

Study shows oceans vital for possibility for alien life

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Researchers at the University of East Anglia have made an important step in the race to discover whether other planets could develop and sustain life.

New research published today in the journal *Astrobiology* shows the vital role of oceans in moderating climate on Earth-like planets.

Until now, computer simulations of habitable climates on Earth-like planets have focused on their atmospheres. But the presence of oceans is vital for optimal climate stability and habitability.

The research team from UEA's schools of Maths and Environmental Sciences created a computer simulated pattern of [ocean](#) circulation on a hypothetical ocean-covered Earth-like planet. They looked at how

different planetary rotation rates would impact heat transport with the presence of oceans taken into account.

Prof David Stevens from UEA's school of Maths said: "The number of planets being discovered outside our solar system is rapidly increasing. This research will help answer whether or not these planets could sustain alien life.

"We know that many planets are completely uninhabitable because they are either too close or too far from their sun. A planet's [habitable zone](#) is based on its distance from the sun and temperatures at which it is possible for the planet to have liquid water.

"But until now, most habitability models have neglected the impact of oceans on climate.

"Oceans have an immense capacity to control climate. They are beneficial because they cause the surface temperature to respond very slowly to seasonal changes in solar heating. And they help ensure that temperature swings across a planet are kept to tolerable levels.

"We found that heat transported by oceans would have a major impact on the temperature distribution across a planet, and would potentially allow a greater area of a planet to be habitable.

"Mars for example is in the sun's habitable zone, but it has no oceans – causing air temperatures to swing over a range of 100OC. Oceans help to make a planet's climate more stable so factoring them into [climate models](#) is vital for knowing whether the planet could develop and sustain life.

"This new model will help us to understand what the climates of other [planets](#) might be like with more accurate detail than ever before."

More information: 'The Importance of Planetary Rotation Period for Ocean Heat Transport' is published in the journal *Astrobiology* on Monday, July 21, 2014.

Provided by University of East Anglia

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