

# Life could exist in the atmospheres of many distant worlds, research suggests

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Microscopic organisms could survive at above the surface of planets and so-called brown dwarfs, whose terrain and lower atmospheres are inhospitable, scientists have found.

Such worlds could in theory sustain life in their overlying atmospheres, which are cooler than the planetary surfaces.

In light of the finding, scientists say they may have previously underestimated how much of the universe is potentially habitable.

## Habitable zones

A theoretical study of simple life forms on a brown dwarf – an object larger than a planet and smaller than a star – suggests that they could adapt to survive in such habitats.

The organisms could adapt to cope in the gravity, temperature and [wind conditions](#) in such environments, where water and nutrients may also be found, researchers found.

Scientists suggest that such life forms could exist on planets whose surface or atmosphere is too hot, cold, dry or dense to support life.

## Solar system

Researchers speculate there may be habitable atmospheres in the gas giants – Jupiter, Saturn, Uranus and Neptune.

Beyond our solar system, billions of such worlds at the distant reaches of our galaxy may have such [habitable zones](#).

The closest of these are some 30 light years away, which may be within the reach of powerful astronomy telescopes likely to be developed in the next decade.

This would enable scientists to search for signs of life in [distant worlds](#).

## Collaborative study

The study, in the *Astrophysical Journal*, is the first to be published by the University's recently formed Centre for Exoplanet Science.

It appears some 40 years after some of the ideas behind the study were published in the same journal by pioneering scientist Carl Sagan.

"The possibility that life may be found in the atmospheres of planetary objects suggests that there may be an abundance of [habitable environments](#) in our [solar system](#) and beyond," says Jack Yates of the School of Geosciences.

Provided by University of Edinburgh

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