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The Washington Post

A4 THURSDAY, JANUARY 13, 2000

NATIONAL NEWS

THE WASHINGTON POST

Global Warming Is 'Real,' Report Finds

By JOBY WARRICK
Washington Post Staff Writer

A worldwide rise in temperatures at the Earth's surface is "undoubtedly real" and appears to have accelerated in recent decades, an independent scientific panel concluded in a major new report yesterday.

The panel estimated the increase in temperatures over the past century at between 0.7 and 1.4 degrees Fahrenheit—a 30 percent increase from earlier projections that reflects record-shattering high temperatures in the late 1990s.

Partly deflating a key argument used by skeptics of global warming, the report also dismissed as insignificant a glaring contradiction between two sets of measurements that have tracked temperature change over recent decades. Although land-based weather stations have shown a rise in temperatures, satellites that record temperatures in the upper atmosphere have shown little change in 20 years.

"The difference between the surface and upper-air trends in no way invalidates the conclusion that the Earth's temperature is rising," said John M. Wallace, a professor of atmospheric sciences at the University of Washington and chairman of the panel.

However, Wallace said, the disparity between the two sets of measurements points up weaknesses in scientists' ability to predict future warming. Most climate-forecasting models have predicted corresponding increases in temperature on land and in the air.

"There really is a difference between temperatures at the two levels that we don't fully understand," Wallace said in a telephone news conference on the eve of the report's official

release today at the annual meeting of the American Meteorological Society in Long Beach, Calif.

The 11-member panel, which was organized by the National Academy of Sciences's National Research Council (NRC), included the two scientists responsible for tracking satellite temperature measurements. Roy Spencer, of NASA's Marshall Space Flight Center, and John R. Christy, of the University of Alabama in Huntsville, had been among a vocal minority of atmospheric scientists who argued that the Earth's warming—if it were occurring at all—was likely very mild. While concurring with the panel's conclusions, Christy said that predicting future climate trends remains fraught with peril.

"It is still not clear whether this is a representative sample that will tell us how the greenhouse effect will be played out in the future," he said.

The report did not attempt to explain the reasons for the warming. Many scientists believe the century's warming is at least partly the result of man-made pollution—higher levels of carbon dioxide and other "greenhouse" gases that trap the sun's heat like an insulating blanket. Further warming could disrupt agriculture and cause sea levels to rise, swamping coastal cities, scientists say.

The NRC panel's chief task was to attempt to reconcile the differences between the observed temperature changes on land and in the troposphere, the layer of the atmosphere that extends six to nine miles above Earth. For years, the lack of notable warming in the 20-year satellite record has provided potent ammunition to global-warming skeptics, who view the land-based temperature measurements as unreliable.

In recent months, small computing errors were detected in satellite

readings that, when corrected, showed a slight warming trend in the upper atmosphere. Still, a "substantial disparity remains," the report said.

Although the difference cannot be fully explained, the NRC panel found a variety of factors that could have slowed the rate of warming high above Earth. Possible explanations include atmospheric cooling from volcanic eruptions in the 1990s and the depletion of Earth's ozone layer.

Also, the 20-year satellite record is too short to be reliable in analyzing long-term trends, the report said.

The NRC's study was immediately hailed by environmental groups that have called for the reduction of greenhouse gases to slow the warming trend.

"It totally deflates the argument of the so-called skeptics that had used the apparent difference between ground-based and satellite data to argue that we really didn't know whether the world is warming or not," said Michael Oppenheimer, an atmospheric scientist with the Environmental Defense Fund.

But Arthur Robinson, the president of and a professor of chemistry at the Oregon Institute of Science and Medicine, called the report a "political document" and evidence that the "National Academy Board has pretty much been taken over by enviros." He contended that any global warming is part of a natural trend.

"One must not lose track of the fact that the Earth's temperature has been warming now for 300 years, not just 50 years. And there was no coal or gas 300 years ago," he said.

Staff writer Rick Weiss contributed to this report.

Panel cites increase in the temperature of Earth's surface

By Joby Warrick
WASHINGTON POST

WASHINGTON — A worldwide rise in temperatures at the Earth's surface is "undoubtedly real" and appears to have accelerated in recent decades, an independent scientific panel concluded in a major new report yesterday.

The panel estimated the increase in temperatures over the past century between 0.7 and 1.4 degrees Fahrenheit — a 30 percent increase from earlier projections that reflects record-shattering high temperatures in the late 1990s.

