

# Two new Water worlds detected

December 20, 2022

**In news**— According to a new study two alien planets about 218 light years away from Earth have found a twin in the ocean worlds of Europa and Enceladus moons orbiting Jupiter and Saturn.

## About twin planets-

- As per the new study, the exoplanets, Kepler-138 c and Kepler-138 d are unlike any other discovered outside the Solar System. These two planets are **filled with water**.
- These water worlds **located in a planetary system 218 light-years away in the constellation Lyra** are unique since the liquid makes up a large volume of their composition.
- Astronomers observed these exoplanets with Hubble and the retired Spitzer space telescopes to make the watery discovery.
- **They are also larger-scale versions of Enceladus (Saturn's moon) and Europa (Jupiter's moon).**
- These twin planets of the same size and mass are **more massive than Earth but lighter than ice giants Uranus and Neptune**.
- But they are different from the planets in our solar system, which is chiefly composed of rocky planets like Earth and gas giants like Jupiter.
- These exoplanets, along with Kepler-138 b, orbit Kepler-138, **a red dwarf star**. The star is smaller and cooler than the Sun, a yellow dwarf star.
- **The volume of the two alien worlds is three times that of Earth and mass twice as big**
- Further, researchers observations showed that **the Kepler- 138 c and d are made up of ingredients lighter than rock** (rocky planets like Earth) **but heavier than hydrogen or helium** (gas-giant planets like Jupiter).
- **This signals the presence of water: Up to half of the**

mass of the twin worlds should be water, the researchers estimated.

- Until now, scientists expected that worlds slightly larger than Earth would likely have rocky features.
- Further, the density of the twin exoplanets was lower than Earth but comparable to Enceladus and Europa.
- **But unlike Enceladus or Europa, these worlds are not ocean worlds.**
- The temperature in Kepler-138 c's and Kepler-138d's atmospheres is likely above the boiling point of water.
- Further, the **researchers also discovered a fourth planet in the Kepler planetary system: Kepler-138 e.**
- **The new planet takes 38 days to complete an orbit. It is** in the habitable zone, meaning it is located in an orbit that receives just the right amount of heat from its star to allow water to exist in a liquid form.