

Positive aspect of acid rain

YOUwouldn't think anyone could possibly have anything positive to say about acid rain. After all, the UK was called "the dirty old man of Europe" by Scandinavian countries in the 1980s because UK industry poured out sulphur dioxide into the atmosphere by the tonnes. The resulting acid rain killed fish and other aquatic life and damaged forests. The UK and Europe have since pretty much cleaned up industry and its dirty old man image over the past two decades, while committing to a treaty of further reduction of emissions by 2010.

So why are Open University biogeochemist researchers now saying acid rain is not the complete bad boy of the environment we once thought it was? Dr Vincent Gauci of the OU department of Earth Sciences has been researching an unexpected positive aspect of acid rain since 1997, along with OU colleague Dr Nancy Dise, NASA, the Academy of Natural Sciences, and one Scandinavian country, Sweden. The research has found that the sulphur in acid rain actually helps cut back emission of the powerful greenhouse gas methane.

The research is being published by the *Proceedings of the National Academy of Sciences of the US* in its August 2 edition. It shows that in natural wetlands, a big producer of methane, the sulphur carried in acid rain actually blocks methane. "Acid rain has such a big impact," Dr Gauci says, "that it shuts down 30 to 40 per cent of the methane in

wetlands that are affected by this pollution."

The experimental research was carried out in Morayshire Scotland, but is backed up with independent data from all over the world including America, Europe and Sweden enabling Dr Gauci to estimate the world-wide impact of this effect.

"When we used all the collected data with a NASA model and applied it to a global scale, it shows that the effect of acid rain from 1960 to 2030 actually reduces methane emissions to below pre-industrial levels" Dr Gauci said. "The effect more than compensates for the increase in methane emission that would be expected as wetlands become warmer. In effect, acid rain is acting like a lid on the largest methane source."

Dr Gauci is cautious about the bad image of acid rain: "We wouldn't want to give the impression that acid rain is a good thing – it has long been known that acid rain damages natural ecosystems such as forests, grasslands, rivers and lakes. But our findings suggest that small amounts of pollution may also have a positive effect in suppressing this important greenhouse gas. Moreover, they point to how complex the Earth system is."

He adds: "Quite rightly, most attention has been given to the negative aspects of pollution but if we want to understand all of Earth's complexities and make better predictions of future climate we also need to understand the 'good side' to these problems."