Climate change and global warming

Climate change is a change in the statistical distribution of weather over periods of time that range from decades to centuries. It is not a change in the average weather or a change in the distribution of weather events around an average (such as extreme climate change, such as extreme weather events). Climate change may be limited to a specific region, or it may occur across the whole Earth.

In recent years, especially in the context of environmental policy, climate change has been widely discussed. Climate change usually refers to changes in Earth's climate that are attributed to human activity. It may be quantified as a change in climate, more generally known as global warming, or as an interannual to interdecadal change in climate (IAWCC). The atmosphere's temperature measurements cover various periods, and the data sources available are temperature records. For attribution of climate change over the past century, are attribution of recent climate change.

Terminology

The most general definition of climate change is a change in the average or in the statistical distribution of weather over periods of decades or longer, or both. The term sometimes is used in a more specific sense to refer to recent climate change caused by human activity. Because of the United Nations Framework Convention on Climate Change, which emphasizes climate change caused directly or indirectly by human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

In the latter sense climate change is synonymous with global warming.

Causes

Factors that can shape cli- mate are climate feedbacks. These include such processes as variations in solar radiation, deviations in the Earth's orbit, ocean circulation, and continental drift, and changes in greenhouse gas concentrations. There are a variety of climate change feedbacks that can either amplify or diminish the initial forcing. Some parts of the climate system, such as the ocean, respond slowly to changes in the climate forcing because of their large mass. Therefore, the climate system may take centuries or longer to fully respond to new external forcings.

Plate tectonics

Over the course of billions of years, the motion of tectonic plates recycles global land and ocean areas and generates topography. This can enhance or weaken local patterns of continental climate and local variations in continental or oceanic temperature. The position of the continents determines the geometry of the ocean and therefore influences patterns of ocean circulation. The locations of the areas with the most significant impacts are important in understanding the transfer of heat and moisture across the globe, and therefore, in determining global climate.

The transfer of heat and water from the equator to the poles can cause the oceans to warm, which can lead to changes in the climate. These changes can lead to large-scale changes in global climate. For example, a 1°C temperature change at the equator is equivalent to a 5°C change in the average temperature of the Earth's surface. This increase in temperature can cause changes in the ocean circulation, which in turn can affect the climate. The ice age and the last interglacial period were both significant examples of this phenomenon. During the Ice Age, the land masses were much smaller and the ice sheets were much larger, which caused a significant change in the climate.

Solar output

The Sun is the predominant source of energy to the Earth. Both the Sun's brightness and its temperature, in solar intensity, are known to affect global climate.

Three to four billion years ago, the Sun emitted only 70% as much power as it does today. If the atmospheric composition had been the same as today, ly- sid water should not have existed on Earth. However, there is evidence for the presence of water on the early Earth, and in the hydrogen and oxygen ratio, leading to what is known as the early Earth's age paradox.

Hypothesized solutions to this problem include a very different atmosphere, with much higher concentrations of greenhouse gases that currently exist. One way to think about the atmosphere is that it is a complex, naturally occurring, and dynamic system. The composition of the atmosphere is not fixed but is continuously changing, with the composition of the atmosphere changing over time. The atmosphere is not fixed but is continuously changing, with the composition of the atmosphere changing over time. The atmosphere is not fixed but is continuously changing, with the composition of the atmosphere changing over time. The atmosphere is not fixed but is continuously changing, with the composition of the atmosphere changing over time.