



Global Climate Coalition
1331 Pennsylvania Ave. NW
Suite 1500 - North Tower
Washington, DC 20004-1703
Tel: 202.637.3158
Fax: 202.638.1043
Alt. Fax: 202.638.1032

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Dear Journalist:

To borrow a phrase, you're about to get "the rest of the story" on the Greenland ice core research that drew front-page coverage last July 15 in *The New York Times*. As you'll see from the enclosed article that ran Dec. 9 in the *Times* (on page B-12), the initial conclusion of the first ice core study, that there have been rapid global climate changes over the past 250,000 years, is failing to withstand additional scientific scrutiny. Information from subsequent core drilling sites offers what appears to be a completely different climate record.


Countless readers of the initial, pessimistic reports may never see the subsequent report on the more complete scientific data from the Greenland ice core study. I am enclosing the more recent news clip for your convenience, since it received far less circulation.

Scientists tell me that there has been a tendency in the science literature and in the lay press by some experts to take on an advocacy role when commenting on the global warming issue. One example of this bias is seen in reports implying linkages between discrete (and often incomplete) scientific studies and the much broader and more complex nature of global climate change.

That certainly may have been the case with some scientists' portrayal of the early findings from the first Greenland ice core study. It reminds me of a comment by University of California (Irvine) atmospheric chemist, Ralph Cicerone, which appears in the *Los Angeles Times*, "When you first look into climate change, you realize how little you know. The more you look into it, the more you realize how little anyone knows."

I hope this material will be of use to you, and that you won't hesitate to contact the Global Climate Coalition on this or other issues related to global climate change.

Sincerely,



John Shlaes
Executive Director

enc.
[7625]



New Study Challenges Theory on Climate Change

By WALTER SULLIVAN

Special to The New York Times

SAN FRANCISCO, Dec. 8 — New research casts doubt on a much publicized analysis of ice extracted from the Greenland ice sheet that seemed to show rapid fluctuations of climate during the warm period that preceded the last ice age, from 115,000 to 135,000 years ago.

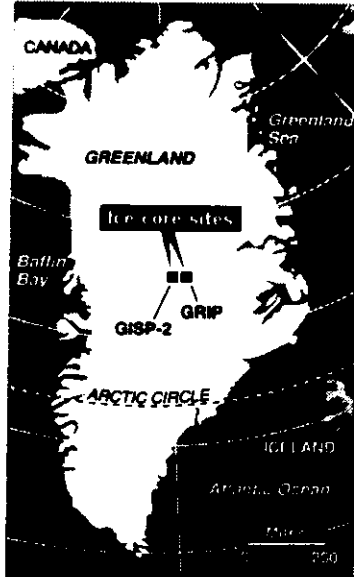
The earlier findings, announced earlier this year, seemed to suggest that climactic changes in the current warm period, which began 10,000 years ago, could also be far more rapid than had been thought if the climate gets as warm as it was then.

But now, comparison of records of layered ice from two holes drilled to bedrock at the summit of the Greenland ice sheet has created doubt about those conclusions. Those cores, extracted from two miles below the surface in holes 20 miles apart, seem to show completely different climate changes.

Report of Bent Ice

The explanation, proposed by participants in the two drilling projects who reported here today, is that the lower part of the ice sheet, dating from after about 95,000 years ago, was bent and otherwise altered by flow. Some dust layers in the ice are tilted more than 20 degrees. Evidence for such alterations was found more than 1,800 feet from the bottom, even though bedrock beneath the ice has been shown by radar to be relatively smooth.

The participants reported evidence that some layers may have been bent or pushed on top of one another, but



The New York Times

New research on ice cores in Greenland raises questions about patterns of warming climate.

they did not explain how that could have happened.

As noted by Dr. Willi Dansgaard of the University of Copenhagen, a leader of one project, it is difficult to imagine what effect under the ice could have caused such changes 1,800 feet above the bottom. Compounding the mystery, he said in an interview, is the discovery that the bottom layers of ice, totaling

225 feet, are flat and seemingly undisturbed.

It would appear, he told the fall meeting of the American Geophysical Union here, that "something peculiar" happened during the interval between the last two ice ages.

Dr. Dansgaard also said the two ice cores that have reached bedrock had ruled out earlier theories that the Greenland ice melted between those ice ages. Worldwide sea levels rose more than 30 feet above today's levels during that period, but this could be explained, at least in part, by heavy melting of Antarctic ice.

Earlier study of the ice cores showed what was taken as evidence of radical "flickers" in climate in the 20,000 warm years between the last two ice ages, but this was questioned today by those who earlier reported it.

The present warm period has been relatively stable, but the report of previous wild fluctuations led to concern that they might recur in this one.