Partly deflating a key argument used by skeptics of global warming, the report also dismissed as insignificant a glaring contradiction between two sets of measurements that have tracked temperature change over recent decades. Although land-based weather stations have shown a rise in temperatures, satellites that record temperatures in the Earth's upper atmosphere have shown little change in 20 years.

"The difference between the surface and upper-air trends in no way invalidates the conclusion that the Earth's temperature is rising," said John M. Wallace, a professor of atmospheric sciences at the University of Washington and chairman of the

panel.

However, Wallace said, the disparity between the two sets of measurements points up weaknesses in scientists' ability to predict future warming. Most climate-forecasting models have predicted corresponding increases in temperature on land and in the air.

"There really is a difference between temperatures at the two levels that we don't fully understand," Wallace said at a news conference in San Francisco, where the results were to be released today at the annual meeting of the American Meteorological Society.

The study was immediately hailed by environmental groups that have called for reduction in greenhouse gases to slow the warming trend.

But Arthur Robinson, president and professor of chemistry at the Oregon Institute of Science and Medicine, called the report a "political document."

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The 11-member panel was organized by the National Academy of Sciences's National Research Council.

THE WALL STREET JOURNAL

A6 THE WALL STREET JOURNAL THURSDAY, JANUARY 13, 2000

Scientists Near Accord on Rate Earth Warms

By JIM CARLTON

Staff Reporter of THE WALL STREET JOURNAL

A National Research Council report shows something close to a consensus for the first time among academics on exactly how much the Earth is warming: a half degree in the past 20 years, or the fastest rate of increase in the past century.

Scientists have been divided on rates of increase, with some arguing for greater increases and others suggesting there has been little or no warming.

However, a panel of 10 scientists from the U.S. and one from the United Kingdom concluded in the report that global warming in fact is occurring, with the Earth's surface temperature having increased from 0.7 to 1.4 degrees Fahrenheit in the past 100 years. Much of that increase—0.50

of a degree—has taken place since 1979, according to the researchers.

"This is a fairly rapid rate of rise, but it is still a very small rise," said John Wallace, chairman of the panel that wrote the report and professor of atmospheric sciences at the University of Washington. The National Research Council, a private think tank of the National Academy of Sciences and National Academy of Engineering, was commissioned by the federal government to undertake the global-warming study about a year ago.

Still unexplained is the cause, whether man-made or from natural, recurring events. Many environmentalists believe the Earth's atmosphere has heated up from all the industrial activities of the 20th century, such as manufacturing and traffic congestion. Others believe that since meteorological records go back only about 150 years, the warming could be part of a cyclical trend.

The scientists said more detailed monitoring is needed to help determine the extent of man-made activities on the atmosphere. They suggested, among other things, that more data be compiled into electronic databases for the entire scientific community to evaluate.

Los Angeles Times

A4 THURSDAY, JANUARY 13, 2000/NA LOS ANGELES TIMES

THE WORLD

Global Warming Real, Says National Panel of Climate Experts

■ **Environment:** Experts find that surface temperatures on Earth have risen in the last 20 years at a rate greater than the average for the last 100.

By ROBERT LEE HOTZ
TIMES SCIENCE WRITER

Despite major conflicts in temperature records, a National Research Council panel concluded Wednesday that the warming of the Earth's surface is "undoubtedly real," and that surface temperatures in the last two decades have risen at a rate substantially greater than average for the last 100 years.

The 11 climate experts on the panel spent nine months investigating the troubling differences in global warming as measured at Earth's surface and in the upper atmosphere. The discrepancies had caused some scientists to question whether a long-term warming trend was just an artifact

of poor record-keeping and faulty satellite measurements.

Because global warming is a long-term process that can be masked by year-to-year changes in climate, warming trends are most clearly revealed by surface temperature measurements, which have been recorded daily at hundreds of locations for more than a century.

These data indicate that the Earth is, in fact, warming, the panel said. By the best ground measurements, Earth's surface temperature has risen about 0.7 to 1.4 degrees Fahrenheit in the last century. But data collected by satellites and balloon-borne instruments since 1979 indicate little if any warming of the atmospheric layer extending up to about 5 miles from the Earth's surface.

Page 1 of 2.

Most climate models of global warming—caused by the buildup of greenhouse gases like carbon dioxide—generally predict that temperatures should increase in the upper air as well as at the surface. Critics of the global warming theory often have cited the satellite and balloon data as evidence that the threat of climate change has not been proven.

However, after examining all available ground and atmospheric temperature records, the panel concluded that the difference in surface and atmospheric temperatures may be real, but it does not undercut the case for global warming.

