

## Climate Change: The Impacts Can Be Seen Now

### KILLER HEAT WAVES

In the coming years, global warming is likely to increase the frequency of “killer” heat waves. During the summer of 2003, the hottest in at least the past 500 years, record heat waves scorched Europe. The relentless heat killed at least 27,000 people, breaking all records for heat-induced human fatalities. In France alone, more than 14,000 people died—more than 19 times the worldwide death toll from the SARS epidemic.

In 1995 in Chicago a heat wave resulted in 525 deaths during a five-day period in July 1995, with the 106°F reading on July 13 the warmest July temperature ever measured.

### DROUGHT

From 1998 to 2002, below-normal precipitation and high temperatures resulted in droughts covering wide swaths of North America, southern Europe, and South and Central Asia. The drought in the United States during this time was one of the worst in the 20th century. During the peak of the drought, about 80 percent of the land area of the western United States was affected. These droughts have been linked to the unusually warm waters of the western Pacific Ocean, thought to be caused by global warming.

### WILDFIRES

The dry, parched conditions and high temperatures associated with drought invite the spread of wildfires. In 1998, Mexico experienced its worst fire season ever, when 1.25 million acres burned during a severe drought. Smoke from these fires even reached Texas, triggering a statewide health alert. In 2000, severe drought and high temperatures in the western United States led to more than 122,000 fires,

which burned approximately 8.5 million acres, the worst wildfire season in the last 50 years.

### RISING SEA LEVEL

During the 20th century, sea levels around the world rose by an average of four to eight inches. This rate of sea level rise is ten times higher than the average rate for the last 3,000 years and is projected to accelerate further. About three feet of vertical sea level rise on a typical east coast beach means 300 feet of horizontal beach loss due to permanent submersion and erosion.

### MELTING GLACIERS

Around the world, mountain glaciers are retreating in response to the warming climate. In Montana, two-thirds of the glaciers that were present in Glacier National Park in 1850 are already gone, and the rest could disappear by 2030. Since 1912, 82 percent of the ice cap on Mt. Kilimanjaro has disappeared, with about one-third melting in just the last dozen years. In 1972 Venezuela had six glaciers, but now it has only two, which will melt in the next ten years. In the Peruvian Andes, glacial retreat has accelerated sevenfold. Between 1963 and 1978 the edge of Peru's Qori Kalis glacier retreated 13 feet annually, but by 1995 the rate had increased to 99 feet per year. In the Garhwal Himalayas in India, the Dokriani Barnak Glacier retreated 66 feet in just one year.

### DISINTEGRATING ICE SHEETS AND MELTING PERMAFROST

Since the 1940s, the Antarctic region has warmed by 4.5°F. In 2002, the northern section of the Larsen B ice shelf, an area equivalent to the size of Rhode Island, disintegrated in only 35 days. Since 1997, the

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shelf has lost a total of 2,200 square miles and is now about 40 percent of its previous size.

In 2003 the Ward Hunt Ice Shelf, the largest in the Arctic, broke in two, draining a unique freshwater lake that had been dammed by the ice sheet. Since the 1950s the surface area of the Arctic's spring and summer sea ice has shrunk by about 10 to 15 percent and in recent decades has thinned by about 40 percent during late summer to early autumn. Finally, because the permafrost on which they are built has melted, buildings and roads in Alaska have been damaged.

## SHIFTING SPECIES RANGES AND BREEDING PATTERNS

Numerous species of animals have been forced to migrate poleward and to alter their annual routines. Polar bear populations are declining because the sea ice in the Hudson Bay is melting. Caribou populations are smaller because spring now arrives earlier in the Arctic. And the Arctic fox's range is shrinking and being replaced by that of the red fox, which is better suited to the warmer climate. At least two species of tropical mountain frogs are thought to have recently become extinct because of climatic changes.

## CORAL REEFS

Around the world, the incidence of large-scale coral "bleaching" events has increased since 1979, and

most evidence indicates that these mass bleachings are caused by global warming. Coral is bleached under certain conditions, including when the surrounding water temperature rises at least one degree above the long-term average summer maximum; bleaching can lead to death. The average surface ocean temperatures in many tropical regions rose by almost one degree over the last century. In 1997/98, the warmest 12-month period on record, the largest bleaching event on record killed 1,000-year-old corals.

## SPREAD OF MOSQUITO-BORNE DISEASES

In Colombia, mosquitoes that carry dengue fever and yellow fever viruses were previously limited to elevations below 3,300 feet but have recently been found at 7,200 feet. In Mexico, dengue fever has spread above its former limit of 3,300 feet and now can be found at 5,600 feet. The recent outbreak of West Nile virus in the United States—10,000 reported cases and 231 deaths to date—is thought to have resulted from a climatic sequence of extended drought followed by heavy downpours, creating ideal conditions for mosquitoes to breed.

*Citations available at [www.environmentaldefense.org](http://www.environmentaldefense.org).*



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