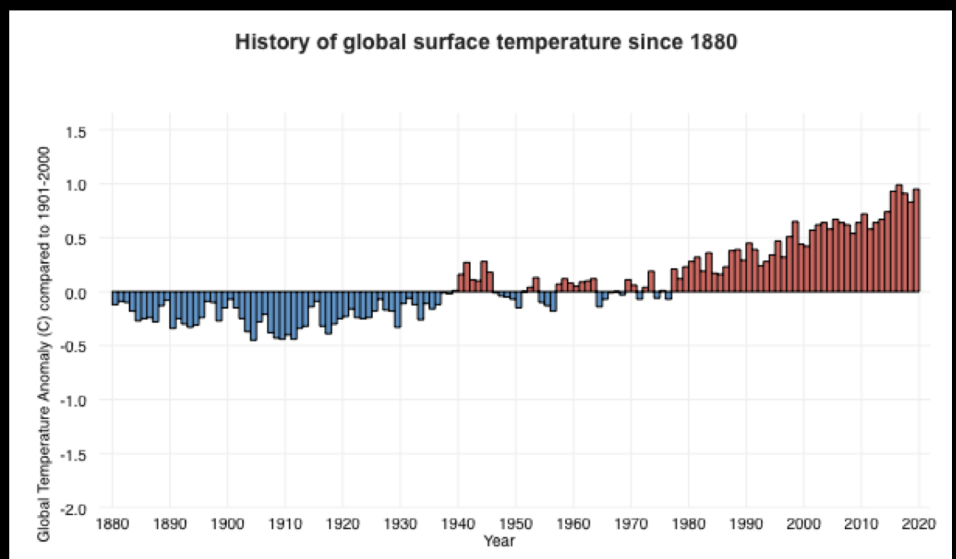




Climate Change

Scientists have discovered that the global average surface temperature has risen by 0.6-0.9°C (1.1-1.6 °F) since the early 20th century ([NASA](#), also see the graph below). It is projected to rise another 2 to 11.5°F over the next hundred years. Climate Scientists have warned that the results will be disastrous if current trends continue.

Rising global temperatures have been accompanied by climate change—significant and long-lasting change in weather. Many places have already experienced climate change such as increased frequency of intense rains, floods, droughts, snow, and extreme heat and heat waves. Over the last ten years since 2010, the United States has seen 121 weather-related disasters exceeding \$1 billion. ([NRDC](#)).



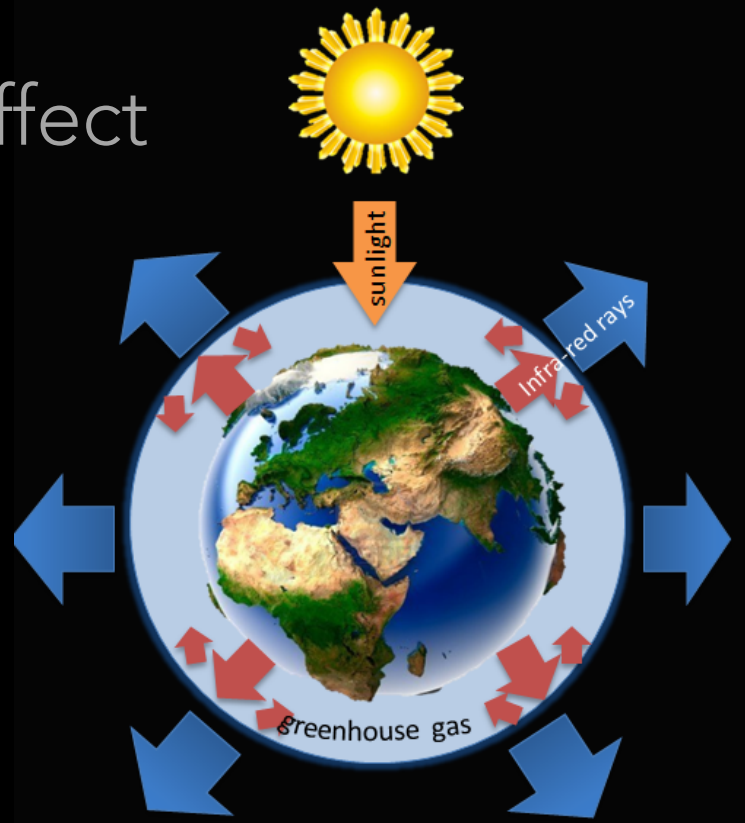
History of global surface temperature since 1880 Source: [NOAA](#)

The Greenhouse Effect

Most climate scientists agree that the main cause of climate change is the enhanced greenhouse effect.

Our Earth has been kept warm through a process called the greenhouse effect. The Earth's surface heats up after the Earth gets energy from the sun in the form of sunlight. The Earth's surface cools down by releasing the heat (infra-red rays) back to outer space. But some of the heat is absorbed by layers of gases called greenhouse gases in the atmosphere, which keep the Earth warm at 59°F on average. Without these greenhouse gases, the Earth's surface would be about -2 °F on average. Scientific findings show that, due to the recent rising concentration of greenhouse gases in the atmosphere, the greenhouse effect has been enhanced and more heat emitted by the surface ends up being trapped by the atmosphere and bounced back to the surface, contributing to the rise of global temperature.

Climate scientists point out that the increase of greenhouse gas concentration is attributable to the increased amount of greenhouse gas emissions from a variety of human activities, such as burning fossil fuels for energy generation, transportation, and heating buildings, cutting down carbon-absorbing forests for agriculture, and disposing of waste in landfills. A study from NASA showed that, since the Industrial Revolution began in about 1750, carbon dioxide, one of the major greenhouse gases, increased by 38%, while methane, another major greenhouse gas, increased by 148% ([NASA](#))



(Above) The Earth's surface heats up after the Earth gets energy from the sun in the form of sunlight. The Earth's surface cools down by releasing the heat (infra-red rays) back to outer space. But some of the heat is trapped by layers of gases called greenhouse gases in the atmosphere. (Below) Due to the recent increased concentration of greenhouse gases in the atmosphere, the greenhouse effect has been enhanced and more heat emitted by the surface ends up being trapped by the atmosphere, contributing to the rise of global temperature.

