assemblage of spiny, organic-walled plankton (Fig. 1), which gives way to a low-diversity assemblage of simpler forms in the younger units, a presumable disaster assemblage.

The turnover itself is not surprising. But Nagy and co-authors reveal that the switch to the low-diversity assemblage occurred some 16 million years before the glaciation, leaving the supposed cause and effect — glaciation and biotic turnover — clearly decoupled. Thus, glaciation need not be invoked to force the phytoplankton turnover from a diverse to an impoverished assemblage.

Although the work by Nagy *et al.* demonstrates that glaciation is not necessary to cause a phytoplankton extinction in the Neoproterozoic, it does not preclude snowball glaciation triggering later extinctions. But other snapshots of Neoproterozoic life do not necessarily support such biotic upheaval. A microfossil assemblage from Death Valley[4], deposited at the time of purported global glaciation, reveals a complex ecosystem (complex for the Precambrian, at least). The assemblage comprises both photosynthetic and heterotrophic eukaryotes, as well as a host of fossils interpreted as cyanobacteria and other bacteria, which apparently survived during the glaciation. The presence of photosynthesizers also indicates that sunlight reached their environment, placing limits on the presence or thickness of sea ice concurrent with the widespread glaciation.

Organic biomarkers — chemical remains preserved in rocks and sediments that indicate the presence of certain groups of organisms — reveal very little evidence for disaster assemblages during glaciation. Biomarkers from glacial strata in Brazil[5] indicate a glacial ecosystem that included eukaryotes and a variety of metabolisms including photosynthesis, once again placing limits on extent and thickness of sea ice. Perhaps even more exciting, sponge biomarkers were found recently in glacial deposits from Oman[6], providing some of the oldest tangible evidence for animals on the Earth, and indicating that even animals survived Snowball Earth.

For me, the work by Nagy and colleagues[1] adds to the growing evidence that the conditions for life during Neoproterozoic Snowball Earth were not as severe as some would suggest. ❐

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ATMOSPHERIC POLLUTION

Brief relief

In the summer of 2008, all eyes were on Beijing. Host to the Olympic and Paralympic Games, China was keen to put on a spectacular show. However, images of athletes arriving in the city wearing face masks and stadiums shrouded in smog cast a shadow over events.

Rapid industrialization has resulted in severe pollution problems in China. Industrial waste spills into rivers, heavy metals weigh down the soils and acid rain falls from the skies. One of the greatest environmental and human health concerns is the level of atmospheric pollutants, a particular problem in China's cities, where concentrations of ozone and particulate matter often exceed World Health Organization guidelines. Thus when Beijing was chosen as host for the 2008 Olympic Games, concerns — particularly about the health of the athletes — ran high.

In an attempt to rectify the problem and ease some of these concerns, factories were shut down, construction works were stopped and half of the city's 3.3 million cars were banned from the roads. In total, the Chinese government spent US$17.58 billion on pollution reduction measures. But did they have any effect?

Jan Cermak and Reto Knutti, of the Institute of Atmospheric and Climate Science, Zurich, argue that they did (*Geophys. Res. Lett.* doi: 10.1029/2009GL038572; 2009). They compared satellite observations of aerosol levels over Beijing during the games, with model predictions of the aerosol burden assuming no emission controls, based on meteorological conditions. Observed aerosol levels were ~15% lower than model projections. Although the reduction is low compared with natural variability, it is noticeable, and suggests that pollution controls were a partial success.


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However, despite massive emission controls hundreds of kilometres outside the capital, aerosol reductions were confined to Beijing and its immediate surroundings. Outside this area, control measures had little effect.

The magnitude and scale of the reduction is disappointing, although expected given that regional transport is a major determinant of atmospheric aerosol levels. But it is encouraging to note just how quickly the benefits of pollution control measures are realized (many of the controls were implemented just months before the games began).

With plans to make the 2012 Olympic Games carbon neutral, London is next in sight. Whether the city can pull off plans to make these games the greenest in history remains to be seen. But, like in Beijing, the event could prove a test bed for the effectiveness of the chosen environmental improvement schemes.

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