

The year 2002 set numerous local and regional records for windstorms, rain intensities, floods, droughts, and temperatures. Economic losses from weather disasters worldwide approached \$53 billion, a 93-percent increase over 2001 losses.¹ (See Figure 1.) The increase was due in part to the return of El Niño in mid-2002.² The number of natural disasters totaled about 700; of these, 593 were weather-related events.³ Windstorms and floods accounted for 98 percent of total 2002 insured losses from natural catastrophes.⁴

Weather disasters also took a significant human toll. Nearly 8,000 people died in storms, floods, droughts, heat waves, or extreme cold.⁵ Many who survived faced the threat of diseases, including cholera, dysentery, malaria, and dengue fever.

The highest costs of weather disasters, in dollar terms, are borne by industrial nations.⁶ But developing countries suffer far higher losses as a share of their gross domestic products, as well as the majority of fatalities.⁷

The most costly event of 2002 was the flooding of the Danube and Elbe Rivers in August. Munich Re, a reinsurance company that compiles data on global disasters, called them “the worst floods in Europe for centuries, probably since the millennium flood in August 1342.”⁸ In less than two days, Germany received as much rain as it normally gets in a year.⁹ At least 108 people died and 450,000 were forced to evacuate.¹⁰ Total economic losses were estimated at \$18.5 billion.¹¹

Extreme cold in Moscow killed more than 300 people in December and early January, while eastern Russia had its worst snowstorm in at least 50 years.¹² Melting snows led to record floods, forcing thousands from their homes in southern Russia.¹³ The following month, Bolivia’s capital, La Paz, was hit by the most powerful storm in its history—receiving almost a gallon of water per square foot in less than an hour.¹⁴ Then heavy snowfall and extreme cold hit Bolivia, Peru, and Argentina in July, killing at least 59 people and affecting 86,682 in Peru alone.¹⁵

In May and June, Southwest Asia sweltered

in temperatures as high as 50 degrees Celsius (122 degrees Fahrenheit).¹⁶ More than 1,200 people died in India, the highest one-week death toll on record for heat waves there.¹⁷ In late July, torrential rains, mudslides, and floods killed nearly 300 Indians and affected more than 10 million.¹⁸ Yet at the same time, expected monsoon rains neglected much of the country, causing the first all-India drought in 15 years.¹⁹

Warm, dry weather contributed to massive wildfires and agricultural losses in the United States and Australia.²⁰ Many U.S. regions experienced the worst drought since the Dust Bowl.²¹ Australia lost some 40,000 rural jobs between July and October due to drought, and analysts expect economic growth to drop 1 percent as a result.²² China also suffered major losses, estimated at \$1.2 billion, due to the most severe drought in over a century.²³ More than 800,000 people in eastern and northern China were affected.²⁴

Heavy rains in Kenya killed at least 53 people and displaced more than 150,000 in May.²⁵ As Kenya battled floods, the Eritrean government reported a drought that was unusually bad even for that country.²⁶ While AIDS, war, and other political problems also play a role, erratic weather patterns are the prime cause of famine for upwards of 18 million people across Africa.²⁷

After months of dry weather, typhoons hit much of Southeast Asia and Japan in mid-2002.²⁸ Record-breaking rains, floods, and landslides killed nearly 1,100 people and injured more than 80,000 in China from June through August.²⁹ The flooding of Hunan’s Dongting Lake affected 8.4 million people and cost more than \$5.4 billion.³⁰ In September, Typhoon Rusa struck South Korea, setting a national record for rainfall and damage and costing the nation \$6.6 billion.³¹ Halfway around the globe, September was also the most active tropical storm month on record for the Atlantic basin.³²

Since 1980, a total of 10,867 weather-related disasters have caused more than 575,000 deaths and entailed costs of more than \$1 trillion (in 2001 dollars).³³ The frequency of severe weather

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events is clearly on the rise. In the United States, the number of weather-related disasters has increased fivefold since the 1970s.³⁴ Worldwide, the number of big weather catastrophes has quadrupled since the 1960s.³⁵

As a result, average annual losses from weather events are rising as well, from more than \$25 billion in the 1980s to nearly \$71 billion in the 1990s.³⁶ Losses due to great catastrophes—which overtax a region’s resources, making external assistance necessary—have increased even faster. Average annual losses from catastrophic weather events exceeded \$43 billion during the 1990s—triple the figure in the 1980s, five times that of the 1970s, and eight times the average in the 1960s.³⁷

Although the average number of deaths per weather event falls with improvements in forecasting and preparedness, the total number of people affected is rising.³⁸ In the Oceania region, for example, the number of deaths due to weather disasters rose by 21 percent between the 1970s and 1990s, while the number of people affected swelled from 275,000 in the 1970s to 18 million in the 1990s.³⁹ Environmental disasters—including severe weather—are to blame for 58 percent of the world’s 43 million refugees.⁴⁰ Klaus Töpfer of the U.N. Environment Programme (UNEP) believes that the number of environmental refugees could double to 50 million by 2010.⁴¹

These economic and human costs have multiplied over the years due to not only the surge in extreme weather events but also rising global population and increasing concentrations of people and wealth in urban areas and vulnerable regions. Human activities such as clearcutting of upstream slopes have increased the impacts as well. In many cases, efforts to avert or lessen disaster, such as construction of dikes, dams, and avalanche barriers, have drawn people to coastal areas, riversides, and hillside locations, giving them a false sense of safety

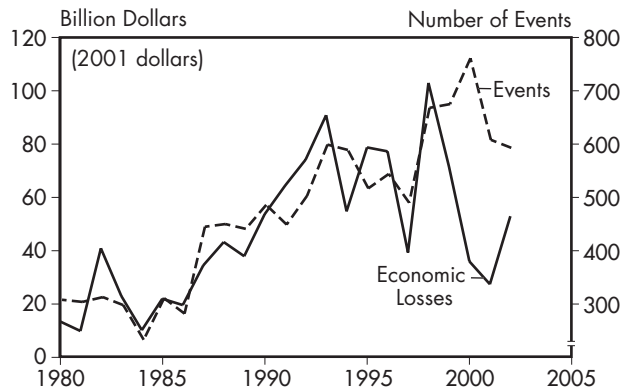


Figure 1: Number and Cost of Weather-Related Disasters, 1980–2002

and perversely increasing the costs of future weather-related disasters.⁴²

Scientists believe that rising global temperatures may increase the intensity and frequency of extreme weather events even more.⁴³ During the twenty-first century, average global surface temperatures are projected to increase at a rate unprecedented over at least the past 10,000 years.⁴⁴ Even slight temperature increases can shift low-pressure systems from their usual paths, causing sudden and significant increases in the frequency of heavy rainfall in a particular area.⁴⁵ Small increases in event severity can lead to multiple increases in damage and costs—for example, a 10-percent increase in wind speed can increase damage by 150 percent.⁴⁶ Thus climate change is expected to exacerbate the upward trends of economic and human costs.

A recent UNEP report concluded that if current trends continue, economic losses from natural disasters will reach \$150 billion annually within the next decade.⁴⁷ According to experts at Munich Re, some single “worst case” disasters could exceed \$100 billion.⁴⁸ Rising costs could stress insurers and banks to the point of insolvency.⁴⁹

SEVERE WEATHER EVENTS ON THE RISE (pages 92–93)

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