

# Scientists want climate change early-warning system



By Gerard Wynn

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LONDON (Reuters) – A better monitoring network for greenhouse gases is needed to warn of significant changes and to keep countries that have agreed to cut their emissions honest, scientists said in papers published Monday.

"What we're hoping to do is see if the warming is feeding the warming, particularly in the Arctic," said Euan Nisbet, a specialist in methane emissions at the University of London.

"Our monitoring network is very, very limited. We feel more observation is needed."

Such measurement could warn of possible climate tipping points, scientists said in papers published by Britain's science academy, the Royal Society.

The data also could be used to verify countries' reporting of greenhouse gas emissions against targets under the present Kyoto Protocol and a possible successor after 2012.

The Earth's climate in the past has changed in a relatively short period of time, warming rapidly about 12,000 years ago at the end of the most recent glacial period.

Scientists are not sure why that happened, and have warned of possible climate tipping points from manmade emissions.

They are concerned, for example, that as Arctic permafrost melts it would allow plant matter to rot and vent methane, a greenhouse gas which could trigger more warming.

Nisbet said the earth last came out of a glacial period "in a matter of a decade or so," referring to rapid warming followed by a more prolonged ice melt, and warned of serious consequences if that were to be repeated now.

A retreat of Arctic summer ice warming has been observed in recent years against a 30-year satellite record, shrinking to its lowest level in 2007 and coinciding with a spike in methane.

"In 2007 the Arctic methane emissions appeared to increase very sharply, and then stabilized a bit later. The question is what were the causes of that," Nisbet said.

## EMISSIONS

An extra benefit of wider measurement would be an independent test of national reporting of greenhouse gas emissions. Under the Kyoto Protocol, nearly 40 industrialized countries report their emissions against targets from 2008-2012.

A particularly thorny issue in negotiations to agree a successor pact from 2013 is how far international inspectors might oversee emissions reporting. A network of stations may provide a technical answer.

"We're trying to verify the greenhouse gas emissions that are declared by the various countries," Nisbet said.

"The measurement of emissions has huge errors."

One way to cross-check national reporting is to count all the sources of greenhouse gas emissions, from cars through power plant to cows.

Another is to use an improved network of climate stations to measure greenhouse gases in the air and use prevailing winds to calculate where they come from.

Nisbet's paper was one of more than 15 published in a special issue of Philosophical Transactions of the Royal Society Monday, setting out key research questions to better understand the impact of greenhouse gases on the climate.

A replacement satellite is planned for 2013 after the previous "orbiting carbon observatory" crashed on launch in 2009.

(Reporting by Gerard Wynn, Editing by Michael Roddy)