Two Project at Work

The revised interpretation was reported both at the meeting here and in the current issue of *Nature*, by many of the same authors. It is based on analysis of two cores of ice extracted at or near the summit of the Greenland ice sheet 10,500 feet above sea level.

One project, known as GRIP, conducted by a consortium of European institutions, reached bedrock after extracting 9,938 feet of ice. The bottom layers are believed to have formed from snow that fell 150,000 years ago. The other drilling, 20 miles to the west, was by a team of American institutions and was known as GISP-2. It reached a similar depth, the last 43 feet of ice being impregnated with bands of brown silt. It also bored 5 feet into the underlying rock.

Comparison of ice from the two holes to a depth of 8,858 feet covering the past 95,000 years, had shown the same record of sudden climate changes with astonishing uniformity. But study of the deeper ice has now shown little conformity between the cores.

To minimize flowing that might distort the ice layers, GRIP was drilled on what is now the summit of the ice sheet, atop the thickest ice in the North-

Troublesome questions in the record of ice layers.

ern Hemisphere. It was assumed that the ice would slowly and uniformly flow seaward. GISP-2 was drilled at a site 100 feet lower, but near enough the summit, it was thought, to minimize flow.

Hope for the Future

Some of today's speakers said they hoped that layers in deeper sections of the two cores could be still correlated and that ancient climates could be determined by using the varying chemistry of dust in the two cores. Much hope also rests on drilling in Antarctica, particularly at the Russian interior station at Vostok, which rests on ice whose base is estimated to be 500,000 years old. Because precipitation in the Antarctic interior is meager, the annual layers at Vostok are very thin, making for a longer but less detailed record.

Scientists have determined the climate of each period represented by a layer in the extracted Greenland cores, and they have done so in several ways. Perhaps the most dramatic conformity between the cores has been in the measurements of electrical conductivity. The winter ice tends to be dustier, perhaps because the weather was windier, making the snow more alkaline and hence a poor conductor of electricity.

As pointed out by Dr. G. S. Boulton of the University of Edinburgh in an accompanying commentary in *Nature*, dust layers are a clue to storminess of the earth. Also measured in the ice are two forms of oxygen whose ratio indicates the temperature when the snow fell.

While comparative study of the cores has shown uncertainty about the earliest record, it has strengthened the belief that there were sudden changes throughout the past ice age. Each of these was usually a sudden warming within a few years, followed by slow cooling.

World doesn't end. B12

It was just last July that New York Times correspondent Walter Sullivan broke the news that the world was in really big trouble. It seems that scientists digging around in Greenland had come up with ice samples from 2 miles down suggesting that the Earth's atmosphere was subject to abrupt temperature changes capable of ending life as we know it.

"The data are likely to bolster concern," wrote Mr. Sullivan in a front-page story complete with zippy graphics, "that future changes in climate might not be spread over many centuries, allowing farmers to adjust to altered growing conditions and coastal cities to deal with rising sea levels, for example."

"Scientists have speculated for years about the effects of climate warming. Even a rise of a few feet in sea level would flood many food-producing regions and populous areas."

Pretty apocalyptic stuff that, notwithstanding comments from the scientists in question that "they could not tell whether that meant similar changes were in store." Nor could one take comfort in the fact that world climate changes apparently were a fact of life more than 100,000 years before the first smoke-stack sent so-called greenhouse gases into the air. No sir. The fear was that industry emissions might accelerate the whole natural process, warming things up for the biggest chill of them all.

Well, unless you are planning to get in some fly fishing next spring, you can hold off on that order for Orvis waders a little while longer. There may not be any abrupt climate changes or floods after all. The scientists appear to have gotten a little ahead of the science.

A second team of scientists drilling in the ice about 20 miles away from the first group came up with samples that found wholly different climate changes. The scientists huddled for a meeting of the American Geophysical Union to try to figure out what had happened. Perhaps the ice layers from which they were taking samples had gotten twisted around or tilted in some fashion. Nobody was quite sure. Apparently "something peculiar" happened. In the meantime, it was back to the drawing board.

In another profession, say, journalism, this sort of backtracking might be a little embarrassing. Predicting apocalypse one day and something less the next, doesn't help one's credibility. But it's the way science works. A researcher lays out one theory for consideration. Other scientists try to verify it. If so, they go on to the next theory or wait for someone else to come up with a better one. If not, it ends up in the same circular file as the cold fusion theory.

The problem for reporters like Mr. Sullivan is to try and cover the scientific back-and-forth. He and his editors decided last July that the original findings warranted front-page coverage. But when the scientists had to back off their assessment, Mr. Sullivan and Co. didn't play the story on A1 or even B1. No, they played it on B12, back with the Toys 'R' Us ads. So readers who have been worrying since July about where they were going to come up with an ark on short notice may not have gotten the news.

What is one to make of this sort of coverage? That the end of the world is big news but that the survival of the world is not? One suspects readers would beg to differ.