"In the opinion of the panel, the warming trend . . . during the past 20 years is undoubtedly real and is substantially greater than the average rate of warming during the 20th century," the group concluded. "The disparity between surface and upper air trends in no way invalidates the conclusion that the surface temperature has been rising."

Panel Chairman John M. Wallace, director of the University of Washington's environment program, emphasized that the group was not asked to address the cause of the rising temperatures or whether human influences, such as the burning of fossil fuels or greater urbanization, might be involved.

"It is a reaffirmation of the fact that the surface temperature is rising and has risen substantially in the past 20 years. We are not saying that rise is due to greenhouse gases nor are we saying it is going to continue," Wallace said.

In addition, the panel warned that temperature records for any single 20-year period may not be representative of a long-term climate trend.

"Twenty years is a short time," Wallace said. "This particular 20 years had two big volcanic eruptions,

which affected the atmosphere, and the two biggest El Niño events on record. That may make the trends different from what we might otherwise see."

A combination of human activities and natural causes has contributed to rising surface temperatures, while other human and natural forces actually may have cooled the upper atmosphere. Natural events such as the eruption of Mt. Pinatubo in 1991 tended to decrease atmospheric temperature for several years. And burning coal and oil for energy produces tiny aerosol particles in the atmosphere that can have a cooling effect.

Upper-air temperatures also can be reduced by depletion of ozone in the stratosphere caused by chlorofluorocarbons and other chemicals being emitted into the atmosphere.

When these variables are accounted for in atmospheric models, satellite and balloon data more closely align with surface-temperature observations, Wallace said.

Some environmentalists said the report effectively countered those who have argued that there is no global warming trend.

"It totally deflates the argument of the so-called skeptics [who] had used the apparent difference between ground-based and satellite data to argue that we really didn't know whether the world is warming or not," said Michael Oppenheimer, an atmospheric scientist with the Environmental Defense Fund.

But Arthur Robinson, president and professor of chemistry at the Oregon Institute of Science and Medicine, called the report a "political document" and evidence that the "National Academy Board has pretty much been taken over by enviros."

He contended that any global warming was part of a natural trend.



USA TODAY · THURSDAY, JANUARY 13, 2000 · 3A

Rate of global warming increases

Strong evidence indicates that the warming of the Earth's surface is "undoubtedly real" even though there is no corresponding increase in atmospheric temperatures, a report released Wednesday says.

Surface temperatures over 20 years have risen at a rate substantially greater than the average for the past 100 years, says a report by the National Research Council of the National Academies. The report examines the apparent conflict between temperatures on the surface and in the upper air, which skeptics say casts doubt on the ability to predict global warming.

Earth's surface temperature has risen about 0.7 to 1.4 degrees Fahrenheit in the last century, the report says. But data collected by satellites and balloon-borne instruments since 1979 indicate little if any warming of the low- to mid-troposphere — the atmospheric layer extending up to about 5 miles from the Earth's surface.

The study, funded by the National Oceanic and Atmospheric Administration and the Aluminum Corp. of America, said the difference does not disprove global warming. The National Research Council is a private, non-profit institution that provides science advice under a congressional charter.

— Steve Marshall

Written by John Bacon with staff and wire reports



USA TODAY • THURSDAY, JANUARY 13, 2000 • 9D

GLOBAL WARMING: Increasing global temperatures are "undoubtedly real," despite differences in satellite and ground climate measures, say federally chartered researchers. The National Research Council committee report, released Wednesday, sought to examine conflicts between surface numbers, which show increased global warming over the last two decades, and high-altitude readings, which show little change. "We're saying quite emphatically that these are not equivalent measures," says committee chair John Wallace of the University of Washington in Seattle. The 20-year record of temperature measurements does not necessarily indicate that warming will continue, he adds.



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Global Warming's Profile Grows

- *Report: 20-Year Trend Is Above Average*
- *Critics Say Emissions Aren't To Blame*
- *But President Has Plans To Boost Efforts*

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[CBS News Correspondent Jim Axelrod Reports](#)

NEW YORK
Wednesday, January 12, 2000 - 09:08 PM ET



CBS

One theory blames man-made gases for the violent weather swings.

(CBS) Texas had another taste of the winter that wasn't Wednesday, **CBS News Correspondent Jim Axelrod** reports. Breaking a record set 64 years ago, it was 82 degrees in Ft. Worth -- a number that dovetails perfectly with a report due out Thursday from the National Research Council.

The warming trend during the past 20 years is undoubtedly real, the report says, and it's substantially greater than the average rate of warming during the 20th century. This adds to the evidence showing global warming as a real threat which was revealed by federal weather experts to **CBS News** earlier this week.

