34,470 --> 00:02:31,440
enough gas to make a hundred thousand

60
00:02:36,630 --> 00:02:34,480
sun-like stars

61
00:02:37,830 --> 00:02:36,640
appearing beyond the confines of our own

62
00:02:39,990 --> 00:02:37,840
galaxy

63
00:02:41,830 --> 00:02:40,000

tess imaged the closest neighboring

64
00:02:44,710 --> 00:02:41,840
spiral galaxy

65
00:02:47,990 --> 00:02:44,720
visible by eye as a hazy patch the

66
00:02:51,270 --> 00:02:48,000
andromeda galaxy located 2.5 million

67
00:02:54,390 --> 00:02:51,280
light years away is a city of stars as

68
00:02:56,470 --> 00:02:54,400
vast as our own milky way

69
00:02:59,110 --> 00:02:56,480
astronomers have just begun sifting

70
00:03:01,270 --> 00:02:59,120
through the torrent of test data and are

71
00:03:03,270 --> 00:03:01,280
working to confirm planets among the

72
00:03:05,990 --> 00:03:03,280
thousands of candidates identified by

73
00:03:07,990 --> 00:03:06,000
the mission so far

74
00:03:09,910 --> 00:03:08,000
tess has already found a few northern

75
00:03:14,309 --> 00:03:09,920
stars hosting planets

76
00:03:16,949 --> 00:03:14,319
one named hd 19 1939 possesses a trio of

77
00:03:19,750 --> 00:03:16,959
neptune size worlds

78
00:03:22,390 --> 00:03:19,760
having successfully mapped about 75 of

79
00:03:25,190 --> 00:03:22,400
the sky during its primary mission

80
00:03:27,030 --> 00:03:25,200
tess is now working on extended duty

81
00:03:29,110 --> 00:03:27,040
its cameras have turned back to the

82
00:03:31,750 --> 00:03:29,120
southern sky to complete another

83
00:03:35,509 --> 00:03:31,760
year-long survey which will include

84
00:03:38,149 --> 00:03:35,519
areas not mapped the first time around

85
00:03:39,430 --> 00:03:38,159
now improved to return even more data

86
00:03:41,350 --> 00:03:39,440
than before

87
00:03:45,400 --> 00:03:41,360
the best of tests