Newsweek

Hillary's Damage Control

THE HOT ZONE

Blizzards, Floods & Hurricanes: Blame Global Warming

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NATIONAL AFFAIRS

As blizzards go, last week's snow was bad enough. But some scientists warn that the paralyzing storm may be a sign of catastrophic global warming. If they're right, weather will turn really extreme—more floods, worse hurricanes, longer droughts and, yes, heat waves.

Capital punishment: *A convoy of plows loses the battle of Pennsylvania Avenue*

MARK WILSON—AP

This Is Global Warming?

OF ALL NATURE'S TANtrums, a snowstorm is the most beguiling. Earthquakes shake our very being, tornadoes blow away our trailer parks, volcanoes evoke the wrath of Hades. But snow is pure, silent white magic from the heavens, blanketing the landscape and taming the toughest of towns. "God wins!" proclaimed Ed Knippers, who couldn't reach his Manassas, Va., office for days.

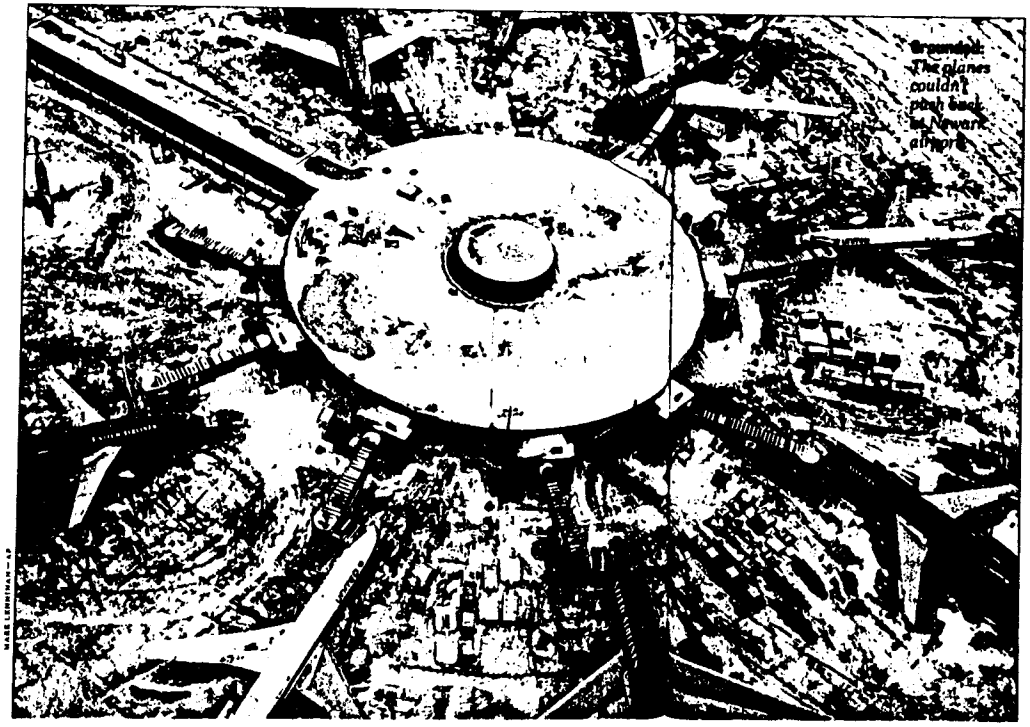
The blizzard of 1996 marched up the Eastern Seaboard and methodically shut down Washington, Philadelphia, New York and Boston, the self-described hubs of the free world. The hills of West Virginia disappeared; drifts covered small cars and large dogs. Rangers searched Shenandoah National Park for hikers caught in the whiteout; airports became refugee camps. The post office couldn't deliver on its pledge to deliver despite rain or snow or any other precipitate. Hoboken, N.J., declared itself off-limits to any incoming vehicles. In Hartford, Conn., firefighters used metal detectors to locate hydrants. In Annapolis, Md., National Guardsmen drove a Humvee to deliver breast milk from a mother stranded at home to her twins under observation at a hospital. Tempers rose, roofs collapsed, schools closed up, shovels sold out, commuter trains stopped, started and stopped again.

