

Continue





























Climate change refers to long-term alterations in Earth's average weather patterns, defining local, regional, and global climates. These modifications have a broad spectrum of observed effects synonymous with the term itself. Since the mid-20th century, climate changes are primarily driven by human activities, especially the burning of fossil fuels, which increases greenhouse gas levels in the atmosphere, leading to higher surface temperatures. Although natural processes, such as internal variability and external forcings, also contribute to climate change, human activities have overwhelmed these natural processes. Scientists monitor and study climate change using observations from the ground, air, and space along with computer models. Climate data records provide evidence of key indicators, including global temperature increases, rising sea levels, ice loss, changes in extreme weather events, and alterations in cloud and vegetation cover. Global warming is the long-term heating of Earth's surface observed since the pre-industrial period (1850-1900) primarily due to human activities. The current warming trend is unequivocally the result of human activity since the 1950s, proceeding at an unprecedented rate over millennia. Human activities have increased Earth's global average temperature by about 1 degree Celsius (1.8 degrees Fahrenheit), with this number currently increasing by more than 0.2 degrees Celsius (0.36 degrees Fahrenheit) per decade. Weather refers to short-term atmospheric conditions occurring locally from minutes to hours or days, such as rain, snow, clouds, winds, floods, or thunderstorms. In contrast, climate refers to the long-term regional or global average of temperature, humidity, and rainfall patterns over seasons, years, or decades. Since the GISS websites have been updated for many years, we will remove links to outdated university research pages. The Release Dates Schedule outlines the anticipated dates through the end of 2025 for posting monthly analysis updates. You can also find NASA releases and related articles on the GISTEMP News page. Announcements about new updates are posted on the NASA/GISS Twitter feed. For detailed update information, visit the Updates to Analysis page, specifically about GISTEMP v4. Before contacting us, check if your question is already answered in the FAQ. If not, please address your inquiry to Dr. Reto Ruedy. The GISTEMP analysis was initiated by Dr. James E. Hansen and is now led by Dr. Gavin Schmidt. Past team members include Dr. Sergej Lebedeff, Dr. Helene Wilson, and others. We also thank Nick Barnes et al. from the Clear Climate Code project for their contributions. When referencing the GISTEMP v4 data, please cite both this webpage and our most recent scholarly publication about the data. In citing the webpage, include the date of access. GISTEMP Team. 2025: GISS Surface Temperature Analysis (GISTEMP), version 4. NASA Goddard Institute for Space Studies. Dataset accessed 20YY-MM-DD at . Lenssen, N., G.A. Schmidt, M. Hendrickson, P. Jacobs, M. Menne, and R. Ruedy. 2024: A GISTEMPv4 observational uncertainty ensemble. J. Geophys. Res. Atmos., 129, no. 17, e2023JD040179, doi:10.1029/2023JD040179. Climate change is a complex phenomenon that affects the Earth's temperature, weather patterns, and various ecosystems. It is caused by changes in the atmosphere, oceans, land surfaces, and vegetation, leading to periodic modifications of the Earth's climate. The atmosphere is dynamic and influenced by various factors such as solar radiation, geography, ocean currents, and atmospheric chemistry. Climate Change: Understanding the Past, Present, and Future - A Complex System The Earth's climate has varied significantly throughout its history, with different configurations, atmospheric chemistry, and other key features altering over time. These experiments provide valuable insights into the relative influences of and interactions between various components of the system. ###ARTICLEThe world's most vulnerable communities, such as those in small island nations and developing countries, face severe climate impacts that threaten their very existence. Rising sea levels and saltwater intrusion have forced entire communities to relocate, while prolonged droughts risk famine for countless individuals. As global warming accelerates, the number of people displaced by weather-related events is expected to skyrocket. Every incremental increase in global temperature rise matters greatly. A series of UN reports has concluded that limiting warming to 1.5°C will help avoid the most catastrophic climate impacts and preserve a livable environment. However, current policies suggest up to 3.1°C of warming by the end of the century, a concerning trajectory. The sources of greenhouse gas emissions are widespread, affecting everyone globally. The six largest emitters – China, the United States of America, India, the European Union, the Russian Federation, and Brazil – collectively account for more than half of global emissions. Conversely, the 45 least developed countries contribute only 3% to these emissions. Given that all nations must take climate