



## Surge in carbon levels shows vegetation struggling to cope

- Increased greenhouse gas from trees, plants and soil
- World may warm up more quickly than predicted

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**Friday May 11, 2007**

### Guardian

Climate change may have passed a key tipping point that could mean temperatures rising more quickly than predicted and it being harder to tackle global warming, research suggests.

Bristol University researchers say a previously unexplained surge of carbon dioxide levels in the atmosphere in recent years is due to more greenhouse gas escaping from trees, plants and soils. Global warming was making vegetation less able to absorb the carbon pollution pumped out by human activity.

Such a shift would worsen the gloomy predictions of the UN's Intergovernmental Panel on Climate Change which warned last week that there is less than a decade to tackle rising emissions to avoid the worst effects of global warming.

At the moment about half of human carbon emissions are re-absorbed into the environment, but the fear among scientists is that increased temperatures will reduce this effect. Wolfgang Knorr, a climate researcher at Bristol, said: "We could be seeing the carbon cycle feedback kicking in, which is good news for scientists because it shows our models are correct. But it's bad news for everybody else."

Measurements of carbon dioxide in samples of air show a sharp increase since the turn of the century, with unusually high levels in four of the past five years. The spike does not seem to match the pattern of increased emissions from fossil fuel burning, and can only be partly explained by natural events such as fires and weather phenomena including El Niño.

Dr Knorr's team compared the high carbon dioxide measurements in the atmosphere for 2002-03 with simulations of how soils and plants, including trees, behave under different conditions. They found the extra amount of carbon dioxide in the atmosphere could be accounted for by plants taking up less carbon because of unusually dry and hot conditions.

Writing in *Geophysical Research Letters*, they say: "We find that the remarkable feature of the 2002-03 anomaly seems to be that climate fluctuations - not only related to El Niño and occurring across all latitudes - acted together to create an unusually strong out-gassing of CO<sub>2</sub> of the terrestrial biosphere.

"Further research will be required to investigate if this fluctuation carries features of projected future climate change."

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