Across the region, at least 100 deaths were attributed to the weather. New York City estimated it lost a billion dollars in revenue—$4 million in unwritten traffic tickets and parking meters unfilled. Sanitation trucks dumped 20,400 tons of salt on city streets; in Philadelphia, plows pushed 20 million tons of snow toward the curb. The Saturday before the blizzard, Giant Food stores in the nation's capital had their biggest day ever. Milk, bread—and toilet paper—sold out. Alas, prudence dictated hoarding; six days after the storm, parts of D.C. were still unplowed (page 29).

Elsewhere, life had pretty much returned to normal by the end of the week. A Friday storm was a poor imitation of the Big One, leaving only mush and ice in its wake. Instead of heroism, it was time again for human frailties. New York's tabloids wondered why that Sanitation Department employee was clearing a private parking lot instead of a SoHo firehouse. (After front-page pictures, the plowman was suspended.) The federal government was set to reopen again this week, the bluster of budget politics notwithstanding. A Canadian neighbor was left with the task of putting American misery in perspective. "I'm rather amused," said Mayor John Murphy of St. John's, Newfoundland. "I don't like to chuckle at people's misfortunes. But on television, it didn't look like very much." We'll see if he's still chuckling when the polar icecap arrives at his doorstep.

DAVID A. KAPLAN

motorists packed lunch

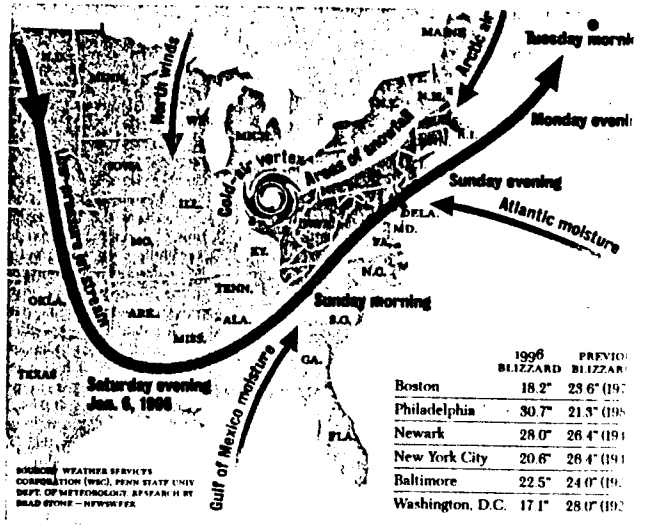


Grounded: The planes couldn't push back at Newark airport

MARK LENNIHAN—AP

The Trail of the Blizzard

When high winds over the Rockies combined with a low-pressure system over Louisia[illegible] the jet stream turned sharply northeast along the East Coast. After gathering moisture, a[illegible] getting hit with a blast of arctic air, it became the blizzard of '96.



	1996 BLIZZARD	PREVIO[illegible] BLIZZAR[illegible]
Boston	18.2"	23.6" (19[illegible]
Philadelphia	30.7"	21.3" (19[illegible]
Newark	28.0"	26.4" (19[illegible]
New York City	20.6"	26.4" (19[illegible]
Baltimore	22.5"	24.0" (19[illegible]
Washington, D.C.	17.1"	28.0" (19[illegible]

What you see as storms, the world's weatherman sees as evidence of global warming, further proof that ...

He's Not Full of Hot Air

By Sharon Begley

Seven floors below, the streets of Manhattan's Morningside Heights have taken on the look of a maze, with walls of white channeling the scurrying pedestrians into precise paths. It snowed last night, and for a while it showed no inclination to stop. Ever. Rulers won't do; to measure the accumulation, yardsticks are in order. So if this seems like an odd moment to turn one's thoughts to the *warming* of the world's climate, well, James E. Hansen begs to differ. "No, this is the perfect time!" the director of NASA's Goddard Institute for Space Studies in New York says in his crammed office. "As you get more global warming, you should see an increase in the extremes of the hydrologic cycle—droughts and floods and heavy precipitation."

