

Bite-size

Moorland cover-up

The Centre for Ecology & Hydrology has set up a novel system of retractable roofs in the Peak District, to find out how fast and well our moorlands will recover from pollution and how land managers can help the moors to cope with climate change.

The Peak District is one of the UK's most polluted upland areas, mostly because it is near large cities like Manchester and Sheffield. Some pollutants have fallen dramatically on these moors: sulphur dioxide from burning coal has fallen by 60 per cent since the mid 1980s. The air now looks much cleaner. But other pollutants have increased, for example, nitrogen oxides from traffic. Climate change is altering weather patterns, and this will also affect the ability of upland areas to recover from pollution.

The 'Recovery Roof'



The 'Recovery Roof' project in Peaknaze Moor, above Glossop.

experiment controls the environment of selected patches of moor, reproducing lower pollution and climate change. When it rains, transparent retractable roofs cover the vegetation, and 'clean' rain is substituted from an irrigation system. This protects the plants from nitrogen pollutants in rainwater. Reflective covers are drawn over the vegetation

at night, to mimic climate warming. Another set of roofs excludes rain from June to September, reproducing the dry summer of 1995.

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New way to grow marine micro-organisms – down on the farm

Working at the interface between earth, ocean and biological sciences, a team from the Universities of St Andrews and Cambridge is growing single-celled marine creatures called Foraminifera in the laboratory, using novel facilities funded by NERC. This is important because the fossilised shells of these creatures are widely used to study past climates. By analysing the tiny fossils from marine sediments, scientists can estimate past seawater temperatures and other environmental conditions. The new facility lets researchers study in more detail how shell chemistry is controlled by their environment, improving the interpretation and reliability of

what the fossils can tell us about past climates.

'We're 'farming' on a very small scale here,' said Heather Austin of the Gatty Marine Laboratory. 'We were very excited when I managed to keep Foraminifera alive and reproducing in the laboratory.'

Nicky Allison, Research Fellow in Geography and Geosciences, explained the experiments, 'We can grow the Foraminifera under tightly controlled conditions then see how the chemistry of their shells is affected by changes in the environment, for example the seawater temperature. To do this we need to be able to analyse the shells on a very fine scale so that we can differentiate between material

deposited under different conditions. Bill Austin and I have recently developed an analytical technique, called secondary ion mass spectrometry, so that we can analyse small areas of Foraminifera (around 30 micrometres in diameter) to investigate how trace metals are distributed in the shells. Our preliminary work, on specimens collected from the Irish Sea, indicates that the shell chemistry is much more complicated than we had thought.'

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What happens when the wind doesn't blow?

The UK Energy Research Centre (UKERC) has published a definitive report on the costs and impacts of an intermittent energy supply from renewable sources, such as wind and waves. None of more than 200 studies reviewed by UKERC suggested that our energy supply would be less reliable if a significant proportion of it came from intermittent renewable sources, and the extra cost would be very modest.

Commenting on the report, Energy Minister Malcolm Wicks said: 'Our target is to have 10 per cent of the UK's electricity produced from renewable sources by 2010 and a significant proportion of that will come from wind power. Suggestions that it is excessively expensive, or that traditional power stations are needed to back up the energy produced by all our wind farms, are just two of the myths that have been peddled by their opponents. The UK Energy Research Centre's study demonstrates that these claims have been exaggerated. I welcome the report's contribution to the debate.' The work was funded by UKERC and the Carbon Trust.

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The report is at www.ukerc.ac.uk/content/view/258/852

