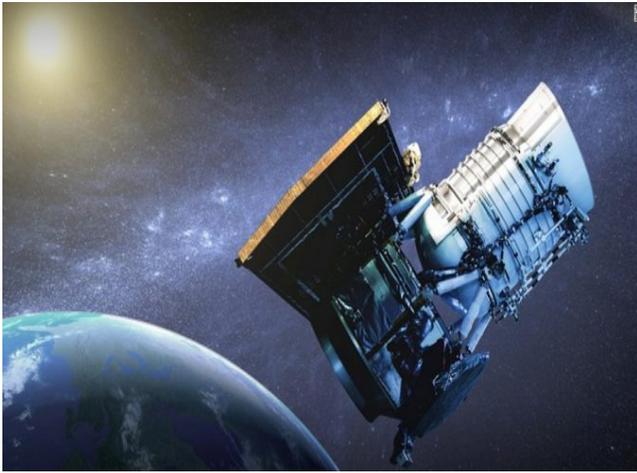


NASA's Kepler Space telescope

5th December, 2018



What to study?

- **For Prelims: About Kepler telescope, TESS.**
- **For Mains: What are exoplanets, significance of their findings.**

Context: Scientists have discovered a cache over 100 new exoplanets using data from NASA's Kepler Space telescope as well as ground-based observatories. The diverse planets are expected to play a large role in developing the research field of exoplanets and life in the Universe.

Background:

The Kepler Space Telescope has been officially retired by NASA. Its successor space telescope, called TESS, has already started collecting data.

About Kepler Mission:

Launched in 2009, the Kepler mission is specifically designed to survey our region of the Milky Way galaxy to discover hundreds of Earth-sized and smaller planets in or near the habitable zone and determine the fraction of the hundreds of billions of stars in our galaxy that might have such planets.

About TESS mission:

- The Transiting Exoplanet Survey Satellite (TESS) is a NASA mission that will look for planets orbiting the brightest stars in Earth's sky. It was led by the Massachusetts Institute of Technology with seed funding from Google.
- **Mission:** The mission will monitor at least 200,000 stars for signs of exoplanets, ranging from Earth-sized rocky worlds to huge gas giant planets. TESS, however, will focus on stars that are 30 to 100 times brighter than those Kepler examined. This will help astronomers better understand the structure of solar systems outside of our Earth, and provide insights into how our own solar system formed.
- **Orbit:** TESS will occupy a never-before-used orbit high above Earth. The elliptical orbit, called P/2, is exactly half of the moon's orbital period; this means that TESS will orbit Earth every 13.7 days.
- **How it works?** It will use transit method to detect exoplanets. It watches distant stars for small dips in brightness, which can indicate that planet has passed in front of them. Repeated dips will indicate planet passing in front of its star. This data has to be validated by repeated observations and verified by scientists.

To be looked in UPSC Paper 3 Topic :

1. Awareness in space.