Hansen, 54, is back where he's most comfortable: out on a climatological limb. It hasn't been sawed off from under him yet. In 1981 this weatherman to the world bucked the scientific consensus that the planet was getting cooler. He argued that, to the contrary, the globe had warmed 1 degree Fahrenheit in the last century—because industrial gases were trapping heat in the atmosphere. He was right, it turns out, and "that was the first thing that got us in trouble," he says with a faint smile. In the spring of 1990 he bet a colleague that at least one year from 1990 to 1992 would be the warmest on record. When 1990 topped the charts, Hansen pocketed $100. Then he nailed his prediction that the 1991 eruption of Mount Pinatubo in the Philippines would put a lid on the warming trend until the 20 megatons of heat-reflecting volcanic dust had settled. And four days after 1995 was history, Hansen announced that it had been the hottest year ever, an average 59.7 degrees. It wasn't a quirk: Pinatubo had lowered the average global temperature so significantly that "it would be very unlikely" for chance alone to push the mercury to a new record.

It's even less likely that chance alone could explain weather that, in 1995, gave new meaning to "capricious." In Antarctica, a 'berg the size of Rhode Island broke off, and flowers bloomed on the ice shelves (map, page 26). Seas warmed off southern California, decimating populations of zooplankton that sustain fish; Northern Europe bailed out from under spring floods. Eleven hurricanes—the most since 1933—pummeled the Caribbean. More than 800 people died in the Midwest's summer heat wave, and London had its hottest, driest summer in 200 years. Northeast Brazil suffered its worst drought of the century and now its south is underwater: Rio has already had three times as much rain in eight days this month as it usually gets in all of January. Siberia was a full 5 degrees hotter than normal last year. Alaska has had almost no snow this season—but Memphis, Tenn., would love to ship it some. "The more rapidly we force changes in the [climate] system," says Stephen Schneider of Stanford University, "the more likely it is to exhibit inscrutable behavior."

"Inscrutability" to a scientist is like a vacuum to nature: theories rush in at the speed of sound. The theory in this case is that the world is caught in the grip of a "greenhouse effect." Gases such as carbon dioxide, released when fossil fuels like coal and oil burn, trap infrared (heat) radiation in the atmosphere much as panes of greenhouse glass do. Since the atmosphere's load of these gases keeps rising, the world will almost certainly get warmer. The Intergovernmental Panel on Climate Change, sponsored by the United Nations, last month forecast a rise of 1.8 to 6.3 degrees by 2100. Since the IPCC can hardly agree on what to order for lunch, that unanimous prediction was a milestone. Even representatives from Kuwait and China were on board: the two countries resist the idea that the world is warming because greenhouse panic could bring restrictions on oil and coal.

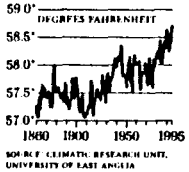
But consensus ends right about there. Not even researchers who agree that the world is warming, and will keep warming, agree on what happens next. On the one hand, Panglossians foresee milder winters and bumper crops from Kansas to Siberia. Despite the recent weather, they expect fewer severe storms in the future: temperature differences between the poles and the equator will even out, and the fury of storm will therefore diminish. Cassandras, on the other hand, wa that in a warmer world agricu tural zones will shift, causing mismatch between climate, s and rainfall that could emp many of the world's brea baskets. Sea levels will rise b tween 6 and 38 inches, obliterating islands, robbing coastal Ne Jersey and Louisiana of congre sional districts and forcin Kevin Costner to rebuild h ark. Up to two thirds of th world's forests could turn t grasslands. The Mideast an northern Africa can expe widespread droughts. A balm er North Pole could alter ocea currents that now warm Wes ern Europe; there will always b an England, but it might not b able to cultivate buttercups.

Meaner storms: It's too soon t tell which side knows what it talking about. But one alarmin prediction seems to be comin true: the expectation that, in warmer world, extremes of we and dry will intensify. A Earth's surface warms, mor moisture evaporates. Over ar regions, where there's littl to evaporate, turning up th thermostat would exacerbat droughts. Rainfall would th increase over moist areas, lik the coasts, and be rarer in th interiors of continents. "Th odds of getting drought yea will increase markedly," say Jerry Mahlman, director of th Geophysical Fluid Dynamic Laboratory, part of the Nation Oceanic and Atmospheric Ad ministration (NOAA). Hurr canes, too, should get more in tense. "The warmer the ocea gets, the meaner the tropical storm," say A. E. (Sandy) MacDonald of NOAA's lab i Boulder, Colo.