"You see a temperature change of about 1 degree Fahrenheit in 100 years, explains the National Oceanic and Atmospheric Administration's Dr. James Baker. **"This is not a big change. But over the past 20 years, the change has been four times that."**

It is still easy to find critics of the theory that man-made gases are overheating the atmosphere and creating violent weather swings. According to Oregon State climatologist George Taylor, **"Even if we controlled every ounce of human emissions, we would still have significant changes in climate over short time scales and long time scales."**

But President Clinton seems convinced, having joined the swelling chorus of the concerned. **"We have made record investments in science and**



technology to protect future generations from the threat of global warming," he said during an announcement of new national monuments Tuesday.

And now the president apparently plans to boost those investments. **CBS News** has learned that in the next few weeks the Clinton Administration will unveil what aides are calling a new and even more ambitious budget to designed specifically to combat global warming.

The move is in keeping with the opinion of former State Department Official Rafe Pomerance, who thinks, **"It won't stop. Sea levels will rise, forests will move, water resources will be shifted all over the earth -- it's a very unpredictable and dangerous future and there is all the rationale in the world to act and act decisively."**

Such thoughts used to be called "doom and gloom" by many. Now, however, a growing number of scientists are hearing the critics, looking at the data, and saying it's a forecast that can't be ignored.

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The New York Times

January 13, 2000

Earth Report Shows Accelerated Warming

BYLINE: AP

DATELINE: WASHINGTON, Jan. 12

Despite conflicts in temperature data, there is strong evidence of an accelerated warming of the Earth's surface during the past 20 years, a panel of the National Academy of Sciences concluded today.

Still, the panel hedged on whether the warming would continue or whether it was tied to the "greenhouse effect" caused by manmade pollution of the atmosphere.

"There is a high level of confidence among the panel members that the surface temperature is indeed rising," said John Wallace, panel chairman and professor of atmospheric sciences at the University of Washington.

The panel said global temperatures increased 0.45 to 0.72 degrees over the last 20 years. By comparison, temperatures increased 0.72 to 1.44 degrees over the last 100 years, the panel said.

The panel of the academy's National Research Council discounted the significance of conflicting temperature data from ground monitors and those on weather balloons and satellites.

National Public Radio

January 13, 2000

BOB EDWARDS, host

This is NPR's MORNING EDITION. I'm Bob Edwards.

A report being released today confirms that the Earth's surface has warmed substantially over the past two decades. The study was conducted by the National Research Council to resolve a paradox in temperature observations. Thermometers on the ground have shown a substantial temperature rise, but careful satellite measurements have not. Those satellite trends had led some to question whether the Earth really is warming up. Here are two reports on the National Research Council study, the first from NPR's Richard Harris.

RICHARD HARRIS reporting

Scientists have been taking the Earth's temperature with thermometers for more than a century, but as cities have grown up around these thermometers, local temperatures have risen, so it's been a bit tricky to identify true global trends. Scientists thought they'd found a clever way around this problem. Two decades ago they launched satellites that could measure the temperature throughout the lower atmosphere. But then came the surprise. Thermometers on the ground recorded a substantial rise in temperature during the 1980s and 1990s. But John Wallace at the University of Washington says the satellite showed little or no atmospheric warming.

Mr. JOHN WALLACE (University of Washington)

And so as soon as people recognized that there was a difference there, there started to be controversy as to which one was right and concerns on the part of some that perhaps there were biases in the surface data and it wasn't really warming and others feeling that there must be something wrong with the satellite data.

HARRIS

The National Research Council asked Wallace to chair an expert committee to find out what's going on. Experts representing the various side of the issue met to hash this out, and the report is being issued today.

Mr. WALLACE

The consensus statement is that we are quite confident that the surface temperatures are warming, that they have warmed during this 20-year period and that they've warmed over the century as a whole. And then a statement that we're agreed on, although not quite as confident in, that the differences between the two sets of the measurements we believe are real.

HARRIS

Many scientists didn't expect it, but in fact temperature ups and downs at the surface of the Earth don't necessarily cause temperature ups and downs in the lower atmosphere. They are, to some extent, independent. Tom Peterson from the National Climatic Data Center in Asheville, North Carolina, says he came to the committee prepared to accept both the ground-based thermometers and the satellites.

Mr. TOM PETERSON (National Climatic Data Center)

I certainly do not think one or the other had to be wrong.

HARRIS

He says part of the reason for the apparent discrepancy has to do with the way the Earth has warmed up over the past two decades.

Mr. PETERSON

The nighttime minimum temperatures have been rising much faster than the daytime temperatures.

