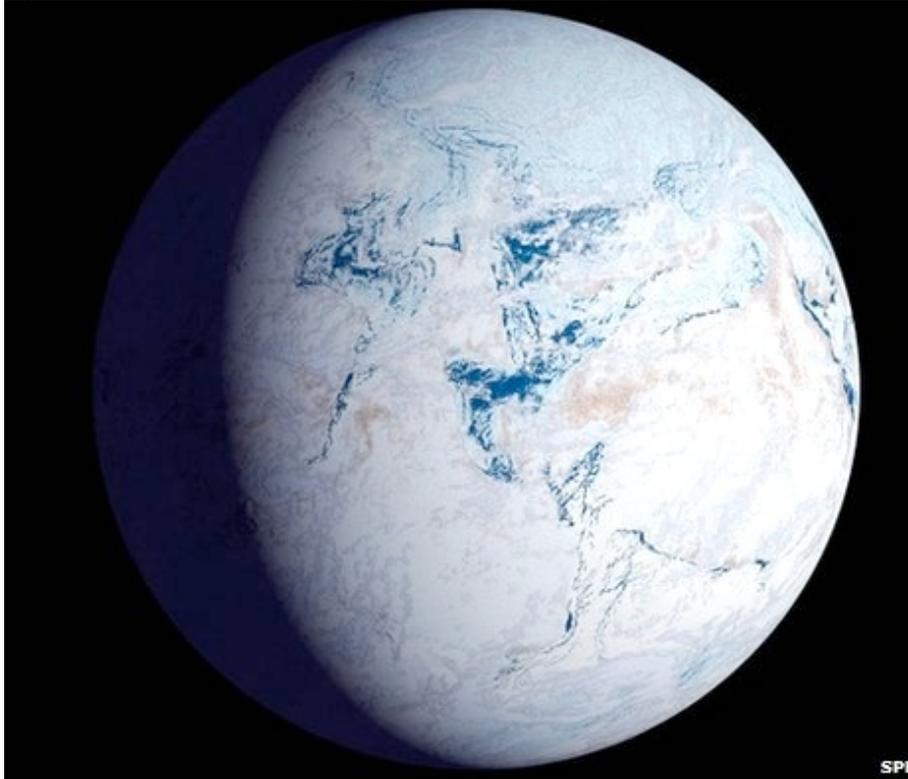


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Life may have survived 'Snowball Earth' in ocean pockets

By Neil Bowdler Science reporter, BBC News



SPL An impression of a frozen Earth shrouded in snow and ice. Basic organisms may have survived in pockets of open water, according to new research

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Life may have survived a cataclysmic global freeze some 700 million years ago in pockets of open ocean.

Researchers claim to have found evidence in Australia that turbulent seas still raged during the period, where microorganisms may have clung on for life.

Conditions on what is dubbed "Snowball Earth" were so harsh that most life is thought to have perished.

Details are published in the journal *Geology*.

The researchers in Britain and Australia claim to have found deposits in the remote Flinders

Ranges in South Australia which bare the unmistakable mark of turbulent oceans.

They say the sediments date to the Sturtian glaciation some 700 million years ago, one of two great ice ages of the Cryogenian period associated with the "Snowball Earth" hypothesis.



The evidence comes from the Flinders Ranges in South Australia

These sediments, they say, prove pockets of open ocean waters must have existed during the period, perhaps supporting microscopic life.

The snowball earth hypothesis suggests the land and oceans of our planet were thrown into a deep freeze, the like of which has never been seen before or since.

"For the first time, we have very clear evidence that storms were affecting the sea floor," said Dr Dan Le Heron of Royal Holloway, University of London, who lead the research. "That means we have to have pockets or oases within this 'Snowball Earth' that are free of ice."

"We see a very particular type of feature in sedimentary rocks called 'hummocky cross-bedding'. These features can only form where storm waves sweep up sand from the ocean floor, slosh it back and forth and create a bed of sandstone."

These ocean pockets could explain how some microorganisms survived the period and went on to flourish and diversify during the later Cambrian period.

"This could be one of the ideal places for early organisms to start thriving and for evolution to really start kicking in."

'Slushball' Earth

The "Snowball Earth" hypothesis is just that - a hypothesis - and while most agree on the evidence for a deep freeze, argument remains over the causes and the extent to which the entire globe froze during the Sturtian and Marinoan glaciations.

Some wonder how any life could have survived such a deep freeze.

Professor Doug Benn of the University Centre in Svalbard, who admits to being more a "Slushball Earth" or "Softball Earth" theorist said: "The paper supports the idea that the Earth

was not completely frozen throughout one of the extreme glaciations in the late Precambrian."

"The Snowball model was ground-breaking in its time, but now it has to be replaced by a more dynamic - and even more interesting - picture of how the Earth functioned in the distant past," he said.