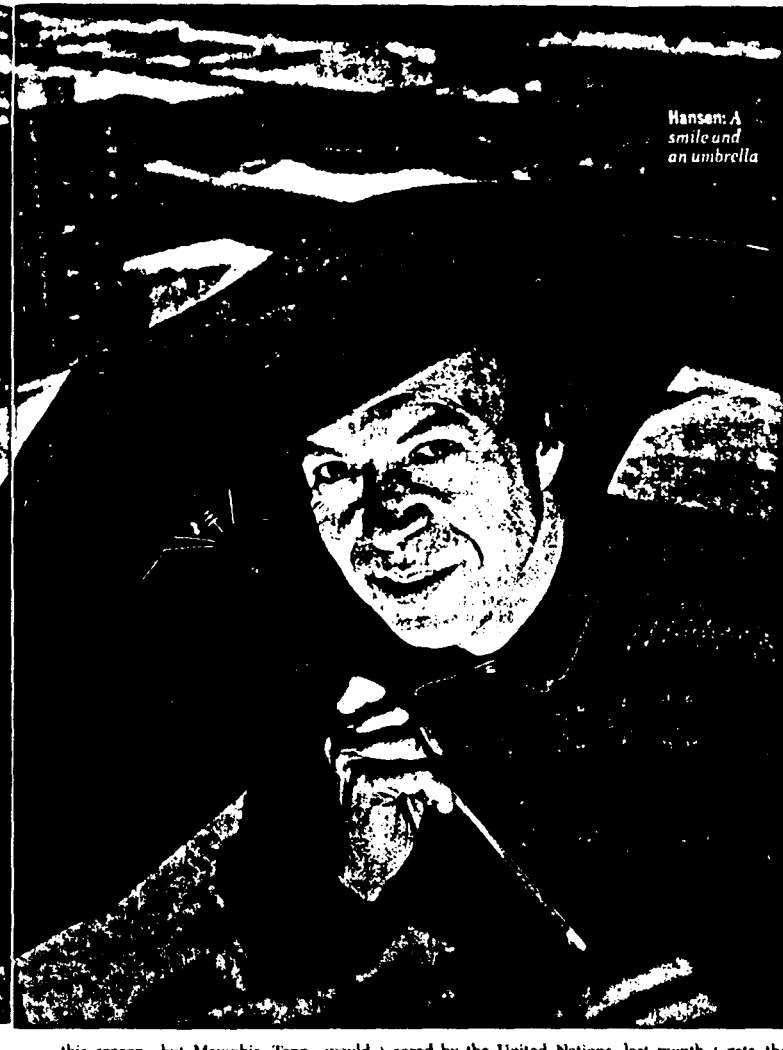
Last week's blizzard can't be blamed o the warming world. No storm or drougl or heat wave ever can be so neatly diag nosed. "You can't connect a given weathe event on a particular day in a particula place with long-term climate change," say physicist Michael Oppenheimer of the En vironmental Defense Fund. The snows o yesteryear prove that. The record North east blizzards of 1888 and 1947, after all, h when the only greenhouse effect anyon cared about was the one that forces lilies t bloom for Easter. Extreme weather is con nected to global warming more subtly. "Al that long-term climate change can do i

Getting Warmer

The average surface temperature of the earth has risen more than 1.5 degrees in the last 135 years.



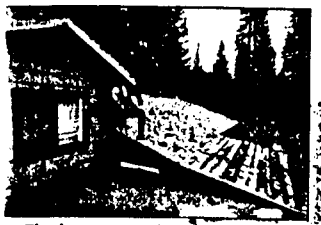
SOURCE: CLIMATIC RESEARCH UNIT, UNIVERSITY OF EAST ANGLIA



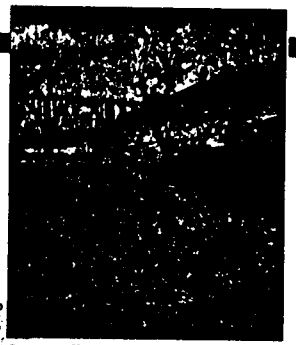
Hansen: A *smile and an umbrella*

Going to Extremes

The weather is always capricious, but last year gave new meaning to the term. Floods, hurricanes, droughts—the only plague missing was frogs. The pattern of extremes fit scientists' forecasts of what a warmer world would be like.