HARRIS

So most global warming is at night, and it just so happens that the satellites don't do a good job measuring nighttime temperatures near the ground, so the satellites have missed a lot of the trend. Panel member John Christy from the University of Alabama in Huntsville says in any event it's important not to read too much into the 20-years trend either from the ground or from satellites.

Mr. JOHN CHRISTY (University of Alabama at Huntsville)

The last 21 years have been fairly unusual in terms of the century scale climate. Because we've had a couple of the largest El Ninos and we've had the two largest volcanoes of the century all occur in this particular period. So it's a peculiar period, and one that you certainly cannot use this trend as a prediction because of the unusual nature of the past 21 years.

HARRIS

But what the satellite data clearly show is that there are still substantial mysteries about how surface temperatures affect the temperature of the lower atmosphere and vice versa. And it's important to understand both, because while we may notice the surface temperature most, the temperature of the lower atmosphere has a profound influence on our weather.

Richard Harris, NPR News, Washington.

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Panel concludes global warming is taking place

RAW NEWS

WASHINGTON (AP) _ While still uncertain about the long-term trend, a panel of scientists says there's no question the warming of the Earth _ under way for a century _ has accelerated during the past 20 years.

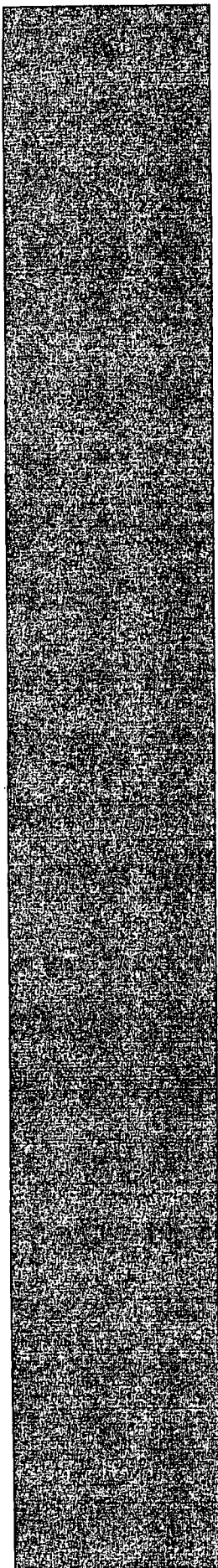
The warming trend in global-mean surface temperatures over the past two decades "is undoubtedly real and is substantially greater than the average rate of warming during the 20th century," said the 11-member panel of the National Academy of Sciences.

The panel sought in a 71-page report to lay to rest a long-standing dispute over temperature data: The fact that while ground monitors have shown a sharp increase in Earth's temperatures, satellite and weather balloon observations have shown little or no warming.

While this discrepancy cannot yet fully be explained, the scientists said, it "in no way invalidates the conclusion that the Earth's temperature has been rising."

Environmentalists immediately said the finding has shot a hole into one of the global warming skeptics' most powerful arguments.

"It completely deflates the argument that contrarians have been using in support of the position that global warming isn't worth dealing with," said Michael Oppenheimer, a climate scientist at the Environmental Defense Fund. He said it reinforces the view that the Earth is warming.



Still the panel in its report hedged on whether the warming of the Earth's surface will continue or whether it is even linked to the "greenhouse effect" caused by manmade pollution of the atmosphere.

"There is a high level of confidence among the panel members that the surface temperature is indeed rising," said John Wallace, panel chairman and professor of atmospheric sciences at the University of Washington.

But, he added, that does not necessarily mean the warming is due to manmade greenhouse gases "nor are we saying it's necessarily going to continue to accelerate in the future." The 20-year record is too short to make definitive statements as to how the atmosphere is changing in the long term, he said.

The past decade has seen some of the warmest years on record and an unusual string of warm weather in the United States.

