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## Baffled Scientists Say Less Sunlight Reaching Earth

By **Robert Roy Britt**  
 LiveScience Managing Editor  
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 10:47 am ET

After dropping for about 15 years, the amount of sunlight Earth reflects back into space, called albedo, has increased since 2000, a new study concludes.

That means less energy is reaching the surface. Yet global temperatures have not cooled during the period.

Increasing [cloud cover](#) seems to be the reason, but there must also be some other change in the clouds that's not yet understood.

"The data also reveal that from 2000 to now the clouds have changed so that the Earth may continue warming, even with declining sunlight," said study leader Philip R. Goode of the New Jersey Institute of Technology. "These large and peculiar variabilities of the

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clouds, coupled with a resulting increasing albedo, presents a fundamental, unmet challenge for all scientists who wish to understand and predict the Earth's climate."

### Cloud changes

Earth's albedo is measured by noting how much reflected sunlight in turn bounces off the Moon, something scientists call earthshine. The observations were made at the Big Bear Solar Observatory in California.

The findings will be published Jan. 24 in *Eos*, a weekly newspaper of the American Geophysical Union.

On any given day, about half of Earth is covered by clouds, which reflect more sunlight than land and water. Clouds keep Earth cool by reflecting sunlight, but they can also serve as blankets to trap warmth.

High thin clouds are better blankets, while low thick clouds make better coolers.

Separately, satellite data recently showed that while the difference between high and low clouds had long been steady at 7-8 percent, in the past five years, for some unknown reason, the difference has jumped to 13 percent. High, warming clouds have increased while low clouds have decreased.

Research shows condensation trails, or [contrails from jet airplanes](#), fuel more high-altitude clouds. But they have not been shown to account for all the observed change.

### What about global warming?

Earth's albedo appears to have experienced a similar reversal during a period running from the 1960s to the mid-1980s.

Goode's team says there may be a large, unexplained variation in sunlight reaching the Earth that changes over the course of two decades or so, as well as a large effect of clouds re-arranging by altitude.

How do the findings play into arguments about [global warming](#) and the apparent contribution by industrial emissions? That's entirely unclear.

"No doubt greenhouse gases are increasing," Goode said in a telephone interview. "No doubt that will cause a warming. The question is, 'Are there other things going on?'"

What is clear is that scientists [don't understand clouds](#) very well, as a trio of studies last year also showed.



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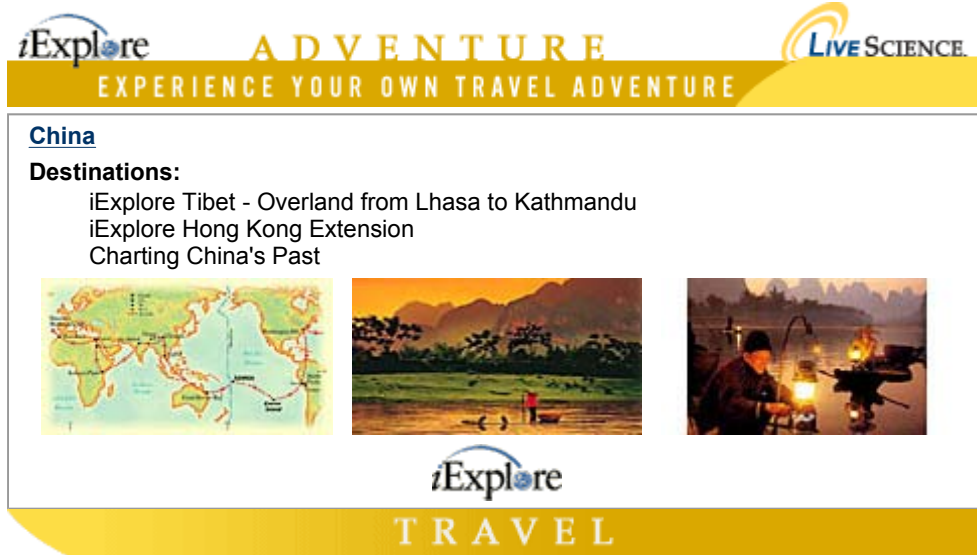
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"Clouds are even more uncertain than we thought," Goode said.




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