Floodwaters cover Sonoma County, Calif.

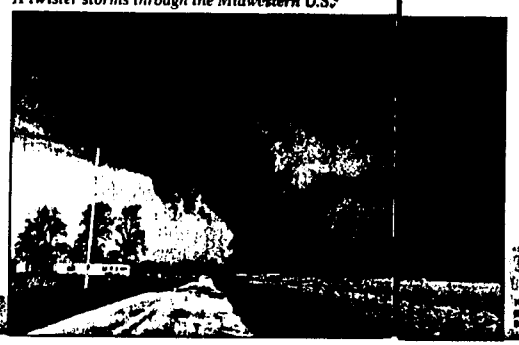


Spain suffers through a 5-year drought

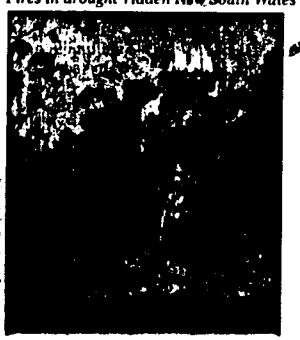
Blizzards sweep through northern Japan last week

Hurricane Luis hits the Caribbean

Heavy rains drench the Philippines



A twister storms through the Midwestern U.S.



Fires in drought-ridden New South Wales

California: Heavy rains in March led to flooding throughout the state, causing 15 deaths and $2 billion in damage.

Midwest: 1,011 tornadoes were reported, the second-most active season on record.

Northeast and Midwest: July's heat wave killed more than 800 people, including hundreds in Chicago alone.

East Coast: Hot and dry summer; then the blizzard of '96 buries the Northeast.

Caribbean: Eight tropical storms and 11 hurricanes made this the worst season since 1933.

Mexico: Northern parts of the country are experiencing the coldest weather in 25 years. On New Year's Day, Mexico City saw its first real snowfall in two decades.

Northeast Brazil: Suffered its worst drought of the century last year, with only 40% of normal rainfall.

Rio de Janeiro: The March rains have come early this year, already bringing more rainfall than January's monthly average.

Argentina: The plains region experienced its worst drought in history. The Patagonia forest is having one of its most active fire seasons in memory.

Antarctica: A 48-by-22-mile piece of the Larsen Ice Shelf fell off.

British Isles: Severe summer heat wave and drought. London had its hottest summer since 1659.

Central and Northern Europe: Above-normal rainfall early last year caused flooding in France and the Netherlands.

Austria: Record highs now being set. World Cup ski event cancelled for lack of snow.

Southwest Europe, Northwest Africa: Protracted drought through first six months of '95.

West Africa: Prolonged drought.

Ghana: July saw its heaviest rainfall in 90 years, with 30 deaths from flooding.

South Africa: The '95 wet season was late, then caused widespread flooding.

Siberia: A five-degree increase in average temperature for '95 was the largest in the world.

Russia: Moscow's May 31 temperature hit 91° F, breaking the previous record.

NE China, Korean Peninsula: Summer rain and flooding led to famine in some regions.

India, Bangladesh and Nepal: June monsoons caused massive flooding, stranding nearly 2 million people and killing more than 100.

Japan: With unprecedented snowfall in the north, the city of Sapporo last week asked for military assistance in removing snow.

Philippines: Typhoon Angela, the area's most powerful storm since 1984, hit in November, killing more than 600 people.

Australia: The year's weather has been wet in the west, with record-high levels of rainfall. In the east, Sydney had its first rainless August ever recorded.

Hurricane/tornado/typhoon

Drought

CLOCKWISE FROM TOP LEFT: J. PATRICK FORDER—SYGMA, DESPOTOVIC—SYGMA, SANEFI SHIMBUN—AP, AFP, JON JONES—SYGMA, RICH SAAL—SPRINGFIELD STATE JOURNAL-REGISTER-SIPA, AMANTA—SIPA

affect the probabilities," Hansen explains. Instead of equal chances that any one storm will be heavier or lighter than normal, or any one day hotter or colder than normal, the climate dice are now loaded. The greenhouse effect, says Hansen, "has changed the odds" on extreme weather.

