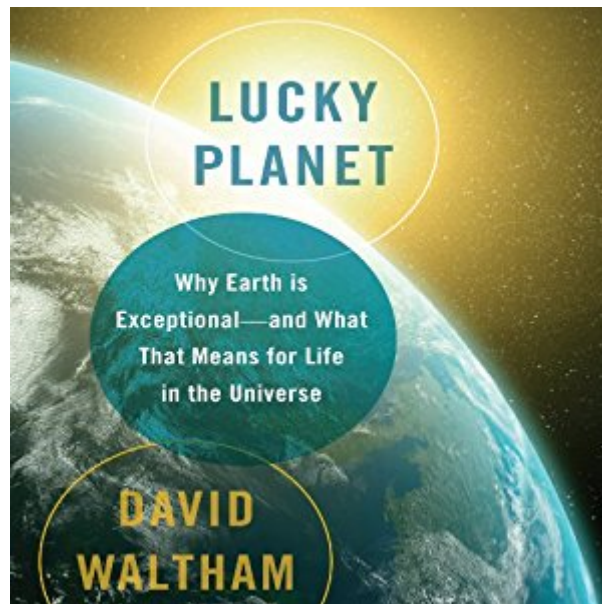


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# Lucky Planet: Why Earth Is Exceptional - And What That Means For Life In The Universe



## Synopsis

Why Earth's life-friendly climate makes it exceptional - and what that means for the likelihood of finding intelligent extraterrestrial life We have long fantasized about finding life on planets other than our own. Yet even as we become aware of the vast expanses beyond our solar system, it remains clear that Earth is exceptional. The question is: Why? In *Lucky Planet*, astrobiologist David Waltham argues that Earth's climate stability is what makes it uniquely able to support life, and it is nothing short of luck that made such conditions possible. The four-billion-year stretch of good weather that our planet has experienced is statistically so unlikely that chances are slim that we will ever encounter intelligent extraterrestrial others. Citing the factors that typically control a planet's average temperature - including the size of its moon, as well as the rate of the Universe's expansion - Waltham challenges the prevailing scientific consensus that 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.

## Book Information

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## Customer Reviews

Although he was enormously popular and a really great guy, Carl Sagan's profession included a dark side--an outrageous public relations campaign plumping for aliens of every stripe. It was he who suggested that, because there are hundreds of millions of stars in our galaxy alone, there must

be at least a million sentient beings within. Let's go and find them. (He even sent them directions!!) Along comes the Great Wet Blanket, "Rare Earth: why complex life is rare uncommon in the universe." Here was a book written not by astronomers with their ridiculously simplistic "Goldilocks" religion--is the planet at a distance from its sun to have liquid water?--Ergo sentient life--but by biologists, experts in the subject of life. Of course the faithful rose up as one to savage the work, but the die of doubt was cast. Are we really alone? Now comes Lucky Earth by British climatologist David Waltham. Whereas Rare Earth painted the big picture using the same celestial mechanics so dear to astronomers, but to a far greater micro-detail--detail that included the crucial event of a rogue Mars-sized planet crashing into Earth and knocking off enough planetary mass to result in the creation of our Moon (how often does that happen?). This huge moon (relative to Earth) resulted in huge mile-high tides that washed seawater over continents to leach out chemicals that eventually resulted--somehow--in the creation of life itself. Lucky Planet covers the same ground using climate mechanics. Its main theme is describing the extraordinarily stable climate of Earth for 4 billion years that permitted life to arise and evolve to ever more complex variations.

It's been fashionable and perhaps even comforting to believe in the essential unity, benevolence and even environmental-competence of life on Earth. The Gaia hypothesis makes us feel good, but hard-nosed evolutionary biologists and planetary scientists crunch the numbers and just can't get it to work. Forget the galaxy of a billion friendly alien civilizations, perhaps there's just one: ourselves. Perhaps we're just very, very fortunate. Here's a much abbreviated summary of what David Waltham has to say in this lively and intelligent book. Our very existence shows that the Earth has experienced life-friendly climatic conditions for billions of years. During this time the output of the sun has increased by 30% while early high levels of greenhouse gases such as methane, water vapour and carbon dioxide have been almost scrubbed from the atmosphere. These changes ought to have produced enormous and lethal climatic variation yet somehow, by some magic, the effects have largely cancelled out. For some people, this shows that powerful negative feedback mechanisms are at work, stabilising the climate for life. Strange then, that such benign processes are so hard to pin down. The alternative view is that for most planets like the Earth, the climate did indeed transition to fire or ice, with the consequent destruction of any biosphere; the Earth is special and very, very lucky. Of course, the fact that we're here at all to make such an observation indicates that for the Earth it could hardly have been otherwise. This is called the principle of Anthropic Selection - to be contrasted with the Principle of Mediocrity, that the Earth is not that special in the universe. David Waltham systematically takes us through the unique

features of the Earth.

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