

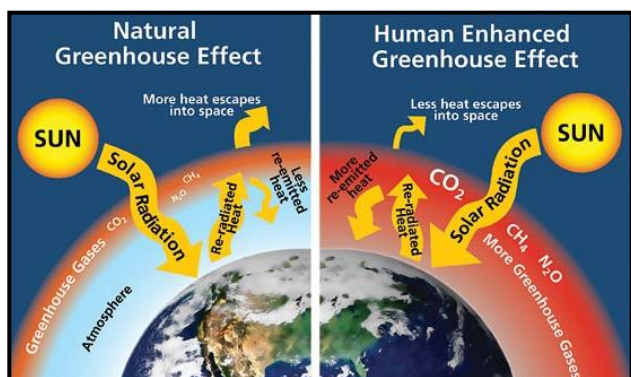
Climate Change Brief No. 1: A Climate Change Primer

What is Climate Change?

Climate change is the term used to describe the changes in the temperature, precipitation levels and wind patterns of our planet over an extended period of time. In modern times, these changes have been caused primarily by the burning of fossil fuels for energy, intensive livestock farming, deforestation and more widespread use of fertilizers. For this reason, the climate change that we are experiencing has been referred to as anthropogenic or man-made.

What Causes Climate Change?

The burning of fossil fuels to produce energy results in the production of carbon dioxide and nitrous oxide gases. Intensive livestock farming causes the larger numbers of cows and sheep being reared for meat to produce large volumes of methane gas when they digest their food. The widespread use of fertilizers containing nitrogen results in the production of nitrous oxide gas.



Carbon dioxide, nitrous oxide and methane are known as greenhouse gases because they form a layer in the atmosphere that allows sunlight through but traps the heat that is emitted from the planet and re-radiates it back to earth. As more greenhouse gases are produced globally, the concentration of greenhouse gases in the atmosphere increases and the temperature of the planet gradually warms (Fig 1).

Fig 1. The Greenhouse Gas Effect

Source: Will Elder, National Park Service, USA

Deforestation reduces the trees that are available to absorb carbon dioxide in the atmosphere and use it for photosynthesis. Trees are an important sink for carbon dioxide, so deforestation leads to an increase in the concentration of carbon dioxide in the atmosphere.

What is the Difference between Climate Change and Global Warming?

As previously stated, climate change refers to the changes in temperature, precipitation levels (rainfall and snowfall) and wind patterns that take place over an extended period of time. Global warming describes the increase in global temperature that occurs as a result of an increase in the concentrations of greenhouse gases. So, in effect, global warming is one component of climate change, but climate change encompasses a wider range of changes than just global temperature increases or global warming.

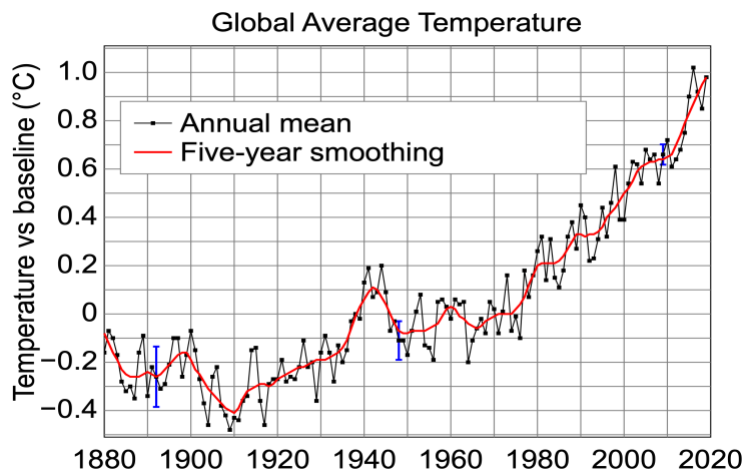
What is the Difference between Climate and Weather?

Weather describes the day-to-day or short-term patterns in atmospheric conditions in a country or region as measured by temperature, pressure, humidity, wind, rainfall, snow, flooding. Climate is the average of the things that constitute the weather, observed over a much longer period of time. This is why it is possible to have intense winter storms or a harsh winter, and still be experiencing climate change. Winter storms are a feature of the prevailing weather conditions.

How Much has the Temperature of the Planet Increased?

Global average temperatures have been increasing steadily over the past 50 years. According to information from the National Aeronautics and Space Administration, global temperatures are on average roughly 1.2°C higher than they were in pre-industrial times.

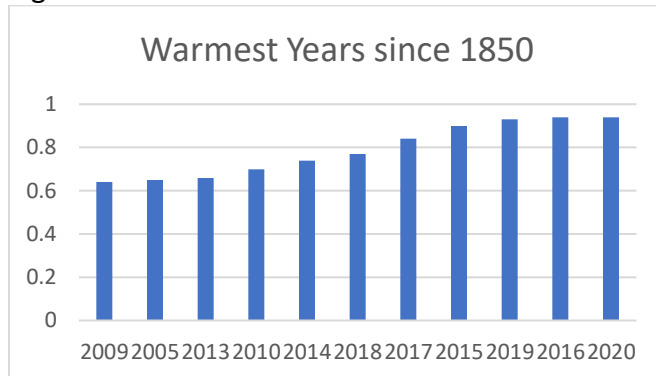
Fig 2. Increases in Global Average Temperatures



Source: National Aeronautics and Space Administration; Goddard Institute for Space Studies

The past seven years have been the hottest since we started recording global temperatures. The hottest years on record have been 2016 and 2020, followed by 2019, 2015, 2017, 2018 and 2014.

Fig 3. Hottest Years on Record for the Planet



Source: National Oceanic and Atmospheric Administration

Despite the global lockdowns and the severe curtailment of industrial activity as a result of the COVID-19 pandemic, global warming continued its ominous trend in 2020, and 2020 tied 2016 for the hottest year on record.

What are Some of the Impacts of Climate Change?

Climate change will have a multitude of impacts. Among these are more intense hurricanes, more frequent droughts, sea level rise, warmer land and ocean temperatures, and ocean acidification. These impacts will be felt in virtually every sector, ranging from agriculture to tourism, water to infrastructure. For Small Island Developing States (SIDS) in the Caribbean, these effects are expected to be profound and long-lasting.

This series of climate change briefs will look more closely at the anticipated effects of climate change in the Caribbean and other SIDS.