Detection of extremely hot exoplanet with winds of more than 8000km/h

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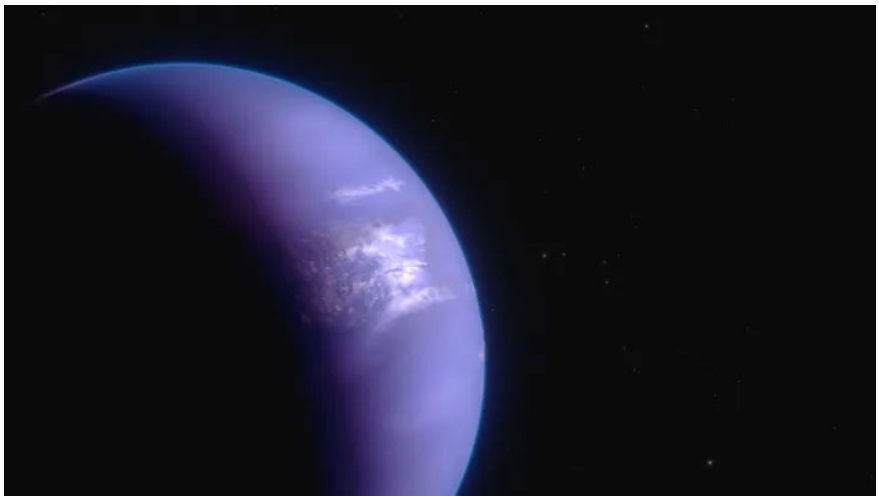
The world's most expensive 'Super Space Telescope' - James Webb - has continued to demonstrate its importance in the field of astronomical research by helping scientists successfully model the weather on an exoplanet. distant, revealing previously unknown meteorological features.

It is an exoplanet named WASP-43 b, located 280 light years from Earth. This is essentially a type of exoplanet called a hot Jupiter, similar in size and mass to Jupiter, but orbiting just 1.3 million miles from its host star, which is much closer than with the distance between Mercury and the sun.

WASP-43 b is so close to its host star that gravity holds it in place, with one side always facing the star and the other always facing out into space. Therefore, one half of the asteroid's hemisphere (called the day side) is always left burning hot, while the opposite side (called the night side) is much cooler. This temperature difference creates extremely strong winds that blow around the planet's equator, with speeds that can reach up to 8000km/h.



"With the help of Hubble, we can clearly see that there is water vapor on the daytime surface. Two of the most advanced telescope systems currently available, Hubble and Spitzer, both showed observations that there is There may be clouds at night,' the study's lead author, Dr. Taylor Bell of the Gulf Coast Environmental Research Institute, explained in a statement. 'But more precise measurements from Webb will still be needed to confirm this the beginning of more detailed mapping of temperature, cloud cover, winds and atmospheric composition across the planet.

Researchers used Webb's MIRI instrument to observe varying temperatures across the planet, averaging 2,300 degrees F (1,250 degrees C) during the day compared to 1,100 degrees F (600 degrees C) during the day. night. 'Being able to map temperature in this way is a real testament to the sensitivity and stability of the James Webb system,' said co-author Michael Roman, of the University of Leicester in the UK.

It's also possible to use the data to measure water vapor and methane across the planet, helping them learn about the location and thickness of clouds in the atmosphere. Although researchers saw water vapor on both the planet's day and night sides, they surprisingly did not see any methane.

The absence of methane gas may lead to the conclusion that WASP-43 b must have had wind speeds reaching about 5,000 miles per hour, which is so fast that there is not enough time for the predicted chemical reactions to occur. The tectonics produce detectable amounts of methane at night.