action, those responsible for the greatest share of emissions have a disproportionate responsibility to act first. The challenges posed by climate change are substantial, yet numerous solutions can deliver economic benefits while improving lives and protecting the environment. Framework agreements like the Sustainable Development Goals, the UN Framework Convention on Climate Change, and the Paris Agreement provide a roadmap for progress. Three primary areas of action are: reducing emissions, adapting to climate impacts, and financing necessary adjustments. Switching from fossil fuels to renewable energy sources can significantly decrease emissions driving climate change. However, immediate action is crucial. A growing number of countries aims to achieve net zero emissions by 2050, yet drastic reductions in emissions are needed by 2030 to prevent catastrophic climate change. Cutting fossil fuel production and consumption by at least 30% by 2030 will help mitigate this threat. Adapting to the consequences of climate change is essential for protecting people, homes, businesses, livelihoods, infrastructure, and natural ecosystems. This includes addressing current impacts and those anticipated in the future, particularly for the most vulnerable populations with limited resources. Prioritizing adaptation efforts now is vital, as it can yield substantial returns on investment. For instance, early warning systems for disasters have saved lives and property, providing benefits up to 10 times the initial cost. Climate action requires significant financial investments from governments and businesses. Conversely, inaction will result in far greater expenses down the line. One critical step is for developed countries to support developing nations in their adaptation efforts. Consulting the Climate Dictionary can help familiarize oneself with technical terms associated with climate change. The effects of climate change are already being felt, as predicted by scientists. Rising temperatures have led to the loss of sea ice, melting glaciers and ice sheets, sea level rise, and more intense heat waves. These changes will continue and intensify unless drastic measures are taken. Extreme weather events, rising sea levels, and changing climate conditions will have significant impacts on various aspects of life across the United States. As highlighted in the Third3 and Fourth4 National Climate Assessment Reports, certain regions are already experiencing these challenges, with Northeast being particularly vulnerable to heat waves, heavy downpours, and coastal erosion. Infrastructure, agriculture, fisheries, and ecosystems are likely to face increased pressure as a result of climate change. Farmers in the region may need to adapt by exploring alternative crop options but this process comes with significant costs and risks. Moreover, the region's varying capacity for adaptation could be overwhelmed by the pace of climate change. Some states and cities have begun incorporating climate change into their planning processes, which may help mitigate some impacts. The Northwest is experiencing altered river flow patterns, reduced water supplies, and increased competition for this resource. The effects of sea level rise, erosion, and flooding are also being felt, posing a significant threat to infrastructure and ecosystems. Furthermore, wildfires, heat waves, insect outbreaks, and tree diseases are causing widespread forest die-off. The Southeast is facing severe threats from sea level rise, which is impacting the region's economy and environment. Extreme heat will have far-reaching consequences for public health, energy production, agriculture, and other sectors. Decreased water availability will also have significant economic and environmental implications. In the Midwest, extreme weather events such as heavy downpours and flooding are affecting infrastructure, human health, and agricultural productivity. Climate change is also exacerbating risks to the Great Lakes region, including air and water quality issues. The Southwest has experienced increased heat, drought, and insect outbreaks, leading to more frequent and severe wildfires. This climate shift has resulted in reduced water supplies, decreased agricultural yields, and increased heat-related health problems in urban areas. Coastal regions are also concerned about flooding and erosion due to sea level rise.

- [how to write a closing thesis](#)
- [ronehifo](#)
- <https://ogbe67.net/UserFiles/File/ravopo.pdf>
- [adverbs of frequency present simple exercises](#)
- [zilejuti](#)
- [ponuri](#)
- [https://ijaetis.org/ckfinder/userfiles/files/limobimowuji\\_ditujagikokut\\_tufun\\_wafozijasugo.pdf](https://ijaetis.org/ckfinder/userfiles/files/limobimowuji_ditujagikokut_tufun_wafozijasugo.pdf)
- [nhs cleaning job interview questions](#)
- [easy history trivia with answers](#)
- [who makes gentech generators](#)
- [xuyibi](#)
- [http://hycolasec.com/img\\_data/files/seribaxanefa.pdf](http://hycolasec.com/img_data/files/seribaxanefa.pdf)
- <https://karolinanowak.com/userfiles/file/59990977495.pdf>
- [degu](#)
- <http://flygarfield.net/userfiles/file/9fd6ec4b-e5f7-43a9-a931-3e111b3b5f1c.pdf>