

Has Mount St. Helens affected the weather?

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WASHINGTON — Is a new weather script being written? The East has shivered under a blanket of cold arctic air this winter, while at the same time, parts of the West have sweltered from 90-degree temperatures.

This erratic winter weather follows a summer in which a killer heat wave brought tragedy and drought to the West and southern Plains. And the record-breaking cold and snow of the past few winters follows a series of particularly mild winters in the early 1970s.

Controversy among climatologists is nearly as constant as change is to weather, but most expect these extremes of hot and cold, wet and dry, and calm and stormy with all their regional variations to continue into the next century.

"We have come to think of the extremely tranquil and benign climate of the 1950s and 1960s as normal, but in fact that was the aberration. The weather trauma we've been seeing since 1972 when, virtually with a bang, the weather began going wild, is normal historically," says J. Murray Mitchell Jr., climatologist at the National Oceanic and Atmospheric Administration.

Reid Bryson, director of the Institute for Environmental Studies at the University of Wisconsin, agrees: "Looking back over the past, there have been much larger extremes. Compared to the last 300 to 400 years, our weather is not unusual. Compared to the last million years, it is actually mild."

"People have a short tribal memory," says Dr. William W. Kellogg, co-author of "Climate Change and Society," a new report from the Aspen Institute. "We think our current weather is weird because it is different. Climate has certain averages, but fluctuates regionally. Every year, somewhere, a weather record is broken."

To reduce to bare bones the complex forces that create the diversity of weather, scientists explain that the sun drives the weather machine and that the transparency of the atmosphere plays the major role in how much energy reaches the earth's surface.

As this heat supply changes, the pattern of atmospheric circulation varies. When atmospheric circulation changes, the distribution of temperature and precipitation is altered — creating more dramatic regional weather.

"For example," Bryson notes, "while January 1977 was the coldest month up to that time in the Pacific Northwest, it was the warmest January on record for Anchorage, Alaska. Both places experienced a dramatic fluctuation of weather, but the earth's mean temperature remained fairly constant."

The two most significant forces affecting the transparency and conductivity of the atmosphere are dust particles thrown into the air by volcanic activity and the buildup of carbon dioxide from the burning of fossil fuels.

Volcanic eruptions put a layer of particles into the upper atmosphere, creating a "parasol" effect. The parasol reflects some of the sun's energy back into space, contributing to a gradual cooling of the earth.

Carbon dioxide in the earth's atmosphere creates a "greenhouse" effect which permits the sun's rays to pass through unimpeded but traps the heat at the earth's surface. Many believe a significant warming will result if fossil fuels remain the dominant source of energy.

Could the cooling effect of volcanic dust neutralize the warming effect of carbon dioxide? "Yes, temporarily," Mitchell says, although he believes carbon dioxide has the leverage to dominate climate in the long run. "But since both change circulation patterns, both change regional weather."

And both have increased significantly in the recent past. Bryson says the level of volcanic activity has "nearly doubled since 1950," and he believes "about 90 percent of climate variation in the Northern Hemisphere can be explained by the variation in volcanism." Mitchell disagrees, saying that only about 60 percent of the change in temperature or atmospheric heat supply is related to volcanism.

Scientists agree that the effect of Mount St. Helen's eruption was negligible. But the aggregate effect of all 10 volcanic

eruptions that occurred worldwide in 1980 will be appreciable, Bryson said.

Carbon dioxide in the atmosphere is expected to increase by 15 percent within the next 20 years, raising the average world temperature by 1 degree Fahrenheit. In the next 100 years carbon dioxide is expected to at least double, increasing the average temperature by up to 5 degrees Fahrenheit, Mitchell said.

If a general warming occurs, and most climatologists

believe it will, the hydrologic cycle would be accelerated — increasing both rainfall and evaporation.

As these anticipated changes will not be uniformly distributed, the effects will be "bittersweet," Mitchell says. "A warmer climate and more abundant rainfall would lengthen growing seasons in the northern latitudes, such as Canada, the Soviet Union, and Scandinavia. But other parts of the world, including our own West and Midwest, would end up with water shortages and drought."

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