

THE GLOBAL WARMING TEST

○ Question 10:


Which temperature measuring method most accurately measures global warming?

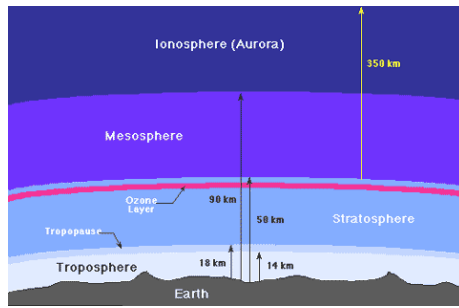
- a) ground-based thermometers
- b) orbiting weather satellites
- c) weather balloons

You are correct !

Since about 1979, each day **satellites** measure the temperature over about 80% of the globe to an accuracy of about 0.1 degree C. Weather balloons only make measurements at specific locations that are concentrated mostly over land (1).

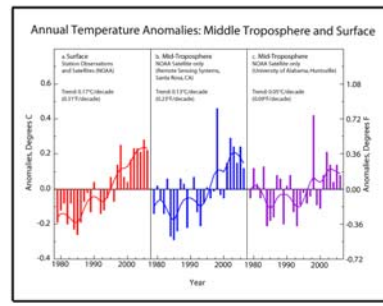
The real signature of greenhouse warming is not surface temperature but temperature in the **middle of the troposphere**, about 5 kilometers up. If global warming is occurring from an increasing **greenhouse effect** due to CO₂ additions by humans the temperature of the middle troposphere should be warming *faster* than Earth's surface (2,3). In fact the opposite has been happening-- which suggests either the surface thermometers are wrong or natural factors, such as changes in **solar activity**, may be responsible for the slight rise in surface temperatures (approximately 1/2° C) that appears to have occurred over the past century.

Interestingly, in the 5 years leading up to 2007 the temperature of the **mid troposphere** has actually **decreased** slightly and surface temperatures have **ceased warming**  -- even as CO₂ concentrations have continued to increase (4). This should not be happening if CO₂ increases to the atmosphere are the primary driver of global warming.



Atmosphere

[View a close-up image.](#)
[Image courtesy of NASA](#)




Surface -vs- Satellite
Temps

[View a close-up image.](#)
[Image courtesy of NOAA \(4\)](#)



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References

- (1) [Satellite Measurements of Atmospheric Temperature Change: New Results from Old Satellites](#); presentation by Carl A. Mears and Frank J. Wentz, *Remote Sensing Systems*, November 2005. 
- (2) [Climate Change Science](#); Compiled by Ken Gregory, Calgary, Alberta, Canada, November 11, 2007. 
- (3) [Climate experts debate in NYC, March 2007](#)-- specifically, testimony by Dr. Richard S. Lindzen, Massachusetts Institute of Technology. 
- (4) [Tropospheric and Stratospheric Temperature Record from Satellite Measurements](#), The National Climatic Data Center, NOAA Satellite Information Service, April 27, 2003 update. 