



CLIMATE – NEWS

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ICFRE – CLIMATE CHANGE NEWS From the Biodiversity and Climate Change (BCC) Division, Indian Council of Forestry Research and Education, P.O. New Forest, Dehra Dun – 248006

CLIMATE CHANGE INTERNATIONAL NEWS

EMISSIONS OF GREEN HOUSE GASES METHANE AND NITROUS OXIDE UNDER ESTIMATED, RESEARCH SUGGESTS

1 July, 2010 Science Daily

<http://www.sciencedaily.com/releases/2010/07/100701090330.htm>

The emission of the greenhouse gases methane and nitrous oxide has been structurally underestimated, as a result of the measuring methods used. This is the conclusion of the scientist Petra Kroon, who carried out research for the Energy research Centre of the Netherlands (ECN) and Delft University of Technology (TU Delft, The Netherlands) into an innovative method for measuring the emission of these gases. Kroon recently obtained her PhD degree for this much more accurate method, which also partly solves the problem of this systematic underestimation.

When it comes to greenhouse gases many of us think first of CO₂. But a large proportion of global greenhouse gas emissions are actually other gases, such as N₂O (nitrous oxide) and CH₄ (methane). In the Netherlands the contributions of methane and nitrous oxide to the total emission of greenhouse gases are estimated to be 8% and 6% respectively. Worldwide these figures are 14% and 9%.

The emission of methane and nitrous oxide is largely the result of agricultural activities; nitrous oxide from fertilisers and methane mostly from cows. In peat pasture areas these emissions are particularly prevalent. PhD student Petra Kroon carried out measurements of methane and nitrous oxide for ECN and TU Delft on an intensively managed peat pasture, but the measuring techniques she used can also be used in other ecosystems.

Given the large contribution these two gases make to total greenhouse emissions, it is important to chart their emission levels accurately. According to Kroon, however, there are considerable disadvantages to the emission measurement technique most commonly used

for these gases, the so-called 'chamber measurement' method. Put simply, this involves regularly measuring the concentration of the gases emitted from the soil and trapped in a sealed box. Rising concentrations of these gases are then analysed in order to draw conclusions about the amount of gas being given off by a given surface area. The problem with this method is that methane and nitrous oxide emissions fluctuate strongly in time and space. "If you do the same measurements ten metres away, or ten days later, the results can be totally different. To reduce uncertainty you would have to do an almost impossible number of measurements," explains Kroon. The result is a high uncertainty in the measured annual emission values: about 50%.

An improved measuring method, the so-called eddy covariance method, recently became available. The eddy covariance technique has long been in use for that other greenhouse gas, CO₂, but was inapplicable for methane and nitrous oxide until recently, partly because the concentrations of methane and nitrous oxide are so much lower. Petra Kroon tested the new technique, which can measure emission values at a single point for 24 hours a day, 365 days a year and for several hectares at the same time. She concluded that when used properly, uncertainty in measured emission levels of methane and nitrous oxide could be reduced from about 50% to less than 10%.

Besides the greater uncertainty of the results, according to Kroon, the chamber measurement method also suffers from another potential problem. It involves certain assumptions, for instance that concentrations in the chamber rise in a linear fashion. "These assumptions may make analysis easier, but they don't always fit the facts, and this leads to underestimates in emission levels." Her findings are currently the subject of international discussions, and in the months to come much work will be devoted to calculating the impact they will have on national and international emission estimates.

NASA SATELLITE ADDS CARBON DIOXIDE TO ITS REPERTOIRE

7 July, 2010 Science Daily

<http://www.sciencedaily.com/releases/2010/06/100629112030.htm>

A NASA-led research team has expanded the growing global armada of remote sensing satellites capable of studying carbon dioxide, the leading greenhouse gas driving changes in Earth's climate.

The newest addition is the Tropospheric Emission Spectrometer (TES) instrument on NASA's Aura spacecraft, launched in 2004. TES measures the state and composition of Earth's troposphere, the lowest layer of Earth's atmosphere, located between Earth's surface and about 16 kilometers (10 miles) in altitude. While TES was not originally designed to measure carbon dioxide, a team led by Susan Kulawik of NASA's Jet Propulsion Laboratory, Pasadena, Calif., has successfully developed and validated a TES carbon dioxide tool.

Kulawik's team analyzed three years of carbon dioxide data from TES and compared them to other carbon dioxide data sources. These sources included the Atmospheric Infrared Sounder (AIRS) instrument on NASA's Aqua spacecraft, aircraft and ground station

samples, and two National Oceanic and Atmospheric Administration carbon dioxide research tools: GLOBALVIEW-CO2 and Carbon Tracker. The TES data were found to be in good agreement with the other data. The TES study appears in the journal *Atmospheric Chemistry and Physics*.

Kulawik says TES data may be able to help significantly reduce uncertainties in annual regional estimates of where carbon dioxide is being created (sources) and where it is being stored (sinks). "It's easy to see why you need measurements near Earth's surface, but TES measurements in the region of the atmosphere where carbon dioxide gets transported around the globe are also key to understanding carbon dioxide sources and sinks," Kulawik said.

