

The Missing Greenhouse Signature

Dr David Evans (david.evans@sciencespeak.com)

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Background Briefing

Introduction

Each possible cause of global warming has a different pattern of where in the planet the warming occurs first and the most. The signature of an increased greenhouse effect is a hotspot about 10 km up in the atmosphere over the tropics.

We have been measuring the atmosphere for decades using radiosondes—weather balloons with thermometers that radio back the temperature as the balloon ascends through the atmosphere. They show no hotspot whatsoever.

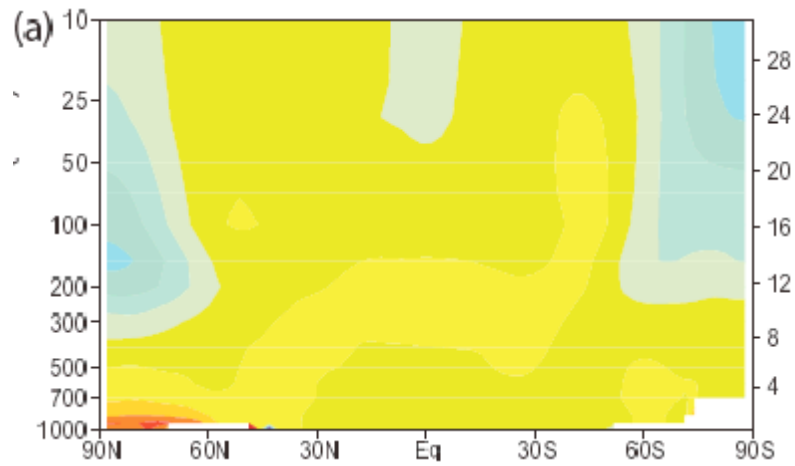
So an increased greenhouse effect is not the cause of the recent global warming. So we now know for sure that carbon emissions are not a significant cause of the global warming.

The Theory

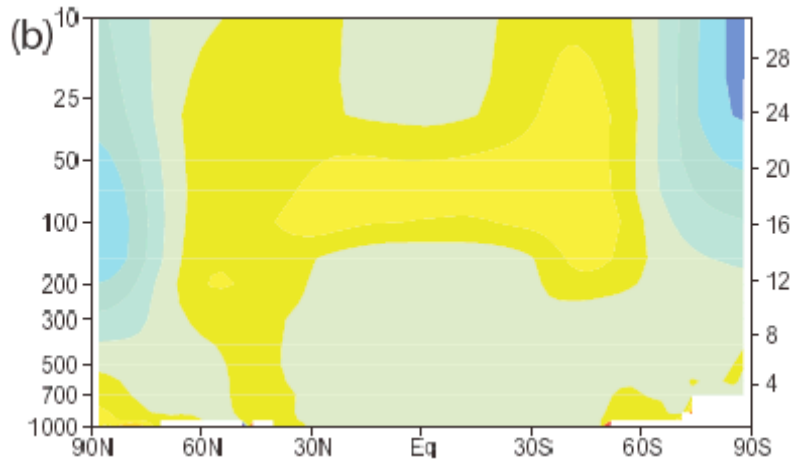
The theoretical signatures come from the latest big report from the IPCC, which is the most authoritative document for those who believe carbon emissions caused global warming. The IPCC Assessment Report 4 (AR4), 2007, Chapter 9. Figure 9.1, in Section 9.2.2.1, page 675, shows six greenhouse signature diagrams.

http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch09.pdf.