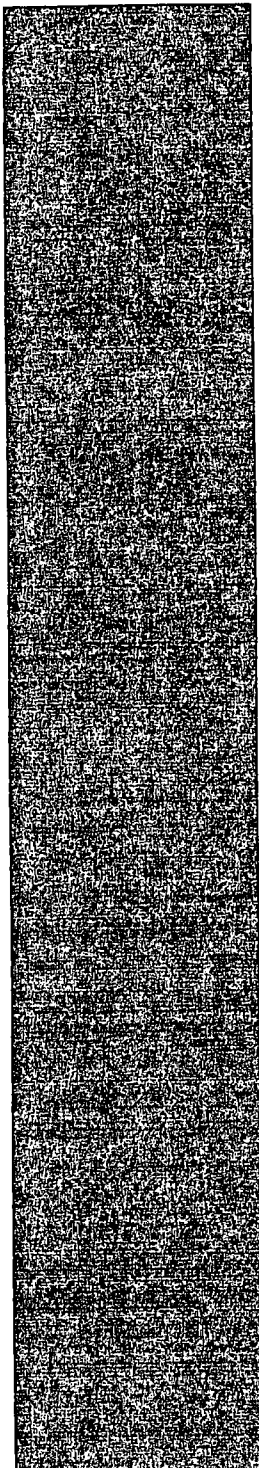
According to the National Aeronautics and Space Administration, 1998 had the highest mean worldwide temperature, topping the previous record set in 1995. Some scientists attribute such temperatures to normal climate fluctuations and such weather phenomena as the 1998 El Nino.

But the panel of the Academy's National Research Council said the warming over the past two decades has accelerated when compared with the entire 100 year span during which surface temperatures have been kept.

The panel said global temperatures increased 0.45 to 0.72 degrees Fahrenheit over the past 20 years. By comparison, temperatures increased 0.72 to 1.44 degrees Fahrenheit over the entire 100-year period.

The panel was specifically charged with examining the discrepancies between surface and aerial temperature readings, and not whether manmade pollution is causing a long-term warming of the Earth, said Wallace.

According to surface monitors, the Earth's temperature during the 20th century increased 0.7 to 1.4 degrees Fahrenheit. The satellite and balloon data, going back to 1979, have shown a warming trend in the upper atmosphere up to 5 miles of no more than



0.36 degrees Fahrenheit, and in some cases none at all.

Critics of the global warming theory often have cited the satellite and balloon data as evidence that the threat of climate change has not been shown.

The discrepancies between the surface and aerial readings should not invalidate the conclusion that surface temperatures have been rising significantly, said the panel, whose members represented a variety of views on climate change.

"We're saying emphatically that it is not valid to equate these two kinds of observations," said Wallace.

While the discrepancies could not be fully explained, the panel speculated that natural causes, including two massive volcanic eruptions during the past 20 years and depletion of the ozone layer, may have had a cooling effect in the upper air region, as opposed to the surface temperatures. Satellite data has been available only since 1979.

A dissenter on the panel, John Christy, a climatologist at the University of Alabama-Huntsville, said the report simply confirms that the Earth has become warmer over the past 100 years.

"It's still not clear as to whether this is a representative sample that will tell us how the greenhouse effect is going to be played out. You can't use this trend for prediction," said Christy.

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AP Online

January 13, 2000

Scientists Report Warmer Earth

BYLINE: H. JOSEF HEBERT

DATELINE: WASHINGTON

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The Houston Chronicle

January 13, 2000

A; Pg. 1

Global warming real, say scientists; Experts cite trend despite space data

BILL DAWSON, Houston Chronicle Environment Writer

The surface of the Earth is "undoubtedly" heating up, according to a new report by the National Research Council that undercuts a key argument by skeptics in the debate over global warming.

The report, issued Wednesday, said satellite readings that appear to conflict with the surface warming trend of the past 20 years do not disprove it.

Critics of the assertion that "greenhouse gases" from human activities are causing global warming maintain that the satellite measurements cast doubt on whether warming is actually occurring.

But a panel of climate experts assembled by the National Research Council, affiliated with the National Academy of Sciences, concluded that an increase in the world's average surface temperature over the last two decades "is undoubtedly real."

The panel said this recent trend "is substantially greater than the average rate of warming during the 20th century."

John M. Wallace, a professor of atmospheric sciences at the University of Washington who chaired the panel, said its 11 members did not address the cause of this surface-warming trend.

Many climate scientists believe the main culprit is the emission of greenhouse gases. The main gas is carbon dioxide, released when coal, oil and other fossil fuels are burned.

Although the panel did not discuss the cause, its finding does support the conclusion by many other experts that the Earth's surface is indeed growing warmer, Wallace said.

The finding also is "not inconsistent" with a controversial declaration by a U.N.-convened group of hundreds of scientists in 1995, he said. It concluded that "the balance of evidence suggests a discernible influence" by greenhouse gases on the planetary climate system.

The new report from the National Research Council focused on a debate regarding a discrepancy in temperature readings at the Earth's surface and by satellites.

The surface measurements have revealed an average global temperature increase of about 0.45 to 0.72 degrees Fahrenheit in the past two decades. But satellites recorded a smaller or even nonexistent increase of zero to about 0.36 degrees in that same period.