Whatever its proximate cause, the blizzard of '96 is just what a greenhouse world would whip up. The storm was born when cold air blew down from Canada. The arctic air happened to smack into a warm, moist air mass hovering over the Atlantic Ocean. In a warmer world, those chance circumstances could be more common. "Global warming has made the Atlantic an even greater source of moisture" from evaporation, Hansen says. And when water vapor condenses, becoming liquid again, the process releases heat. So warm moist air that feeds blizzards is more likely to be parked over the Atlantic, just waiting for the delivery of a cold mass. "The greenhouse effect alters the probabilities [of having the ingredients of a massive snowstorm]," says Hansen. "In that sense the greenhouse effect is changing our climate now."

Hot Venus: Hansen was not always a greenhouse cultivator. In 1965, he was casting about for a dissertation for his Ph.D. in physics at the University of Iowa. His mentor, James Van Allen (discoverer of the radiation belts that girdle Earth), suggested that Hansen tackle the question of why the surface of Venus is hot enough to melt lead. The catch was that the explanation had to be wholly original. The best theory for Venus's heat—that it was the victim of a runaway greenhouse effect—had already been claimed by some young Harvard professor named Carl Sagan. Hansen wasn't deterred. "I decided to say that Venus was so hot because a dusty atmosphere was trapping internal heat," he recalls. That was good enough for the doctoral committee (even though it turns out that Sagan was right about Venus). Hansen received his degree and landed a fellowship at Goddard, which has lately become as well known for its location as for its science: Tom's Restaurant, where the "Seinfeld" characters chow down, is on the ground floor. Now Hansen can't escape climate change even on his birthday. For his 50th, he got a clear plastic bank filled with coins from around the world—and labeled GLOBAL CHANGE.

Some researchers resent Hansen's bravado. One June day in 1988, as drought and record heat fried the Midwest, Hansen testified before a Senate committee that he was "99 percent" certain that greenhouse warming had gone from theory to reality. The senators paid attention—it was 100 degrees in Washington that day—and Hansen became famous overnight as the government scientist who said the world was

Weathering Heights

The Weather Channel's forecast: higher ratings

WHEN IT BECAME CLEAR THE STORM WAS GOING TO BE A WHOPPER, THE Weather Channel went on a war footing. The executive producer dispatched reporters to Washington, D.C., and New York for live reports. As the storm blew furiously up the East Coast, the network stayed with it, logging news, it seemed, of almost every flake. The energy on the screen was as palpable as the blizzard outside.

Wait a minute. Isn't this the 24-hour channel of weather wonks standing in front of exotic-looking maps? It is, but just as O.J.'s was no ordinary murder trial, this was no ordinary storm – and the ratings showed it. As the blizzard developed last Sunday, more viewers tuned in to the Atlanta-based cable channel than ever before - 953,000 households watched, a fourfold jump over its normal audience. That was also twice as large as the ratings for CNN, its cross-town rival in big weather stories. These ratings won't knock "ER" off its perch. But if Desert Storm fixed CNN's reputation, and O.J. did the same for Court TV, then the blizzard of '96 has put The Weather Channel solidly on the map. "We kicked CNN's butt," gushed executive producer Jim Sutherland. "We want to own the weather."

From laughingstock to must-watch: *Weathercaster*

Well, not literally, but Sutherland has a right to gush. From its start in 1982, The Weather Channel has been pelted with snickers. WHEN IT RAINS IT BORES, read one headline. The male meteorologists looked like they were wearing outlet-mall suits and the women wore dresses a size too large, critics wrote. All that may have been true, but the viewing public came to want weather on demand. Buoyed by big weather stories, like Hurricane Erin last year, the channel has grown into one of the nation's "must have" cable channels. Available in over 90 percent of all cable homes, its revenues last year climbed to more than $80 million.

Many viewers have turned into fanatics, some undoubtedly out of an obsession with nature and some undoubtedly because they don't have jobs. About 20 percent have reported watching for an eye-glazing 30 minutes at a time. After 14 years, TWC is a brand name, selling CD-ROMs, tornado videos and online services.