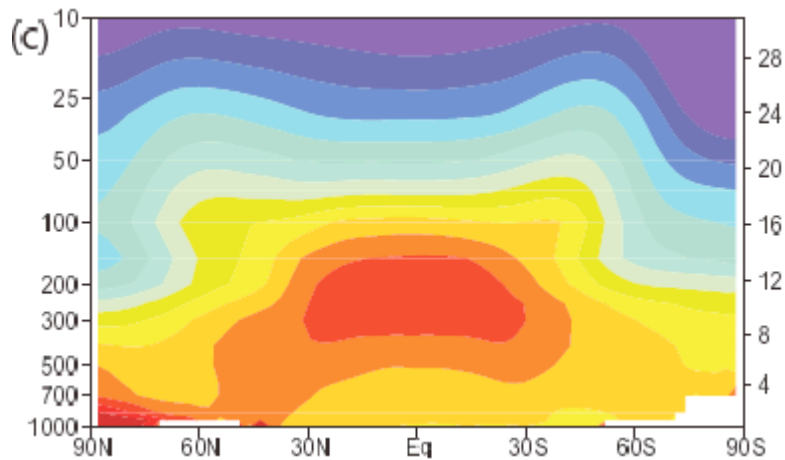
In each diagram the horizontal axis is the latitude, from the north pole (90 degrees north) through the equator to the south pole (90 degrees south). The vertical axis shows the height in the atmosphere, marked on left hand side shown as 0 – 30 km (and on the right hand side as the corresponding air pressures in hPa). The coloured regions on each diagram shows where the temperature changes occur for each possible cause (red +1°C, yellow +0.5°C, green –0.5°C, blue –1°C per century).



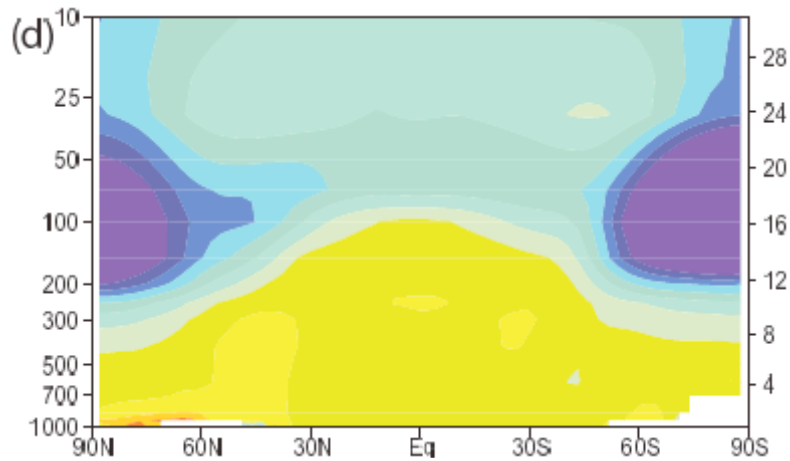
The signature of increased solar irradiation (that is, of the sun getting a bit hotter). Warming would be moderate through most of the atmosphere.



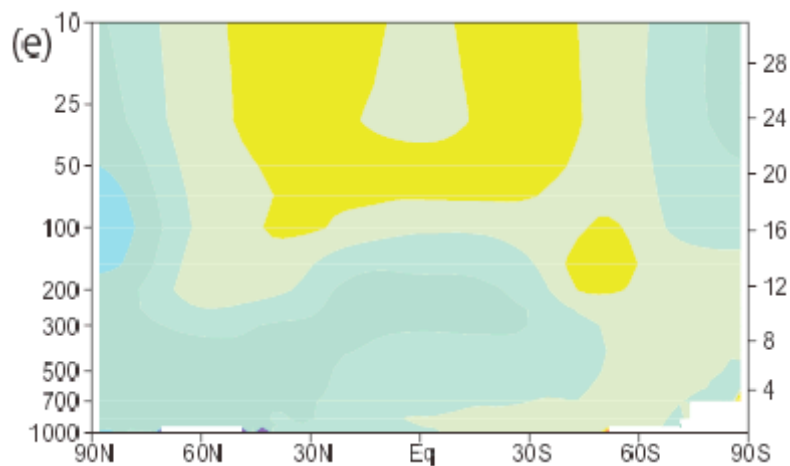
The signature of a large volcanic eruption that emits huge clouds of ash and fumes. There would be moderate warming above 14 km, and moderate cooling below that.



