Atmosphere found around Earth-like planet GJ 1132b

By Rebecca Morelle
Science Correspondent, BBC News

6 April 2017 | Science & Environment

Scientists say they have detected an atmosphere around an Earth-like planet for the first time.

They have studied a world known as GJ 1132b, which is 1.4-times the size of our planet and lies 39 light years away.

Their observations suggest that the "super-Earth" is cloaked in a thick layer of gasses that are either water or methane or a mixture of both.

The study is published in the Astronomical Journal.

Discovering an atmosphere, and characterising it, is an important step forward in the hunt for life beyond our Solar System.

But it is highly unlikely that this world is habitable: it has a surface temperature of 370C.

Dr John Southworth, the lead researcher from Keele University, said: "To my knowledge the hottest temperature that life has been able to survive on Earth is 120C and that's far cooler than this planet."

Chemical signatures
The discovery of planet GJ 1132b was first announced in 2015. It lies in the Vela constellation in the southern hemisphere.

While it is a similar size to Earth, the star it orbits is much smaller, cooler and dimmer than our Sun.

Using a telescope at the European Southern Observatory in Chile, the researchers were able to study the planet by watching how it blocked some of the light of its host star as it passed in front of it.

"It makes the star look a little bit fainter - and it's actually a very good way of finding transiting planets - it's how this one was found," said Dr Southworth.

But different molecules in a planet's atmosphere - if it has one - absorb light in different ways, allowing scientists to look for their chemical signatures when the world transits its star.

The observations of planet GJ 1132b suggest that it has a thick atmosphere containing either steam and/or methane.

"One possibility is that it is a 'water world' with an atmosphere of hot steam," said Dr Southworth.

The researchers say while it is unlikely that any life-forms could survive on this world, the discovery of an atmosphere is encouraging in the hunt for extraterrestrial life.

Dr Southworth said: "What we have shown is that planets around low mass stars can have atmospheres and because there are so many of those in the Universe, it makes it that much more likely that one might have life."

Commenting on the research Marek Kukula, the public astronomer at the Royal Observatory Greenwich, said: "This is a nice proof of concept.

"If the technology can detect an atmosphere today, then it bodes well for being able to detect and study the atmospheres of even more Earth-like planets in the not-too-distant future."

Follow Rebecca [on Twitter].

Related Topics

- Astronomy
- Space exploration

Share this story About sharing

More on this story

'Venus twin' excites astronomers

12 November 2015
Related Internet links

Astronomical Journal: Detection of the Atmosphere of the 1.6 M Exoplanet GJ 1132 b
Keele University
The BBC is not responsible for the content of external Internet sites

Top Stories

Term-time holiday dad loses court battle
The father refused to pay his fine, but the PM says it is right that schools should decide penalties.
6 April 2017

'No role' for Assad to govern Syria
6 April 2017

China's Xi arrives in US for Trump talks
6 April 2017

Features

When IS set the desert on fire
How many pro-Brexit comedians are there?
Gender pay gap: What every woman should know
Magic moments marking 170 years of British photography
A-Z of big issues in tense US-China summit
On which of these items do we pay VAT?
Is the humble Lada now a classic car?

Do Labour's sums add up on free school meals?
Labour leader Jeremy Corbyn says charging VAT on private school fees could fund free school meals in England.

Are US TV shows about to fall off air?

BBC News Services
On your mobile
On your connected tv
Get news alerts
Atmosphere found around Earth-like planet GJ 1132b - BBC News