All this is pretty heady for a channel that annoyingly starts commercials while the anchorperson is still speaking. But a highly sophisticated operation churns out the forecasts. All of the channel's 27 anchors are meteorologists and, it should be said, are as well dressed and personable as any local weather broadcaster. Remarkably, they do their shtik without a script, and their passion is evident. Stu Ostro recalled that "to see hail bigger than a baseball was a very spiritual experience." At their disposal is a multimillion-dollar state-of-the-air computer system that lays out varying forecasts; the 65 meteorologists on staff make the final call. Every 10 minutes, 4,000 separate local forecasts – drawn from the National Weather Service – are beamed via satellite to local cable operators.

The channel's biggest challenge is to get people to watch longer. The fanatics aside, the average length of time a viewer watches The Weather Channel is only 14 minutes. That means the channel must move quickly to cover local, regional and national forecasts. To try to stretch that time, the channel offers features to appeal to specific audience groups, like weather for skiers. And by rapidly dissolving one map or graphic into another, the anchors keep things moving, even if the information being imparted is often the same as 15 minutes earlier. The downside is that all this can induce a trancelike state similar to watching a stock ticker tape. The antidote: the mother of all snowstorms.

LARRY REIBSTEIN *with* VERN E. SMITH *in Atlanta*

warming. Looking back on Hansen's testimony, says Kerry Emanuel of MIT, "I don't think it was good for scientific research. It was such an outlandish view that it sparked a counterrevolution. We found ourselves in the middle of the Chicken Littles on the one hand, and the reactionaries on the other." But there is little debate that, as Van Allen puts it, "Hansen's work is really the standard of reference in the field."

And lately the weather has been on his side. Downpours are one of those "extreme hydrologic events" that Hansen expects from the greenhouse. Higher temperatures mean more evaporation, which means more water vapor in the air. That does not portend more *frequent* rainfalls – whether or not a storm forms depends on circulation patterns that are not expected to shift much. But storms that do form will have more moisture-laden air to wring out. Since 1970, reports Thomas Karl of the National Climatic Data Center in Asheville, N.C., more rain in the United States has been falling in big sloppy storms, with less arriving in showers. In other words, when it rains it pours. "We were flabbergasted, to be honest with you," Karl says. "Our best information is that global warming is having an impact [on rainfall] now." It also seems to be affecting the infamous Pacific Ocean warming known as El Niño. El Niño brings torrential rain to the Southeastern United States and unusual heat to the Pacific Northwest. And global warming, says Kevin Trenberth of the National Center for Atmospheric Research, makes El Niño effects stronger and more frequent.

To scientists who remain skeptical about greenhouse warming, wacky weather and a balmier world reflect no more than normal variability. Weather is so sensitive to tiny changes, after all, that a butterfly flapping its wings in Beijing can make it rain in Pittsburgh (and if we ever find that butterfly we're going to make it stop). Need evidence that the science underlying climate models is unsettled? The IPCC now predicts that the world will warm only half as much as it forecast in 1990. The 1990 report neglected the cooling effect of sulfates, which are released into the air when dirty, high-sulfur coal and other fuels are burned; 1995's took account of sulfates. The Global Climate Coalition, an industry-sponsored group fighting efforts to require cuts in the emissions of carbon dioxide, argues that this "trend [toward lower warming estimates] could continue . . . and is a very good reason why continued research is a wise strategy." The coalition suggests that the world has 40 to 240 years to stabilize greenhouse gases before the heat gets turned up uncomfortably high.

Several reputable scientists agree. There are huge uncertainties in the computerized climate models. For one, the increased evaporation in a warmer world might produce more clouds, which have a cooling effect. For another, oceans might absorb most of the increased heat, leaving little to change the climate. "I don't believe the climate system is messed up," says climatologist Robert Balling of Arizona State University. "[Neither] circulation patterns [nor] precipitation records are showing any cataclysmic problem."

The Global Climate Coalition describes its views as "business and industry's," but one player has broken ranks. Insurers have concluded that a greenhouse world could "bankrupt the industry," as the president of the Reinsurance Association of America said last year. Hurricane Andrew, the kind of storm a warmer world could see more of, produced $16.5 billion in damage claims. In Europe, reinsurers Swiss Re and Munich Re have lobbied governments to regulate greenhouse gases, and Swiss Re suggested that global warming might force people to abandon major cities. "This hazard has to be contained," says a Swiss Re statement. "We have to rethink, correct our mistakes and win time." Insurers are also meeting with Greenpeace, which is exhorting them to take on energy companies in a battle that would be straight out of a Japanese monster movie.

