1
00:00:00,000 --> 00:00:04,000
Narrator: TESS, the Transiting Exoplanet Survey Satellite,

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00:00:04,000 --> 00:00:08,000
is NASA’s newest planet hunter. The mission has operated for

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00:00:08,000 --> 00:00:12,000
a year, mapping most of the southern sky and is now surveying the northern sky.

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00:00:12,000 --> 00:00:16,000
With mountains of data to analyze, scientists have just scratched the

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00:00:16,000 --> 00:00:20,000
surface of what they can learn using TESS. Here are some

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00:00:20,000 --> 00:00:24,000
noteworthy discoveries from TESS’s first year.
[TEXT: TESS’s first year of science]

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00:00:24,000 --> 00:00:28,000
In September, the TESS team released the first of 26 planned sector

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00:00:28,000 --> 00:00:32,000
images. [TEXT: TESS shares first science image] Each sector is a 24-by-96-degree strip

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00:00:32,000 --> 00:00:36,000
of sky, monitored by TESS’s four cameras.

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00:00:36,000 --> 00:00:40,000
[TEXT:TESS rounds up its first planets] By the end of 2018, TESS began delivering on its promise to discover

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00:00:40,000 --> 00:00:44,000
new worlds around nearby bright stars when astronomers announced the mission’s

12
00:00:44,000 --> 00:00:48,000
first new exoplanets. In April 2019,

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00:00:48,000 --> 00:00:52,000
one year after launch, astronomers announced the discovery of

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00:00:52,000 --> 00:00:56,000
TESS's first Earth-size exoplanet. [TEXT: TESS's first Earth-size planet HD 21749 c]

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00:00:56,000 --> 00:01:00,000
Orbiting a relatively nearby star, this world is likely too hot to support life,

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00:01:00,000 --> 00:01:04,000
but it proved that TESS could find small planets that orbit very

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00:01:04,000 --> 00:01:08,000
close to their stars. TESS has now found several

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00:01:08,000 --> 00:01:12,000
multiplanet systems, where small planets orbit nearby stars, just

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00:01:12,000 --> 00:01:16,000
as it was designed to do. [TEXT: Many multiplanet systems] Many are not in the habitable zone,

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00:01:16,000 --> 00:01:20,000
like the planets in the L 98-59 system, but

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00:01:20,000 --> 00:01:24,000
all are teaching us more about the wide range of planets out there.

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00:01:24,000 --> 00:01:28,000
Even before starting its hunt for exoplanets, TESS was making

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00:01:28,000 --> 00:01:32,000
observations to test its cameras. [TEXT: TESS watches Comet C/2018 N1] In late July 2018,

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00:01:32,000 --> 00:01:36,000
TESS imaged a passing comet, along with many asteroids in our solar

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00:01:36,000 --> 00:01:40,000
system, visible here as moving white dots.

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00:01:40,000 --> 00:01:44,000
Later in the year, TESS went from seeing comets orbiting our Sun

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00:01:44,000 --> 00:01:48,000
to comets other stars. [TEXT: Exocomets in Beta Pictoris system] Its cameras spotted fluctuations

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00:01:48,000 --> 00:01:52,000
in light from the star Beta Pictoris that are now recognized as the

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00:01:52,000 --> 00:01:56,000
signatures of three comets passing in front of the star. They join

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00:01:56,000 --> 00:02:00,000
planets already discovered in this young, nearby system.

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00:02:00,000 --> 00:02:04,000
[TEXT: TESS snares far-flung supernovae] Although designed to look for exoplanets, TESS also spots many s

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00:02:04,000 --> 00:02:08,000
bright explosions that mark the deaths of stars. Its cameras

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00:02:08,000 --> 00:02:12,000
can catch these outbursts from their very start, even before ground-based

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00:02:12,000 --> 00:02:16,000
surveys identify them. After just

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00:02:16,000 --> 00:02:20,000
one year, TESS has already expanded our understanding of

36
00:02:20,000 --> 00:02:24,000
new worlds close to home, and exploding stars beyond our galaxy.