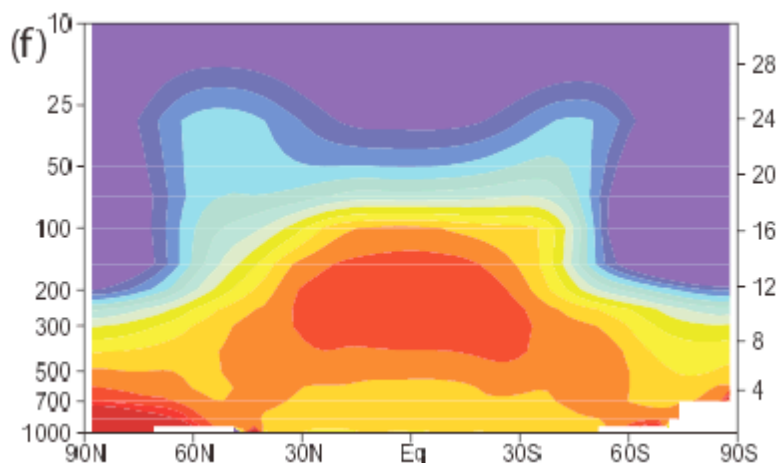
The signature of an increase in well-mixed greenhouse gases (such as due to carbon emissions). Warming would be concentrated in a distinct “hot spot” about 8 – 12 km up over the tropics, less warming further away, turning to cooling above 18 km.



The signature of more ozone depletion (both tropospheric and stratospheric). Moderate warming below 12 km, moderate cooling above 12 km.



The signature of increased industrial pollution (specifically, of direct sulphate aerosols). Moderate cooling below 14 km mainly in the northern hemisphere, moderate warming above 14 km over the tropics.



The theoretical signature expected by the IPCC, found by combining the five signatures above in the proportions the IPCC believe those causes contributed to global warming. The distinct hotpot 8 – 12 km up over the tropics due to increased greenhouse warming dominates the theoretical combined signature.

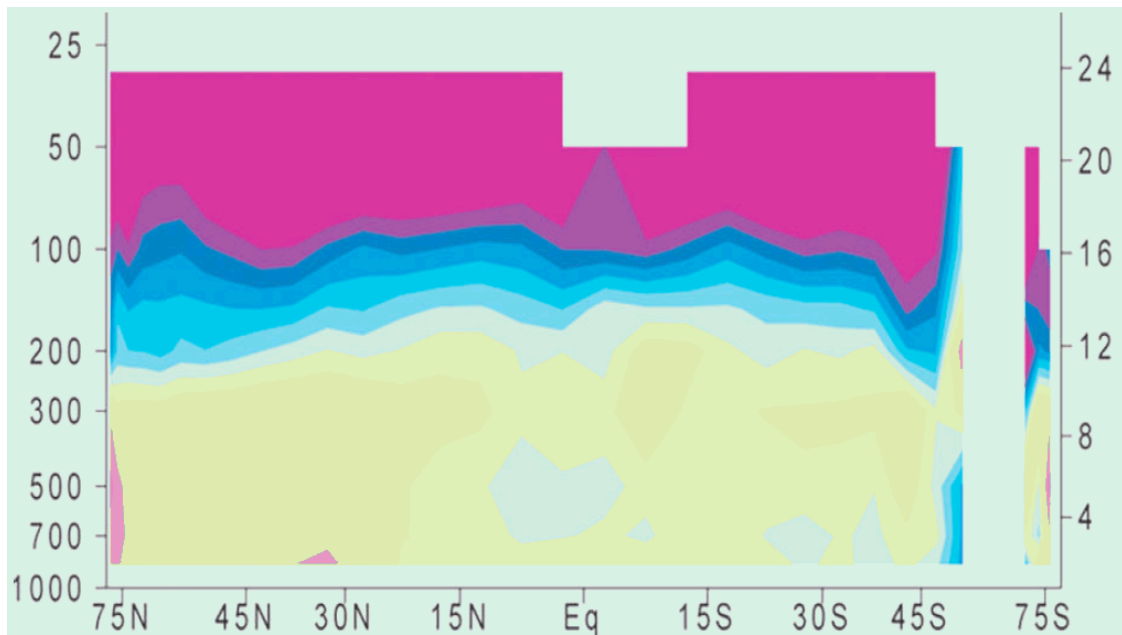
(By the way, the IPCC omitted signature data for what most skeptics believe is the prime suspect for global warming, namely clouds/cosmic rays/the sun's magnetic field. Clouds are the main factor that control the earth's temperature, and are the least understood and most poorly represented factor in the climate models. Cloud formation is strongly affected by the number of high energy cosmic rays falling on the earth, but the sun's magnetic field shields us from some of these rays. Cosmic rays have a chilling effect on the earth—they cause more low clouds. In periods of higher solar activity the sun's magnetic field is stronger and shields us from more of these rays, so the earth gets hotter. The earth's magnetic field is too weak to significantly influence the number of rays striking the earth. Although the correlation between high energy cosmic rays and the earth's temperature is very high, it is only a correlation and at this stage we cannot prove that this is the cause of the recent global warming. The IPCC focuses only on human emissions of carbon, other greenhouse gases, and industrial pollution as causes of global warming, and vigorously ignores the possibility of solar-magnetic causes.)

