



- [News](#) [Articles](#) [Videos](#) [Images](#) [Books](#)
- [Health & Medicine](#) [Mind & Brain](#) [Plants & Animals](#) [Earth & Climate](#) [Space & Time](#) [Matter & Energy](#) [Computers & Math](#) [Fossils & Ruins](#)

Science Video

- [Share](#) [Blog](#) [Print](#) [Email](#) [Bookmark](#)

Inside The Clouds
Meteorologists Gather Important Information With 5-satellite

April 1, 2008 — Meteorologists analyzing data from a closely-packed group of five satellites have identified a decrease in cloud cover over the Arctic. They find this alarming because cloud cover absorbs some of the heat in sunlight, stopping it from warming the surface of the earth. It is possible that this loss of cloud cover is contributing to global warming.

See also:

Matter & Energy

- [Nature of Water](#)
- [Aviation](#)
- [Thermodynamics](#)

Reference

- [Evaporation](#)
- [Boiling](#)
- [Ice age](#)
- [Instrumental temperature record](#)

NASA satellites are lifting the cloud of uncertainty surrounding climate change. Five satellites, flying in formation above the Earth, are revealing several times more information about global warming than traditional research methods.

We are really just sort of beginning to discover how to combine the data -- how to unlock certain secrets that sort of exist," Graeme Stephens, Ph.D., an investigator at Colorado State University in Fort Collins, Colo., told Ivanhoe.

At Colorado State University, meteorologists working with NASA are discovering how what happens up in the sky affects what happens down here. "What we are able to observe with this new observing system," Dr. Stephens explains. "With the radar and the laser system, in particular, we are able to unequivocally tell you how much the cloud changed."

CloudSat is just one of a constellation of five satellites orbiting earth, separated apart by only seconds. "That is an incredible kind of engineering feat to tightly fly these space crafts around the earth, maintaining this fifteen second separation within two seconds of each other," Dr. Stephens says.

Called the "A-Train" because the first satellite and last satellite in the "train" both start with the letter "A," the A-Train's most important discovery so far? The arctic is losing cloud cover. Some meteorologists say that is contributing to global warming.

"What we've discovered is the clouds ... more than half of the clouds disappeared over the arctic," Dr. Stephens says. "And what that effectively has done is like opening up the blinds, letting the sunlight, in warming the ocean surface." Sure enough, Arctic surface waters warmed four degrees last year. Meteorologists say this is only the tip of the iceberg for A-Train discoveries.


Life expectancy of the A-Train satellites is less than ten years, so scientists are trying to accumulate as much data as possible now, before any one of the satellites fails.

ABOUT GLOBAL WARMING: Global warming refers to an increase in the earth's average temperature -- which has risen about 1 degree F over the past 100 years. A warmer earth may lead to changes in rainfall patterns, and a rise in sea level, for example, as polar glaciers melt.

Some of this rise is due to the greenhouse effect: certain gases in the atmosphere trap energy from the sun so that heat can't escape back into space. Without the greenhouse effect, the earth would be too cold for humans to survive, but if it becomes too strong, the earth could become much warmer than usual, causing problems for humans, plants

Related Stories

Sharpest Measurement Of Ice Crystals In Clouds Ever Will Help In Climate Modeling (July 20, 2008) — Scientists have created an instrument designed to help determine the shapes and sizes of tiny ice crystals typical of those found in high-altitude clouds, down to the micron level (comparable to the ... > [read more](#))

 **Scientist Measures Role Of Science's Coolest Player: The Snow** (December 7, 2005) — What would the Earth be like if one fine day all the snow melted away? Obviously, it would be a much warmer place. But what's interesting is how much warmer, says Stephen Vavrus, an associate ... > [read more](#)


"Soapy" Droplets Make Brighter Clouds (September 20, 1999) — The organic properties of some particles, such as those from the burning of agricultural waste, have been found to increase the number of cloud droplets in polluted air, allowing more sunlight to be ... > [read more](#)

Are Aerosols Reducing Coastal Drizzle And Increasing Cloud Cover? (July 1, 2005) — Scientists are conducting a six-month atmospheric research campaign at the Point Reyes National Seashore in California. The experiment's goal is to help understand how aerosols -- small particles ... > [read more](#)

 **Scientists To Track Impact Of Asian Dust And Pollution On Clouds, Weather, Climate Change** (April 19, 2007) — Scientists using the nation's newest and most capable aircraft for environmental research are launching a far-reaching field project this month to study plumes of airborne dust and pollutants that ... > [read more](#)

Just In:
[Packing DNA: How Did Genetic Storage Evolve?](#)

Science Video News

 **Mission for NASA**
 One hundred schools in 11 countries are participating in a program to help NASA calibrate the measurements from CloudSat, a remote-sensing satellite... > [full story](#)

[Zoo Focuses Efforts on Poison Dart Frog Breeding Program](#)

[Physicists Spot Interstellar Shock Wave Using Spitzer Telescope](#)

[Atmospheric Scientists Link Lightning to Ice Particles In Clouds](#)

[more science videos](#)

Breaking News

... from NewsDaily.com

[Gene found for rare and deadly childhood cancer](#)

[Tropical storm Julio heads for Baja California](#)

[Fay weakens to depression after drenching Florida](#)

[Typhoon Nuri weakens after hitting Chinese coast](#)

[NY nuclear plant likely a quake risk: study](#)

[more science news](#)

In Other News ...

[Suicide bomber kills 25 in west Baghdad](#)

[Kyrgyz passenger plane crashes, dozens dead](#)

[U.S. forces say they catch two Iraq al Qaeda leaders](#)

[Only 25 survive air Kyrgyz crash: RIA](#)

[Iran will hit back if Israel attacks:](#)



They often form at the boundary where a layer of warm moist air passes over a layer of cool air, causing the warm air to cool. If the warm air cools below the dew point, the excess water vapor condenses to form the blanket-like layer of stratus clouds. Cumulus clouds are puffy and look like giant cotton balls. The usually form when warm moist air is forced upward, cooling as it rises. Again, if it cools before the dew point, condensation will occur.

The American Geophysical Union and the American Meteorological Society contributed to the information contained in the video portion of this report.

Search ScienceDaily *Number of stories in archives:*
44,032

[Israeli-Palestinian gaps](#)
[NATO-chartered helicopter crashes in Afghanistan](#)
[more top news](#)

Copyright Reuters 2008. See [Restrictions](#).

Free Subscriptions ... from ScienceDaily

Get the latest science news with our free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

[Email Newsletters](#)
[RSS Newsfeeds](#)

Feedback ... we want to hear from you!

Tell us what you think of the new ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?


Your Name:

Your Email:

Comments:

Click button to submit feedback:

Note: This story and accompanying video were originally produced for the American Institute of Physics series [Discoveries and Breakthroughs in Science](#) by [Ivanhoe Broadcast News](#) and are protected by copyright law. All rights reserved.



Find with keyword(s):

Enter a keyword or phrase to search ScienceDaily's archives for related news topics, the latest news stories, reference articles, science videos, images, and books.