

Are we alone in the Universe?

NASA is searching for life beyond Earth.

Artist's interpretation of what it might be like to stand on the surface of one of the Earth-like planets orbiting in the TRAPPIST-1 system.

LEARN MORE about TRAPPIST-1: exoplanets.nasa.gov/trappist1/

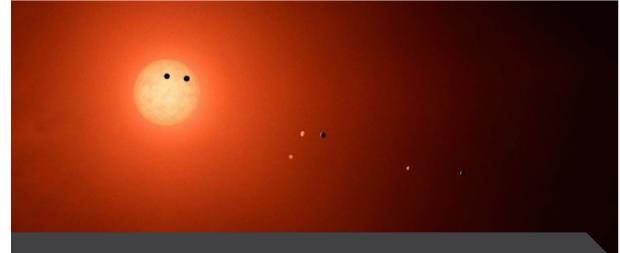
SEE MORE about this important discovery: jpl.nasa.gov/video/details.php?id=1459

Astronomers believe that life, if it's out there, probably exists on a planet that shares some of the characteristics that make Earth habitable. They're looking for an Earth-like planet: one with a rocky surface and liquid water.

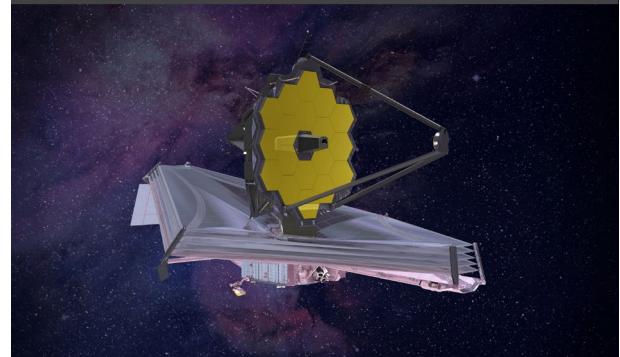
In February 2017, scientists announced the historic discovery of seven Earth-sized planets orbiting one star. The system, called TRAPPIST-1, is actually quite close to our Solar System—roughly 40 light years away—and could be our best bet for finding life beyond Earth!

Three of the TRAPPIST-1 planets are in the habitable zone, meaning they are orbiting just the right distance from the star for water to exist in liquid form, a critical ingredient for life as we know it. In fact, scientists think that liquid water could exist on any of the seven planets given the right conditions.

Astronomers discovered the planets of TRAPPIST-1 using NASA's Spitzer Space Telescope along with several ground-based telescopes. When searching for exoplanets, researchers look for the telltale dimming of a star's light as planets pass across its face. The team found that the light from TRAPPIST-1 dimmed in a way that suggested seven different planets.



The TRAPPIST-1 system is different from our Solar System. The star is much smaller and cooler than our Sun and will live for much longer. All of the planets in the TRAPPIST-1 system have very small orbits. If they were transported to our Solar System, they'd all be within the orbit of Mercury.



NASA's James Webb Space Telescope, launching in 2018, could teach us even more about the TRAPPIST-1 system by detecting the chemical fingerprints of water, methane and oxygen. These compounds might reveal the presence of life.