



SMALL FOSSILS RECORD BIG CHANGES: TRACKING THE DEEP HISTORY OF CLIMATE CHANGE

They are only small marine animals, some less than one centimetre in width, but their fossilised shells carry an enormous amount of information about life on earth.

Brachiopods, a group of invertebrate marine creatures, were very abundant in the world's oceans between 500 million and 252 million years ago.

Spread across the globe in warm and cold water environments, their distribution was largely controlled by climate.

Warmer waters had greater species diversity. In colder surrounds diversity dropped, and the animals grew bigger.

By studying brachiopod fossils and the size of their shells, Deakin palaeontology Professor Guang Shi can work out the type of environments the animals lived in.

Guang says the fossils can also be used as indicators of climate change through time.

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When the climate changed, some brachiopods moved to new regions. By tracing this migration Guang and his colleagues hope to map the ocean currents of the past.

These marine creatures may also help to reconstruct the history of the earth itself. Guang and collaborators in Argentina are examining fossils in the two nations to test the theory that they were both once part of the supercontinent, Gondwana.

"Brachiopods are information-rich," Guang says. "They provide a very powerful insight into the geological past."

His work so far has suggested a global warming trend towards the end of the Permian period that extended from 299 to 252 million years ago.

Guang has also documented cases where brachiopods used islands to migrate from one hemisphere to another, known as "the stepping stone migration pattern".

Brachiopod shells range in width from less than one centimetre to up to 30 centimetres. They still exist today, but their numbers were devastated when a mass extinction 252 million years ago wiped out 95 per cent of the existing species.



Professor Guang Shi at work near Broome, Western Australia

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A fossil brachiopod about 280 million years old from Western Australia. Image: Guang Shi

FURTHER INFORMATION:

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