Study co-authors Ray Nassar and Dylan Jones of the University of Toronto, Ontario, Canada, found that TES data can reduce -- by approximately 70 percent -- uncertainties in estimates of how much carbon dioxide is being released and stored in South America's tropical rain forests and Africa's grasslands. These include the Amazon, Congo and surrounding savannahs. "These regions have a major influence on the global carbon cycle," said Jones. "The new carbon dioxide data from TES will help scientists reduce uncertainties in our understanding of carbon dioxide, particularly in tropical regions, where there are currently very few surface or aircraft measurements."

Carbon dioxide is the most important human-produced greenhouse gas. Its current global average concentration in Earth's atmosphere is about 389 parts per million by volume, increasing by about two parts per million each year. This concentration varies seasonally and by hemisphere. Estimates are challenging, as it varies by less than two percent globally in the mid-troposphere.

Currently, about 55 percent of human-produced carbon dioxide remains in the atmosphere; the rest is stored in the ocean and by land plants, but exactly where remains a mystery. Recent studies have shown carbon dioxide emissions from fossil fuel combustion have been increasing faster than predicted, while the southern hemispheric oceans' capacity for storing carbon dioxide may be diminishing. Scientists want to better understand carbon dioxide sources and sinks so they can more reliably predict future atmospheric carbon dioxide levels, assess the impact of land use changes on atmospheric carbon dioxide, develop mitigation strategies and verify international treaties.

The new TES carbon dioxide data complement the available international space-based resources for measuring carbon dioxide. These include AIRS; Envisat's European Scanning Imaging Absorption Spectrometer for Atmospheric Chartography (SCIAMACHY); the European MetOp Infrared Atmospheric Sounding Interferometer (IASI); and the Japan Aerospace Exploration Agency's Greenhouse gases Observing Satellite (GOSAT). The Orbiting Carbon Observatory mission, NASA's first spacecraft dedicated to studying carbon dioxide and its sources and sinks, was lost in a launch vehicle mishap in February 2009. It is currently being rebuilt for a planned launch in 2013.

TES will measure carbon dioxide in the troposphere at altitudes between 2 and 8 kilometers (1.2 to 5 miles), with peak sensitivity at around 5 kilometers (3.1 miles). It will produce carbon dioxide products at latitudes between 40 degrees south and 45 degrees north. The team expects to release daily and monthly TES carbon dioxide data products to the public starting this July.

CHARCOAL TAKES SOME HEAT OFF GLOBAL WARMING: BIOCHAR CAN OFFSET 1.8 BILLION METRIC TONS OF CARBON EMISSIONS ANNUALLY

12 August, 2010 Science Daily

As much as 12 percent of the world's human-caused greenhouse gas emissions could be sustainably offset by producing biochar, a charcoal-like substance made from plants and other organic materials. That's more than what could be offset if the same plants and materials were burned to generate energy, concludes a study published August 10 in the journal *Nature Communications*.

"These calculations show that biochar can play a significant role in the solution for the planet's climate change challenge," said study co-author Jim Amonette, a soil chemist at the Department of Energy's Pacific Northwest National Laboratory. "Biochar offers one of the few ways we can create power while decreasing carbon dioxide levels in the atmosphere. And it improves food production in the world's poorest regions by increasing soil fertility. It's an amazing tool."

The study is the most thorough and comprehensive analysis to date on the global potential of biochar. The carbon-packed substance was first suggested as a way to counteract climate change in 1993. Scientists and policymakers have given it increasing attention in the past few years. The study was conducted by Dominic Woolf and Alayne Street-Perrott of Swansea University in Wales, U.K., Johannes Lehmann of Cornell University in Ithaca, N.Y., Stephen Joseph of the University of New South Wales, Australia, and Amonette.

Biochar is made by decomposing biomass like plants, wood and other organic materials at high temperature in a process called slow pyrolysis. Normally, biomass breaks down and releases its carbon into the atmosphere within a decade or two. But biochar is more stable and can hold onto its carbon for hundreds or even thousands of years, keeping greenhouse gases like carbon dioxide out of the air longer. Other biochar benefits include: improving soils by increasing their ability to retain water and nutrients; decreasing nitrous oxide and methane emissions from the soil into which it is tilled; and, during the slow pyrolysis process, producing some bio-based gas and oil that can offset emissions from fossil fuels.

Making biochar sustainably requires heating mostly residual biomass with modern technologies that recover energy created during biochar's production and eliminate the emissions of methane and nitrous oxide, the study also noted.

CLIMATE CHANGE NATIONAL NEWS

INDIA WARY AS WEST PLOTS NEW CLIMATE MOVES AHEAD OF CANCUN

Nitin Sethi

24 September, 2010 Times of India , New Delhi

NEW DELHI: With all key countries discounting the possibility of a complete new global deal on climate change at Cancun, Mexico, in November, US and other rich countries have begun closed-door parleys to instead discuss a brief but game-altering 'Mexico Mandate'.

