

# VITAL SIGNS

1997  
1998

## The Environmental Trends That Are Shaping Our Future

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Editor: Linda Starke

with  
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**earthscan**  
from Routledge

Bis 1996 lag die höchste Globaltemperatur noch bei 15,4°C

### Overview: A Year of Contrasts

#### AS ROCK ANCE INDUSTRY

is getting warmer. Early data show that 1996 is the fourth warmest year since record keeping began in 1866. (See page 63 and Figure 2.) The 13 years on record have been warmer since 1979, with the four warmest being during the 1990s. The release of the 1996 data provides another piece of evidence that the warming trend is under way. The insurance industry is deeply concerned about this. Higher temperatures of surface waters, particularly in the tropics and subtropics, where heat is released into the atmosphere, result, storm systems are more frequent, and more

weather-related disasters in 1996 reached a record \$60 billion. (See pages 70-71.) An estimated \$26 billion of this occurred in China, where a succession of typhoons (hurricanes) led to severe flooding, displacing 2 million people and claiming 2,700 lives.

Weather-related insurance claims, a much

The United States, the largest single source of carbon emissions, is responsible for 23 percent of the emissions of this climate-changing gas. China, the world's fastest growing economy during the 1990s, now accounts for 14 percent of carbon emissions, largely because of its heavy dependence on coal. Emissions there grew 27 percent from 1990 to 1995, compared with approximately 8-percent increases in both the United States and Japan in the same period.

Since the Industrial Revolution, atmospheric CO<sub>2</sub> levels have risen from an estimated 280 parts per million to 362 parts per million, the highest in 150,000 years. (See Figure 1.) The mainstream scientific community, represented by the Intergovernmental Panel on Climate Change—2,500 of the world's leading atmospheric scientists—now finds evidence that human activity is indeed altering the Earth's climate.

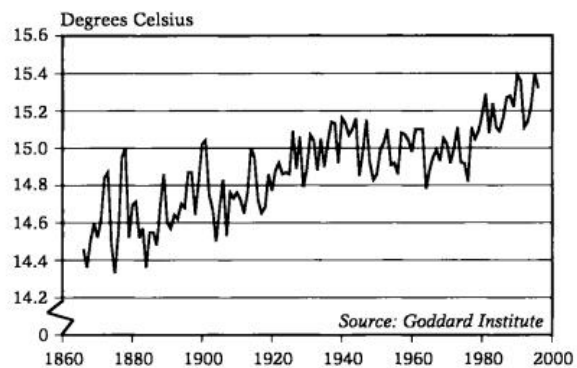


Figure 2: Average Temperature at the Earth's Surface, 1866-1996

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 Ashley T. Mattoon      John Tuxill

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Am 18.01.1998 hat **James Hansen** (NASA-GISS) 1°C aus der Erderwärmung verschwinden lassen:

Die höchste Globaltemperatur beträgt ab 1997 nur noch **14,4°C**

the Midwest and the lower Mississippi Valley, it often leads to vast algal blooms that then decay, absorbing the free oxygen in the water and depriving fish of oxygen. The hypoxic region, or "dead zone," now formed through this process each year in the Gulf of Mexico is roughly the size of New Jersey.

Closely associated with the burning of fossil fuels is the emission of sulfur dioxide and nitrous oxides, which combine with moisture in the atmosphere to form acid rain. Although emissions of these two pollutants have been sharply reduced in North America and Western Europe, they are still climbing rapidly in Asia (134–35.) Acid deposition in Asia is now far higher than the level in Japan in 1975 before that

nation established stringent emission limits. Acids can eliminate fish in freshwater lakes, rendering them lifeless.

Another economic activity that is particularly disruptive of the environment is mining. In recent years, mineral exploration has expanded dramatically in developing coun-

By far the most visible human alteration of the planet has been the destruction of forests. Almost half the forests that once covered vast expanses of the Earth are already gone. Between 1980 and 1995, the world lost at least 200 million hectares of forest—an area three times as large as Texas. In recent years, the world has experienced an estimated net loss of 16 million hectares a year. (See pages 124–25.)

The amount of nitrogen fixed in forms that plants can use through fertilizer manufacturing, the burning of fossil fuels, and the extensive planting of leguminous crops such as soybeans now exceeds the amount fixed by nature. (See pages 132–33.) Synthesized nitrogen fertilizer, the use of which has increased ninefold since 1950, is the major form of nitrogen fixation as a result of human activities. Wherever it leads to excessive nutrient runoff, as it does in

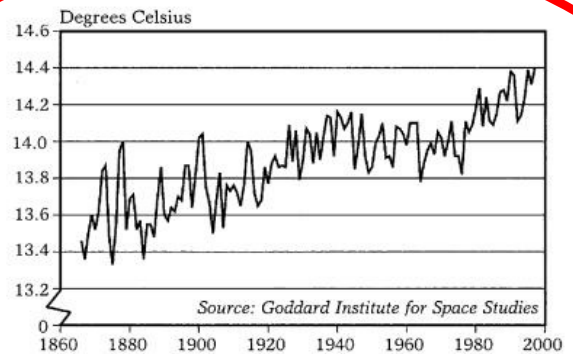


Figure 5: Average Temperature at the Earth's Surface, 1866–1997