

Microbes as climate engineers

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We might think we control the climate but unless we harness the powers of our microbial co-habitants on this planet we might be fighting a losing battle, according to an article in the February 2008 issue of *Microbiology Today*.

Humans are continually altering the atmosphere. “Arrogant organisms that we are, it is easy to view this as something entirely novel in Earth’s history,” says Dr Dave Reay from the University of Edinburgh. “In truth of course, micro-organisms have been at it for billions of years.”

Humans affect the atmosphere indirectly by their activities. Most human-induced methane comes from livestock, rice fields and landfill: in all of these places, microbes are actually responsible for producing the methane, 150 million tonnes a year. Microbes in wetlands produce an additional 100 million tonnes and those that live inside termites release 20 million tonnes of methane annually.

90 billion tonnes of carbon a year is absorbed from the atmosphere by the oceans, and almost as much is released; microbes play a key role in both. On land, a combination of primary production, respiration and microbial decomposition leads to the uptake of 120 billion tonnes of carbon every year and the release of 119 billion tonnes.

“The impact of these microbially-controlled cycles on future climate warming is potentially huge,” says Dr Reay. By better understanding these processes we could take more carbon out of the atmosphere using microbes on land and in the sea. Methane-eating bacteria can be used to

catch methane that is released from landfill, Cyanobacteria could provide hydrogen fuel, and plankton have already become a feedstock for some biofuels.

“Microbes will continue as climate engineers long after humans have burned that final barrel of oil. Whether they help us to avoid dangerous climate change in the 21st century or push us even faster towards it depends on just how well we understand them.”

Source: Society for General Microbiology

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