There are indications that the 'Mexico Mandate' could set new ground rules for crucial negotiations leading to a final new deal by December 2011. The move has not gone down well with the Indian government which sees pitfalls in allowing decisions on issues closer to developed countries' interests at Cancun while concerns of the South are unresolved.

The mandate could be in form of a series of decisions that all countries accept instead of hammering out a comprehensive new package. The Indian negotiators feel it could force negotiations to depart away from Bali mandate which was concluded after a heated debate in 2009 with developing countries managing to push in concerns of equity and development rights even as US and others fought hard to pin responsibility for mitigation on emerging economies.

Since Bali, negotiations that led up to and after Copenhagen Accord are seen by developing nations, especially BASIC nations — China, India, Brazil, South Africa — as a consistent attempt to reduce the differential in responsibilities between rich and poor nations.

With the recession having smacked the political will out of Northern countries to take any strong mitigation action and Barack Obama unable to pull off a domestic legislation on greenhouse gas emission reduction targets, Cancun is expected to produce a set of decisions on select issues. The US is seen to push for a decision that sets up strict scrutiny regime monitoring developing nations' economies while a deal on forestry and technology sharing is seen as sops to poor nations. India so far remains wary of such decisions where key issues of strong mitigation targets by developed countries and their financial commitments under UN Convention remain unresolved.

ICFRE NEWS

PARTICIPATION OF ICFRE IN THE ‘BONN CLIMATE CHANGE TALKS’ HELD ON AUGUST 2010 BONN, GERMANY

Shri V.R.S. Rawat, Scientist- D, Biodiversity and Climate Change Division, participated in the “Bonn Climate Change Talks” The thirteen session of the Ad Hoc Working Group on Further Commitments for Annex I Parties of the Kyoto Protocol (AWG-KP 13) and the eleventh sessions of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA 11) held in Bonn, Germany from 2 to 6 August 2010.

FIVE DAYS TRAINING PROGRAMME ON ‘CDM VALIDATION AND VERIFICATION’ AT ICFRE DEHRADUN

A five days training course on ‘CDM Validation and Verification’ was organized by M/S TUV SUD South Asia Pvt. Ltd New Delhi at ICFRE, Dehradun from 9-13 August 2010. 20 officers and scientists of ICFRE and FRI participated in the training programme. The programme was highly appreciated by the participants.



ONE WEEK DST TRAINING FOR SCIENTIST AND TECHNOLOGIST ON “CLIMATE CHANGE AND CARBON MITIGATION” FROM 6 TO 10 SEPTEMBER 2010 AT ICFRE, DEHRADUN



One week training programme for Scientist and Technologist on “Climate Change and Carbon Mitigation” was organized by the Biodiversity and Climate Change Division at ICFRE, Dehradun from 6 to 10 September 2010. 26 scientist and technologists participated in the course. The training programme was sponsored by the Department of Science and Technology New Delhi. The programme was highly appreciated and rated by the participants.

UPCOMING EVENTS

UNECE AD HOC GROUP OF EXPERTS ON ENERGY EFFICIENCY INVESTMENTS FOR CLIMATE CHANGE MITIGATION

20 - 22 October, 2010 Geneva (Geneve), Switzerland

http://www.unece.org/energy/welcome/Calendar_Meeting_10.html

This expert group was created within the framework of the UN Economic Commission for Europe (UNECE) Committee on Sustainable Energy.

CDM-EB 57

1- 5 November, 2010 Bonn (Nordrhein-Westfalen), Germany

http://unfccc.int/meetings/unfccc_calendar/items/2655.php?ye...

The 57th meeting of the Clean Development Mechanism (CDM) Executive Board (EB) will take place in Bonn, Germany.

CLIMATE 2010: CLIMATE CHANGE AND THE SUSTAINABLE MANAGEMENT OF WATER RESOURCES

1-7 November, 2010 virtual

<http://www.klima2010.net/>

CLIMATE 2010 is being organized in cooperation with the UN Environment Programme (UNEP), the UN Educational, Scientific and Cultural Organization (UNESCO), the World Meteorological Organization (WMO), the Intergovernmental Panel on Climate Change (IPCC), and the UN Food and Agriculture Organization (FAO).

58TH MEETING OF THE CDM EXECUTIVE BOARD

22-26 November, 2010 Cancun (Quintana Roo), Mexico

http://unfccc.int/meetings/unfccc_calendar/items/2655.php

This meeting of the Executive Board of the Clean Development Mechanism (CDM) will take place in Cancun, Mexico.

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UNFCCC COP 16 AND COP/MOP 6

29 November - 10 December, 2010 Cancun (Quintana Roo), Mexico
http://unfccc.int/files/meetings/cop_15/application/pdf/cop1...

The 16th session of the Conference of the Parties (COP) to the UNFCCC and the sixth session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) will be held in Mexico from 29 November to 10 December 2010 .

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