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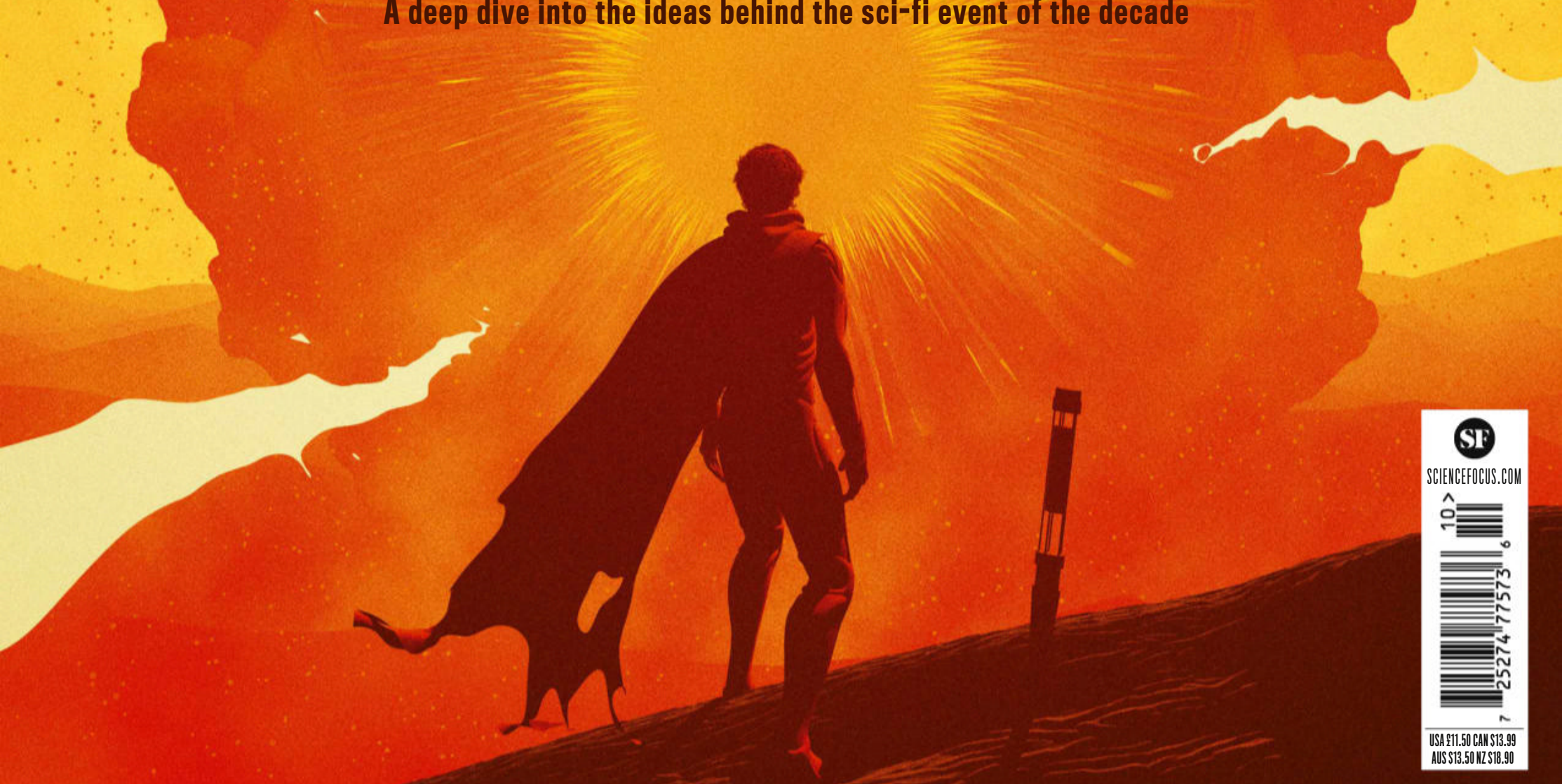

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Alien life could thrive on newly discovered 'water world' planets

Astronomers say focusing on these "hycean" planets could mean we find alien life in the next two to three years

When hunting for signs of life on other planets, astronomers have typically played it safe. They've looked for Earth-sized planets, with Earth-like surface temperatures, and Earth-like atmospheres.

But now, a team of researchers from the University of Cambridge have identified a new class of habitable planets that could change the game completely. Dubbed 'hycean' planets – a portmanteau of 'hydrogen' and 'ocean' – these newly identified exoplanets are more numerous and easier to spot than Earth-like planets.

According to the researchers, specifically hunting for hycean planets could lead to us discovering biosignatures of life outside our Solar System within the next two or three years.

"Hycean planets open a whole new avenue in our search for life elsewhere," said study leader Dr Nikku Madhusudhan, from Cambridge's Institute of Astronomy.

"Essentially, when we've been looking for these various molecular signatures, we have been focusing on planets similar to Earth, which is a reasonable place to start. But we think hycean planets offer a better chance of finding several trace biosignatures."

Hycean planets can be up to 2.6 times larger than Earth and have atmospheric temperatures as high as 200°C. However, their oceanic conditions could be similar to Earth's and so could potentially harbour microbial life. A significant proportion of the exoplanets discovered so far fall into this category.

The larger sizes, higher surface temperatures and hydrogen-rich atmospheres of hycean planets also make their atmospheric signatures easier to detect than Earth-like planets.

When looking for signs of life on other planets, astronomers look at so-called biosignatures such as oxygen, ozone, methane and nitrous oxide, which are all present on Earth. There are also a number of other biomarkers, such as methyl chloride and dimethyl sulphide, that could suggest the existence of life on planets with hydrogen-rich atmospheres where oxygen and ozone may not be as abundant.

"A biosignature detection would transform our understanding of life in the Universe," said Madhusudhan. "We need to be open about where we expect to find life and what form that life could take, as nature continues to surprise us in often unimaginable ways."

The researchers have identified a number of hycean planets between 35 and 150 light-years away that they hope will be prime targets for the next generation of space telescopes, such as the James Webb Space Telescope (JWST), due to be launched later this year.

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