The National Research Council report said evidence indicates the smaller increase in higher regions of the atmosphere may have resulted from natural causes, like volcanic eruptions, and human influences, including depletion of the Earth's protective ozone layer by chemical emissions.

"Regardless of whether the disparity is real, the panel cautions that temperature trends based on data for such short periods of record, with arbitrary start and end points, are not necessarily indicative of the long-term behavior of the climate system," the report stated.

Climate scientists' traditional models of warming caused by greenhouse emissions have included greater temperature increases in the lower to mid-troposphere (where the satellite readings occur) than at the surface.

But Wallace said the National Research Council panel concluded the climate system's response to a buildup of the gases may be far more complicated, including a different pattern of temperature increases and changes in things like wind patterns and clouds.

The U.N.-sponsored group, called the Intergovernmental Panel on Climate Change, has projected that a doubling of atmospheric carbon dioxide, compared to pre-industrial levels, would increase the average surface temperature of the Earth by 2 to 6 degrees Fahrenheit above the 1990 average. That would amount to the warmest climate in the last 10,000 years.

Carbon dioxide is now about 30 percent above the pre-industrial level.

Responding to concerns about global warming, diplomats forged a 1997 treaty that calls for developed nations to roll back their greenhouse emissions to 5 percent below 1990 levels, on average.

But the agreement has strong critics, including Gov. George W. Bush and the Republican congressional leadership, and its chances to go into effect remain clouded. The Clinton administration signed the accord but has not submitted it for Senate ratification.

Portland Press Herald

January 13, 2000

Pg. 4A

Global warming 'undoubtedly real,' panel concludes;
Climate experts did not assess blame, but say surface temperatures rose
at a greater rate over the past 20 years than the century average.

BYLINE;Los Angeles Times

Despite major conflicts in temperature records, a National Research Council panel concluded Wednesday that the warming of the Earth's surface is "undoubtedly real," and that surface temperatures in the past two decades have risen at a rate substantially greater than average for the past 100 years.

The 11 climate experts on the panel spent nine months investigating the troubling differences in global warming as measured at Earth's surface and in the upper atmosphere. The discrepancies had caused some scientists to question whether a long-term warming trend was just an artifact of poor record-keeping and faulty satellite measurements.

Because global warming is a long-term process that can be masked by year-to-year changes in climate, warming trends are most clearly revealed by surface temperature measurements, which have been recorded daily at hundreds of locations for more than a century.

These data indicate that the Earth is, in fact, warming, the panel said. By the best ground measurements, Earth's surface temperature has risen about 0.7 to 1.4 degrees Fahrenheit in the last century. But data collected by satellites and balloon-borne instruments since 1979 indicate little if any warming of the atmospheric layer extending up to about 5 miles from the Earth's surface.

Most climate models of global warming -- due to the buildup of greenhouse gases like carbon dioxide -- generally predict that temperatures should increase in the upper air as well as at the surface. Critics of the global warming theory often have cited the satellite and balloon data as evidence that the threat of climate change has not been proven.

However, after examining all available ground and atmospheric temperature records, the panel concluded that the difference in surface and atmospheric temperatures may be real, but it does not undercut the case for global warming.

"In the opinion of the panel, the warming trend . . . during the past 20 years is undoubtedly real and is substantially greater than the average rate of warming during the twentieth century," the group concluded. "The disparity between surface and upper air trends in no way invalidates the conclusion that the surface temperature has been rising."

Panel chairman John M. Wallace, director of the University of Washington's environment program, emphasized that the group was not asked to address the cause of the rising temperatures or whether human influences, such as the burning of fossil fuels or greater urbanization, might be involved.

"We are not saying (the) rise is due to greenhouse gases nor are we saying it is going to continue," Wallace said.

In addition, the panel warned that temperature records for any single 20-year-period may not be representative of a long-term climate trend.

"Twenty years is a short time," Wallace said. "This particular 20 years had two big volcanic eruptions, which affected the atmosphere, and the two biggest El Nino events on record. That may make the trends different from what we might otherwise see."

A combination of human activities and natural causes has contributed to rising surface temperatures, while other human and natural forces may actually have cooled the upper atmosphere. For example, natural events such as the eruption of Mount Pinatubo in 1991 tended to decrease atmospheric temperature for several years. And burning coal and oil for energy produces tiny aerosol particles in the atmosphere that can have a cooling effect.

Upper-air temperatures also can be reduced by depletion of ozone in the stratosphere caused by chlorofluorocarbons and other chemicals being emitted into the atmosphere.

When these variables are accounted for in atmospheric models, satellite and balloon data more closely align with surface-temperature observations, Wallace said.

