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WATER FOUND IN ATMOSPHERE OF HABITABLE EXOPLANET

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An artist's rendering shows exoplanet K2-18b, foreground, its host star and an accompanying planet in the system.AP

Water has been discovered for the first time in the atmosphere of an exoplanet with earth-like temperatures that could support life as we know it, scientists have revealed.

Eight times the mass of earth and twice as big, K2-18b orbits in its star's "habitable zone" at a distance — neither too far nor too close — where water can exist in liquid form, they reported in the journal *Nature Astronomy* . "This planet is the best candidate we have outside our solar system" in the search for signs of life, co-author Giovanna Tinetti, an astronomer at University College London, said on Wednesday. "We cannot assume that it has oceans on the surface but it is a real possibility."

Of the more than 4,000 exoplanets detected to date, this is the first known to combine a rocky surface and an atmosphere with water. Most exoplanets with atmospheres are giant balls of gas, and the handful of rocky planets for which data is available seem to have no atmosphere at all.

Discovered in 2015, K2-18b is one of hundreds of so-called "super-earths" — planets with less than ten times the mass of ours — spotted by NASA's Kepler spacecraft.

"Finding water in a potentially habitable world other than Earth is incredibly exciting," said lead-author Angelos Tsiaras, also from UCL.

Working with spectroscopic data captured in 2016 and 2017 by the Hubble Space Telescope, Mr. Tsiaras and his team used open-source algorithms to analyse the starlight filtered through K2-18b's atmosphere. They found the unmistakable signature of water vapour. Exactly how much remains uncertain, but computer modelling suggested concentrations between 0.1 and 50 %.

By comparison, the percentage of water vapour in earth's atmosphere varies between 0.2 % above the poles, and up to four percent in the tropics.

K2-18b orbits a red dwarf star about 110 light years distant — a million billion kilometres —in the Leo constellation of the Milky Way.

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