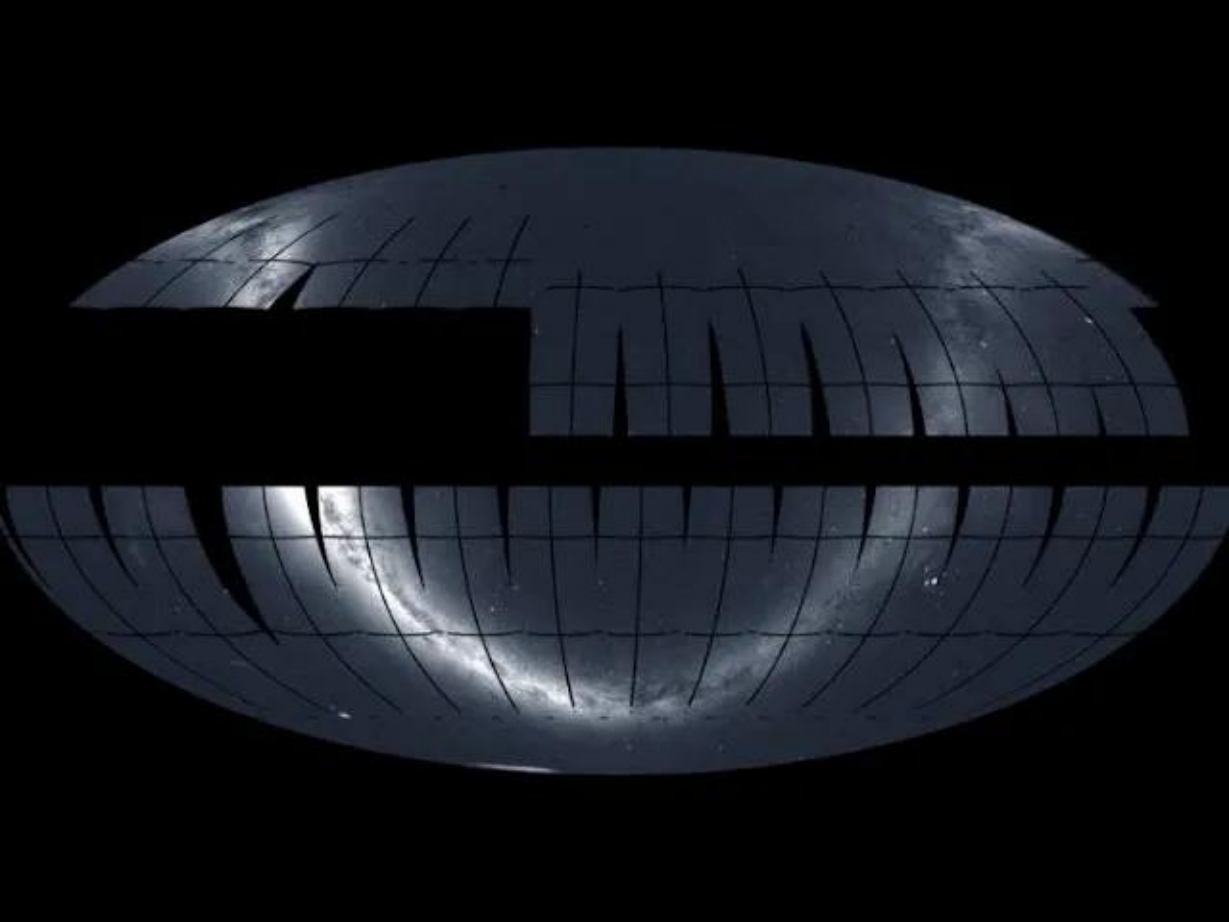

1
00:00:07,670 --> 00:00:04,550
tess the transiting exoplanet survey

2
00:00:09,830 --> 00:00:07,680
satellite is nasa's newest planet hunter

3
00:00:12,150 --> 00:00:09,840
the mission has operated for two years

4
00:00:13,669 --> 00:00:12,160
and has now mapped about 75 percent of

5
00:00:16,150 --> 00:00:13,679
the sky

6
00:00:18,230 --> 00:00:16,160
this enormous area of coverage gives

7
00:00:20,150 --> 00:00:18,240
scientists unprecedented opportunities

8
00:00:22,710 --> 00:00:20,160
to search for new worlds beyond our

9
00:00:24,150 --> 00:00:22,720
solar system as well as other cosmic

10
00:00:26,310 --> 00:00:24,160
phenomena

11
00:00:29,910 --> 00:00:26,320
tess completed its initial sky survey in

12
00:00:33,750 --> 00:00:29,920
july 2020 this giant mosaic is made from

13
00:00:36,470 --> 00:00:33,760

26 sector images each sector is a 24 by

14
00:00:39,270 --> 00:00:36,480
96 degree strip of sky monitored by

15
00:00:40,790 --> 00:00:39,280
tess's four cameras for about a month

16
00:00:43,750 --> 00:00:40,800
here are some of the noteworthy

17
00:00:45,670 --> 00:00:43,760
discoveries from tess's second year

18
00:00:49,270 --> 00:00:45,680
tess discovered a trio of planets around

19
00:00:51,830 --> 00:00:49,280
gj 357 a red dwarf star just 31 light

20
00:00:54,069 --> 00:00:51,840
years away the system's farthest planet

21
00:00:56,310 --> 00:00:54,079
with about six times earth's mass is

22
00:00:58,549 --> 00:00:56,320
especially intriguing it orbits in the

23
00:01:00,389 --> 00:00:58,559
outer part of the star's habitable zone

24
00:01:02,389 --> 00:01:00,399
if this planet has an atmosphere thick

25
00:01:04,229 --> 00:01:02,399
enough to keep its surface warm liquid

26
00:01:06,310 --> 00:01:04,239
water could exist there

27
00:01:07,550 --> 00:01:06,320
tess found another planetary trio around

28
00:01:10,310 --> 00:01:07,560
the star

29
00:01:13,190 --> 00:01:10,320
l98-59 the innermost world is the

30
00:01:14,870 --> 00:01:13,200
littlest found by tess and is 20 smaller

31
00:01:15,749 --> 00:01:14,880
than earth

32
00:01:17,749 --> 00:01:15,759
later

33
00:01:20,550 --> 00:01:17,759
scientists announced tess had observed a

34
00:01:22,310 --> 00:01:20,560
star being torn apart by a black hole

35
00:01:24,789 --> 00:01:22,320
catching one of these title disruption

36
00:01:26,550 --> 00:01:24,799
events showcases the mission's ability

37