The Evidence

The other main authoritative source for the case that carbon emissions caused global warming is the US Climate Change Science Program (CCSP). Atmospheric temperatures have been measured by radiosondes (at all heights) since the 1960s, and by satellites using microwave sensors (up to 5 km) since 1979. The CCSP published the results for 1979 – 1999 in part E of Figure 5.7 in section 5.5 on page 116:

<http://www.climate-science.gov/Library/sap/sap1-1/finalreport/sap1-1-final-chap5.pdf>

The axes and colours are as per the signature diagrams above, except that the horizontal axis only goes from 75 degrees north to 75 degrees south, there is no data around 60 degrees south, the vertical axis only goes up to 24 km, and dark blue above becomes purple here. The data is called the “HadAT2 temperature data”.



The observed signature.

This diagram is confirmed by more radiosonde data collected after 1999, and also after May 2006 when this diagram was published.

Conclusions

The theoretical combined signature expected by the IPCC contains a prominent and distinct hotspot over the tropics at 8 – 12 kms. This hotspot is the signature feature of an increase in greenhouse warming.

The observed signature at 8 – 12 km up over the tropics does not contain a hotspot, not even a little one.

Therefore:

1. The IPCC theoretical signature is wrong. So the IPCC models are significantly wrong.
2. The signature of increased greenhouse warming is missing. So the global warming from 1979 to 1999 was not due predominately to increased greenhouse warming, and was therefore not due to carbon emissions.

The observed signature shows cooling above 16 km, which strongly suggests that the global warming was not due to increased solar irradiation, volcanoes, or increased

industrial pollution (aerosols). The observed signature looks like a combination of increased ozone depletion, possibly a decrease in industrial pollution, and an unknown signature or signatures.

Further Developments

When the signature was found to be missing, alarmists objected that maybe the readings of the radiosonde thermometers might not be accurate and maybe the hotspot is there but went undetected. The uncertainties in temperature measurements from a radiosonde are indeed large enough for a single radiosonde to maybe miss the hotspot. Yet hundreds of radiosondes have given the same answers, so statistically it is not possible that they collectively failed to notice the hotspot.

Recently the alarmists have suggested we ignore the radiosonde thermometers, but instead take the radiosonde wind measurements, apply a theory about wind shear, and run the results through their computers to estimate the temperatures. They then say that the results show that we cannot rule out the presence of a hotspot. If you believe that you believe anything.