

Climate change & global warming

1 .What is Climate Change?

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term.

Changes observed in Earth's climate since the early 20th century are primarily driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere, raising Earth's average surface

temperature. These human-produced temperature increases are commonly referred to as global warming.

Natural processes can also contribute to climate change, including internal variability (e.g., cyclical ocean patterns like El Niño, La Niña and the Pacific Decadal Oscillation) and external forcings (e.g., volcanic activity, changes in the Sun's energy output, variations in Earth's orbit).

Scientists use observations from the ground, air and space, along with [theoretical models](#), to monitor and study past, present and future climate change. Climate data records provide evidence of climate change key indicators, such as global land

and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and severity changes in extreme weather such as hurricanes, heatwaves, wildfires, droughts, floods and precipitation; and cloud and vegetation cover changes, to name but a few.

1. What is global warming

Global warming, the phenomenon of increasing average **air temperatures** near the surface of **Earth** over the past one to two centuries. Climate scientists have since the mid-20th century gathered detailed observations of

various **weather** phenomena (such as temperatures, **precipitation**, and storms) and of related influences on **climate** (such as **ocean currents** and the atmosphere's chemical composition). These data indicate that Earth's climate has changed over almost every conceivable timescale since the beginning of geologic time and that the influence of **human** activities since at least the beginning of the **Industrial Revolution** has been deeply woven into the very fabric of **climate change**.

3 .What causes global warming?

A: Global warming occurs when carbon dioxide (CO₂) and other air

pollutants and greenhouse gases collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface.

Normally, this radiation would escape into space—but these pollutants, which can last for years to centuries in the atmosphere, trap the heat and cause the planet to get hotter. That's what's known as the greenhouse effect.

In the United States, the burning of fossil fuels to make electricity is the largest source of heat-trapping pollution, producing about two billion tons of CO₂ every year. Coal-burning power plants are by far the biggest polluters. The country's second-largest source of carbon pollution is

the transportation sector, which generates about 1.7 billion tons of CO2 emissions a year.



4: How is global warming linked to extreme weather?

A: Scientists agree that the earth's rising temperatures are fueling longer and hotter heat waves, more frequent droughts, heavier rainfall, and more powerful hurricanes. In 2015, for example, scientists said that an ongoing drought in California—the state's worst water shortage in 1,200 years—had been intensified by 15 percent to 20 percent by global

warming. They also said the odds of similar droughts happening in the future had roughly doubled over the past century. And in 2016, the National Academies of Science, Engineering, and Medicine announced that it's now possible to confidently attribute certain weather events, like some heat waves, directly to climate change.

The earth's ocean temperatures are getting warmer, too—which means that tropical storms can pick up more energy. So global warming could turn, say, a category 3 storm into a more dangerous category 4 storm. In fact, scientists have found that the frequency of North Atlantic hurricanes has *increased* since the

early 1980s, as well as the number of storms that reach categories 4 and 5. In 2005, Hurricane Katrina—the costliest hurricane in U.S. history—struck New Orleans; the second-costliest, Hurricane Sandy, hit the East Coast in 2012.

The impacts of global warming are being felt across the globe. Extreme heat waves have caused tens of thousands of deaths around the world in recent years. And in an alarming sign of events to come, Antarctica has been losing about 134 billion metric tons of ice per year since 2002. This rate could speed up if we keep burning fossil fuels at our current pace, some experts say,

causing sea levels to rise several meters over the next 50 to 150 years.

5. What are the other effects of global warming?

A: Each year, scientists learn more about the *consequences of global warming*, and many agree that environmental, economic, and health consequences are likely to occur if current trends continue. Here's just a smattering of what we can look forward to:

2. Melting glaciers, early snowmelt, and severe droughts will cause more dramatic water shortages and increase the risk of wildfires in the American West.

3. Rising sea levels will lead to coastal flooding on the Eastern Seaboard, especially in Florida, and in other areas such as the Gulf of Mexico.
4. Forests, farms, and cities will face troublesome new pests, heat waves, heavy downpours, and increased flooding. All those factors will damage or destroy agriculture and fisheries.
5. Disruption of habitats such as coral reefs and Alpine meadows could drive many plant and animal species to extinction.
6. Allergies, asthma, and infectious disease outbreaks will become more common due to increased

growth of *pollen-producing ragweed*, higher levels of *air pollution*, and the spread of conditions favorable to pathogens and mosquitoes.