



Lucky Planet: Why Earth is Exceptional—and What That Means for Life in the Universe

By David Waltham

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Humankind has long fantasized about life elsewhere in the universe. And as we discover countless exoplanets orbiting other stars--among them, rocky super-Earths and gaseous Hot Jupiters--we become ever more hopeful that we may come across extraterrestrial life. Yet even as we become aware of the vast numbers of planets outside our solar system, it has also become clear that Earth is exceptional. The question is: why?

In "Lucky Planet," astrobiologist David Waltham argues that Earth's climate stability is one of the primary factors that makes it able to support life, and that nothing short of luck made such conditions possible. The four-billion-year stretch of good weather that our planet has experienced is statistically so unlikely, he shows, that chances are slim that we will ever encounter intelligent extraterrestrial others.

Describing the three factors that typically control a planet's average temperature--the heat received from its star, how much heat the planet absorbs, and the concentration of greenhouse gases in the atmosphere--Waltham paints a complex picture of how special Earth's climate really is. He untangles the mystery of why, although these factors have shifted by such massive measures over the history of life on Earth, surface temperatures have never fluctuated so much as to make conditions hostile to life. Citing factors such as the size of our Moon and the effect of an ever-warming Sun, Waltham challenges the prevailing scientific consensus that other Earth-like planets have natural stabilizing mechanisms that allow life to flourish.

A lively exploration of the stars above and the ground beneath our feet, "Lucky Planet" seamlessly weaves the story of Earth and the worlds orbiting other stars to give us a new perspective of the surprising role chance plays in our place in the universe.

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Editorial Review

Review

"David Waltham takes us on a delightful tour of the various factors that influence planetary habitability and the evolution of advanced life. That he thinks the prospects for it are unlikely is all the more reason for us to go up to space and take a good look!"

--James Kasting, Professor of Geosciences, Penn State University, and author of "How to Find a Habitable Planet"

"A lively and well-argued antidote to a widespread view that advanced life could arise frequently and in many places in the known Universe. Waltham explains why the Earth is a much more peculiar planet than you might think, and he shows that its friendliness to life does not just apply to the here-and-now, but must equally have pertained through a history of more than 3.5 billion years: life's survival and prospering to the point where intelligent life could emerge was a product of extraordinary and exceptional luck. A skeptical response to ideas of inevitable evolution of intelligent beings among the stars, Waltham suggests that we may, after all, be lonelier than we could have thought."

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"A bold, unwavering argument that pushes back against the too-quick acceptance of Earth as exceptional--and encourages its intelligent life forms to appreciate our supreme luck."

--"Kirkus Reviews"

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"Waltham has an engaging, pleasantly meandering, style of writing, making his book accessible to the non-specialist. He shows a knack for clearly explaining complex concepts - for example, geologic time scales and

exoplanet detection techniques."

--"Quest: The History of Spaceflight Quarterly"

About the Author

David Waltham is an astrobiologist, geophysicist and head of the department of Earth Sciences at Royal Holloway College, the University of London.

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