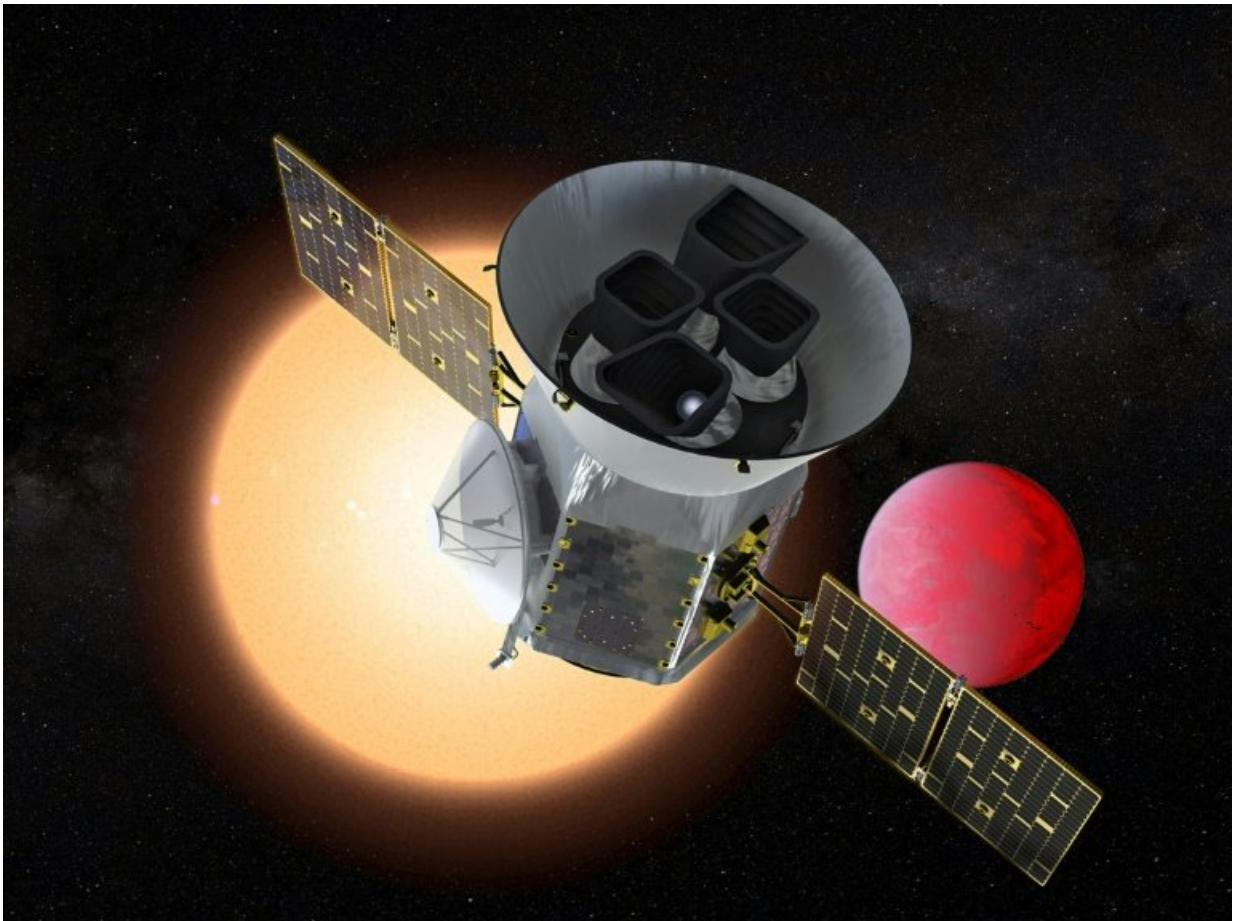


# Are we alone? NASA's new planet hunter aims to find out

April 16 2018

---



This artist's rendition from NASA shows the Transiting Exoplanet Survey Satellite, or TESS, which is set for launch Monday on a mission to search for the nearest Earth-like planets in our cosmic neighborhood

Are we alone? NASA's new planet-hunting mission, poised to launch Monday, aims to advance the search for extraterrestrial life by scanning the skies for nearby, Earth-like planets.

The Transiting Exoplanet Survey Satellite, or TESS, is poised to blast off at 6:32 pm (2232 GMT) aboard a SpaceX Falcon 9 rocket from a NASA launchpad in Cape Canaveral, Florida.

The \$337 million washing machine-sized spacecraft is built to search the nearest, brightest stars for signs of periodic dimming. These so-called "transits" may mean that planets are in orbit around them.

TESS is expected to reveal 20,000 planets beyond our solar system, known as exoplanets, NASA said.

Its discoveries will be studied further by ground- and space-based telescopes for signs of habitability, including rocky terrain, a size similar to Earth and a distance from their sun—neither too close nor too far—that allows the right temperature for liquid water.

NASA predicts that TESS could find more than 50 Earth-sized planets and up to 500 planets less than twice the size of the Earth.