00:01:28,630 --> 00:01:26,560
to spot many kinds of short-lived

38
00:01:30,870 --> 00:01:28,640

phenomena like stellar outbursts and

39
00:01:33,830 --> 00:01:30,880
supernovae underscoring tess's

40
00:01:36,469 --> 00:01:33,840
importance for studies beyond exoplanets

41
00:01:38,789 --> 00:01:36,479
in early 2020 scientists announced

42
00:01:40,789 --> 00:01:38,799
tess's first earth-sized planet orbiting

43
00:01:44,069 --> 00:01:40,799
in its star's habitable zone

44
00:01:45,749 --> 00:01:44,079
this world called toi 700d

45
00:01:47,190 --> 00:01:45,759
is a little larger than earth and

46
00:01:49,270 --> 00:01:47,200
probably rocky

47
00:01:50,950 --> 00:01:49,280
based on tess and spitzer data

48
00:01:52,870 --> 00:01:50,960
researchers were even able to model

49
00:01:55,109 --> 00:01:52,880
potential weather systems

50
00:01:57,429 --> 00:01:55,119
analysis of the planet's atmosphere if

51
00:01:59,590 --> 00:01:57,439
it has one will have to await future

52
00:02:01,830 --> 00:01:59,600
space-based observatories like nasa's

53
00:02:04,389 --> 00:02:01,840
james webb space telescope

54
00:02:07,030 --> 00:02:04,399
missions like tess and later web help

55
00:02:08,949 --> 00:02:07,040
contribute to the field of astrobiology

56
00:02:10,790 --> 00:02:08,959
the interdisciplinary research on the

57
00:02:12,869 --> 00:02:10,800
variables and conditions of distant

58
00:02:13,750 --> 00:02:12,879
worlds that could harbor life as we know

59
00:02:15,510 --> 00:02:13,760
it

60
00:02:18,790 --> 00:02:15,520
tess has found many systems very

61
00:02:21,030 --> 00:02:18,800
different from our own toi 1338 has a

62
00:02:24,390 --> 00:02:21,040
neptune-sized planet orbiting a pair of

63
00:02:27,110 --> 00:02:24,400

stars kelt 9 has a fast spinning star

64
00:02:29,910 --> 00:02:27,120
with hot poles and a cooler equator kelt

65
00:02:32,470 --> 00:02:29,920
9b orbits over the poles resulting in

66
00:02:34,390 --> 00:02:32,480
star-induced seasons that only last a

67
00:02:36,550 --> 00:02:34,400
few hours

68
00:02:38,550 --> 00:02:36,560
now that its primary mission is complete

69
00:02:40,470 --> 00:02:38,560
tess will return to the southern sky for

70
00:02:42,949 --> 00:02:40,480
another year-long survey

71
00:02:46,070 --> 00:02:42,959
many new planets as well as more brief

72
00:02:47,990 --> 00:02:46,080
cataclysmic events await astronomers as

73
00:02:49,780 --> 00:02:48,000
they scour the flood of tess