The Deseret News

(Salt Lake City, UT)

January 13, 2000

Pg. A04

Global warming warning

BYLINE: Associated Press

WASHINGTON -- While still uncertain about the long-term trend, a panel of scientists says there's no question the warming of the Earth -- under way for a century -- has accelerated during the past 20 years.

The warming trend in global-mean surface temperatures over the past two decades "is undoubtedly real and is substantially greater than the average rate of warming during the 20th century," said the 11-member panel of the National Academy of Sciences.

The panel sought in a 71-page report to lay to rest a long-standing dispute over temperature data. The fact that while ground monitors have shown a sharp increase in Earth's temperatures, satellite and weather balloon observations have shown little or no warming.

While this discrepancy cannot yet fully be explained, the scientists said, it "in no way invalidates the conclusion that the Earth's temperature has been rising."

Environmentalists immediately said the finding has shot a hole into one of the global warming skeptics' most powerful arguments.

"It completely deflates the argument that contrarians have been using in support of the position that global warming isn't worth dealing with," said Michael Oppenheimer, an Environmental Defense Fund scientist.

Still the panel in its report hedged on whether the warming of the Earth's surface will continue or whether it is even linked to the "greenhouse effect" caused by manmade pollution.

"There is a high level of confidence among the panel members that the surface temperature is indeed rising," said John Wallace, panel chairman and professor of atmospheric sciences at the University of Washington.

But, he added, that does not necessarily mean the warming is due to manmade greenhouse gases "nor are we saying it's necessarily going to continue to accelerate in the future." The 20-year record is too short to make definitive statements as to how the atmosphere is changing in the long term, he said.

The past decade has seen some of the warmest years on record and an unusual string of warm weather in the United States.

But the panel of the Academy's National Research Council said the warming over the past two decades has accelerated when compared with the entire 100-year span during which surface temperatures have been kept.

The panel said global temperatures increased 0.45 to 0.72 degrees Fahrenheit over the past 20 years. By comparison, temperatures increased 0.72 to 1.44 degrees Fahrenheit over the entire 100-year period.

The panel was specifically charged with examining the discrepancies between surface and aerial temperature readings, and not whether manmade pollution is causing a long-term warming of the Earth, said Wallace.

According to surface monitors, the Earth's temperature during the 20th century increased 0.7 to 1.4 degrees Fahrenheit. The satellite and balloon data, going back to 1979, have shown a warming trend in the upper atmosphere up to 5 miles of no more than 0.36 degrees Fahrenheit, and in some cases none at all.

Critics of the global warming theory often have cited the satellite and balloon data as evidence that the threat of climate change has not been shown.

The discrepancies between the surface and aerial readings should not invalidate the conclusion that surface temperatures have been rising significantly, said the panel, whose members represented a variety of views on climate change.

"We're saying emphatically that it is not valid to equate these two kinds of observations," said Wallace.

While the discrepancies could not be fully explained, the panel speculated that natural causes, including two massive volcanic eruptions during the past 20 years and depletion of the ozone layer, may have had a cooling effect in the upper air region, as opposed to the surface temperatures. Satellite data has been available only since 1979.

A dissenter on the panel, John Christy, a climatologist at the University of Alabama-Huntsville, said the report simply confirms that the Earth has become warmer over the past 100 years.

"It's still not clear as to whether this is a representative sample that will tell us how the greenhouse effect is going to be played out. You can't use this trend for prediction," said Christy.

Chicago Sun-Times

January 13, 2000

Pg. 3

Global warming real, scientists proclaim

A panel of scientists says there's no question the warming of the Earth has accelerated during the last 20 years. The warming trend in global-mean surface temperatures over the last two decades "is undoubtedly real and is substantially greater than the average rate of warming during the 20th century," the 11-member panel of the National Academy of Sciences said. The panel sought to lay to rest a long-standing dispute over temperature data. The fact that while ground monitors have shown a sharp increase in Earth's temperatures, satellite and weather balloon observations have shown little or no warming. While this discrepancy cannot yet fully be explained, the scientists said, it "in no way invalidates the conclusion that the Earth's temperature has been rising." The last decade has seen some of the warmest years on record and an unusual string of warm weather in the United States.

The Christian Science Monitor

January 14, 2000, Friday

Robert Kilborn and Judy Nichols

Global warming has accelerated over the past 20 years by just under 0.50 degrees F., a panel of the National Academy of Sciences said. But its study, which evaluated surface temperatures over a 100-year span, stopped short of making predictions or attributing the trend to atmospheric pollution.