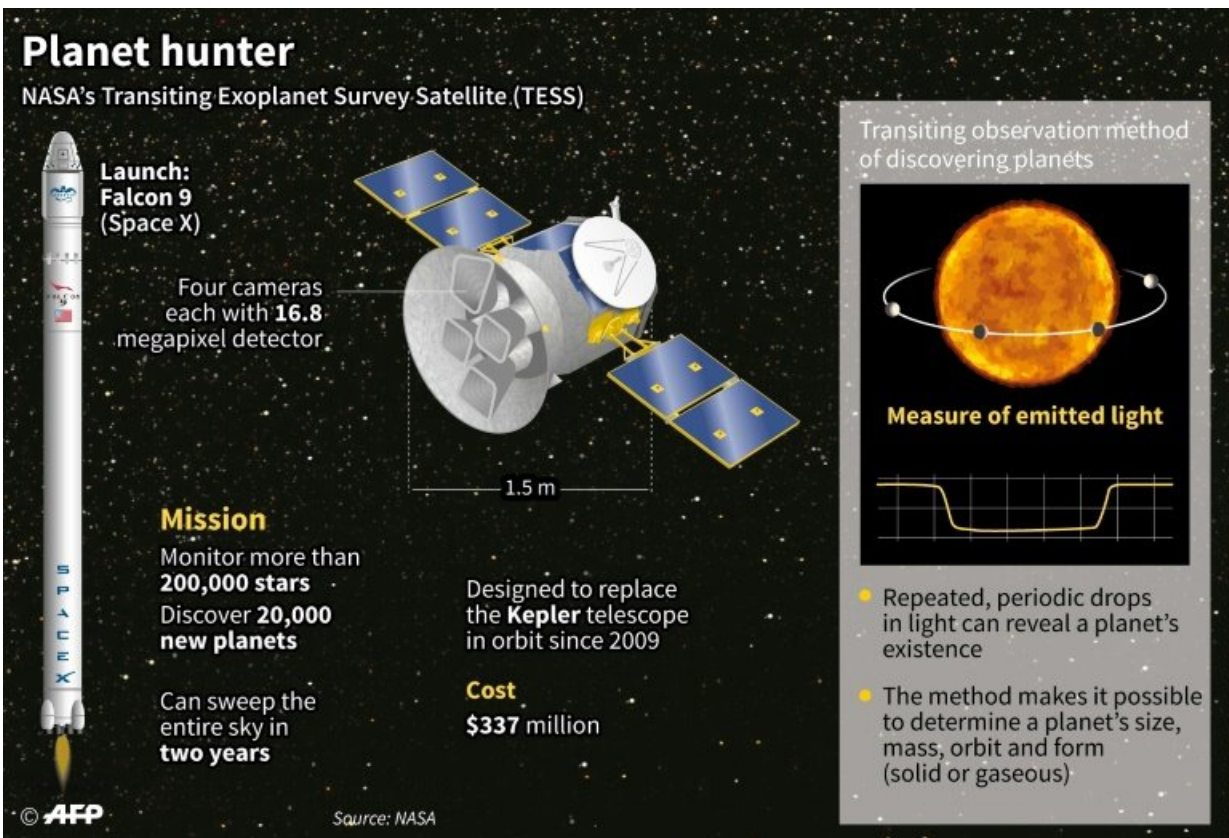
TESS will survey far more cosmic terrain than its predecessor, NASA's Kepler Space Telescope, which launched in 2009, taking in some 85 percent of the skies.

"TESS is equipped with four very sensitive cameras that will be able to monitor nearly the entire sky," said George Ricker, TESS principal investigator at the Massachusetts Institute of Technology (MIT).

"That is about 20 times what the Kepler mission was able to detect."

## Kepler vs TESS

Kepler, the first planet-hunting mission of its kind, "was launched to answer one single question: How common is a planet like Earth around a star like the Sun?" said Patricia "Padi" Boyd, director of the TESS guest investigator program at NASA's Goddard Spaceflight Center.



**Planet hunter**  
NASA's Transiting Exoplanet Survey Satellite (TESS)

**Launch:**  
Falcon 9  
(Space X)

Four cameras each with **16.8** megapixel detector

**Mission**  
Monitor more than **200,000 stars**  
Discover **20,000 new planets**  
Can sweep the entire sky in **two years**

1.5 m

Designed to replace the **Kepler** telescope in orbit since 2009

**Cost**  
**\$337 million**

Transiting observation method of discovering planets

**Measure of emitted light**

- Repeated, periodic drops in light can reveal a planet's existence
- The method makes it possible to determine a planet's size, mass, orbit and form (solid or gaseous)

© AFP Source: NASA

This graphic explains key facts about Nasa's TESS telescope as it prepares for launch on a mission to find the nearest Earth-like planets

"It was designed to look at 150,000 stars in a fairly wide field of view without blinking, for four years," she told reporters on the eve of the

launch.

"One of the many amazing things that Kepler told us is that planets are everywhere and there are all kinds of planets out there.

"So TESS takes the next step. If planets are everywhere, then it is time for us to find the planets that are closest to us orbiting bright nearby stars, because these will be the touchstone system."

TESS and Kepler use the same system of detecting planetary transits, or shadows cast as they pass in front of their star.

While Kepler confirmed some 2,300 exoplanets and thousands more potential planet candidates, many were too distant and dim to be studied further.

With Kepler running low on fuel and nearing the end of its life, TESS aims to pick up the search while focusing closer, on planets dozens to hundreds of light years away.

"TESS is going to dramatically increase the number of planets that we have to study," said Ricker.

The Hubble Space Telescope and the James Webb Space Telescope, scheduled to launch in 2020, should be able to reveal more about planets' mass, density and the makeup of their atmosphere—all clues to habitability.

The first data from TESS is expected to be made public in July, and NASA says citizen astronomers are welcome to help study the planets.

It may be decades before astronomers know whether or not life exists elsewhere.

"TESS is the first step," said Stephen Rinehart, TESS project scientist at NASA's Goddard Spaceflight Center.

© 2018 AFP

Citation: Are we alone? NASA's new planet hunter aims to find out (2018, April 16) retrieved 19 April 2024 from <https://phys.org/news/2018-04-nasa-planet-hunter-aims.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.