

Global warming to trigger more warming

Reuters

OSLO (Reuters) - Climate change caused by mankind will release extra heat-trapping gases stored in nature into the atmosphere in a small spur to global warming, a study showed.

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But the knock-on effect of the additional carbon dioxide -- stored in soils, plants and the oceans -- on top of industrial emissions building up in the atmosphere will be less severe than suggested by some recent studies, they said.

"We are confirming that the feedback exists and is positive. That's bad news," lead author David Frank of the Swiss Federal Research Institute WSL said of the study in Thursday's edition of the journal Nature.

"But if we compare our results with some recent estimates (showing a bigger feedback effect) then it's good news," Frank, an American citizen, told Reuters of the report with other experts in Switzerland and Germany.

The data, based on natural swings in temperatures from 1050-1800, indicated that a rise of one degree Celsius (1.6 degree Fahrenheit) would increase carbon dioxide concentrations by about 7.7 parts per million in the atmosphere.

That is far below recent estimates of 40 ppm that would be a much stronger boost to feared climate changes such as floods, desertification, wildfires, rising sea levels and more powerful storm, they said.

Carbon dioxide levels in the atmosphere have already risen to about 390 ppm from about 280 ppm before the Industrial Revolution. Only some models in the last major U.N. climate report, in 2007, included assessments of carbon cycle feedbacks.

Frank said the new study marks an advance by quantifying feedback over the past 1,000 years and will help refine computer models for predicting future temperatures.

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"In a warmer climate, we should not expect pleasant surprises in the form of more efficient uptake of carbon by oceans and land," Hugues Goosse of the Universite Catholique de Louvain, Belgium, wrote in a comment in Nature.

The experts made 220,000 comparisons of carbon dioxide levels -- trapped in tiny bubbles in annual layers of Antarctic ice -- against temperatures inferred from natural sources such as tree rings or lake sediments over the years 1050-1800.

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Goosse said the study refined a general view that rising temperatures amplify warming from nature even though some impacts are likely to suck carbon dioxide from the air.

Carbon might be freed to the air by a projected shift to drier conditions in some areas, for instance in the east Amazon rainforest. But that could be partly offset if temperatures rise in the Arctic, allowing more plants to grow.

Warmer soils might accelerate the respiration of tiny organisms, releasing extra carbon dioxide to the air. Wetlands or oceans may also release carbon if temperatures rise.

Frank said it was hard to say how the new findings might have altered estimates in a report by the U.N.'s Intergovernmental Panel on Climate Change in 2007 that world temperatures could rise by between 1.1 and 6.4 Celsius by 2100.

"Of the models that did include the carbon cycle, our results suggests that those with slightly below average feedbacks might be more accurate," he said. "But we can't now say exactly what sort of temperature range that would imply."

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