

# New study of solar system speculates about life on other planets

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A comprehensive review by leading scientists about our Solar System which speculates on the possibility of life on other planets has been published. *Solar System Update* brings together the work of 19 physicists, astronomers, and climatologists from Europe and the USA in 12 chapters on the sun, the main planets and comets.

The book, co-authored by Dr Philippe Blondel, of the University of Bath, highlights the many recent discoveries and in particular the amount of water, one of the essentials for life, found in the Solar System.

Recent studies have revealed ice in craters on Mercury, the closest planet to the sun, and that liquid water may once have existed on the surface of Mars, and may still be there underground.

In addition, liquid water may exist on moons around Jupiter, in particular Europa, Ganymede and Callisto, underneath a surface of ice.

In his chapter *The Habitability of Mars: Past and Present*, Thomas McCollom, of the Center for Astrobiology at the University of Colorado, USA, says that though the temperatures on Mars, as low as minus 120 Centigrade, mean that water cannot exist on the surface, there may be a "planet-wide liquid aquifer at some depth in its crust." There is also geological evidence that water has flowed on the surface in the past.

"It seems increasingly apparent that habitable environments very likely exist on Mars today, and may have been considerably more diverse and

abundant in the past," he writes.

In his chapter *The Icy Moons of Jupiter*, Richard Greenberg, of the Department of Planetary Sciences at the University of Arizona, USA, says: "There is an unusually strong motivation to continue to pursue studies of the icy satellites."

He says that three large moons of Jupiter "probably have liquid water layers, and one, Europa, almost certainly has an ocean just below the surface. Naturally liquid water raises the possibility of extraterrestrial life."

However, if the surface ice were very thick, this would cut the water below off from oxygen and sunlight which are important for most forms of life on Earth, and so might have prevented life from developing.

Dr Blondel, who works in the University of Bath's Department of Physics, took 18 months to edit the book, with his co-editor Dr John Mason.

"This book sets out how much water and ice there is in the solar system," said Dr Blondel. "This obviously has implications for our search for extra-terrestrial life.

"By understanding better how the climates of planets like Mars and Venus have evolved, we can understand more about climate change on Earth.

"For instance, the very hot and cloudy climate of Venus is likely to have developed after a runaway greenhouse effect, and the more we know about this the more we can understand some of the challenges caused by our climate change on Earth. "

Source: University of Bath

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