At the 1992 Earth Summit in Río de Janeiro, developed nations pledged to cut their releases of greenhouse gases so that emissions in the year 2000 would not exceed 1990's. About the only country that has a chance of living up to its promise is Sweden. The United States is relying on industry to voluntarily reduce emissions – by using less energy and making more fuel-efficient cars, for instance. Rather than adopting tough measures like an energy tax, which would cut energy use but also end political careers, the United States and other countries are hoping that technology will ride to the rescue. Maybe solar power and hydrogen will replace coal and oil before greenhouse warming gets bothersome. But Hansen thinks there's less time than governments are counting on. "The climate system is being pushed hard enough that change will become obvious to the man in the street in the next decade," he says. To many people trudging along streets lined with urban Himalayas last week, it already was.

With DANIEL GLICK *in Boulder, Colo., and* ADAM ROGERS

Two Feet Under

Another crisis Washington can't handle

FOR THE BUNDLED MASSES IN CHICAGO AND BUFFALO, IT WAS AN UTTERLY incomprehensible sight: Washington, D.C. – seat of the free world, capital of the most powerful nation on earth – trounced by one powerful dose of snow. Other cities on the East Coast got walloped, too, but they managed to clear the roads and open the stores in a few days. The capital was so poorly prepared that a week after the storm hit, nearly everyone but the president was still stuck at home. No chance of moving the car, no place open to drive to anyway. Did we in Washington think winter would just sort of *skip* us this year?

Actually, yes. And we thought it would last year, too. Every year Washingtonians brace themselves for the cold months with this neat bit of logic: Southern cities have mild winters. Washington is a Southern city. Therefore, Washington will have a mild winter. Trouble is, like so many other examples of capital reasoning, this one defies the truth: it snows here.

Vigilant: *Tourists kept coming to the Vietnam wall*

At first there was something pleasantly anachronistic about the ability of mere weather to mock the determination of a city so concerned with getting to the office. The feeling didn't last long. Four days after the storm, 80 percent of the city's 1,100 miles of roads hadn't been plowed. A week after, you could still ski Pennsylvania Avenue. Residential streets were arctic preserves.

Mayor Marion Barry went on television to assure everyone that the District had plenty of equipment to get the job done. He tooled around in a plow, mugging for the cameras. (Barry could afford to be jolly; his street was cleared as soon as the snow stopped.) In fact, there wasn't nearly enough equipment. Four years ago, the District owned 100 plows and had contracts with private companies for an additional 240. By this winter, with the District broke and in federal receivership, the fleet had atrophied to a mere 50 street scrapers. Eight others stood in a downtown garage, waiting for minor parts the city hadn't ordered. To make up the shortfall, the city signed contracts with 50 private plow drivers. Barry wanted to hire more, but couldn't find any takers. No one else believed the District government would ever get around to paying them. No fools, they. In a few days the city's $2.1 million snow-removal budget was sapped. At the weekend, the mayor was begging for help.

The police, at least, could get around. The National Guard provided them with Humvees to cruise in, and at least a few cops didn't want to give them back. Not so ambulance drivers, who had to tromp for blocks through two-foot snow to retrieve the sick and injured. Firefighters had their own troubles. The hydrants were buried. Until a few years ago, a rookie fire-snuffer was required to memorize the location of every hydrant in his district. That requirement was waived; now only the old-timers know where to drag the hose.

It is hardly an exaggeration to say that in the capital of the United States of America last week, it was not possible to buy a loaf of bread. Local news stations were reduced to reading off the names of the few markets that still had milk. Surly shoppers suspiciously eyed the contents of their neighbors' carts, and made grisly jokes about getting invited to a Donner party in Georgetown.

From the darkness and chaos, however, there emerged two gratifying truths to which Washingtonians could cling. First, that violent crime in the city dropped off in the week after the storm; and second, that next year, like this one, will be a winter without snow.

WESTON KOSOVA *with* LUCY SHACKELFORD *and* PAT WINGERT *in Washington*