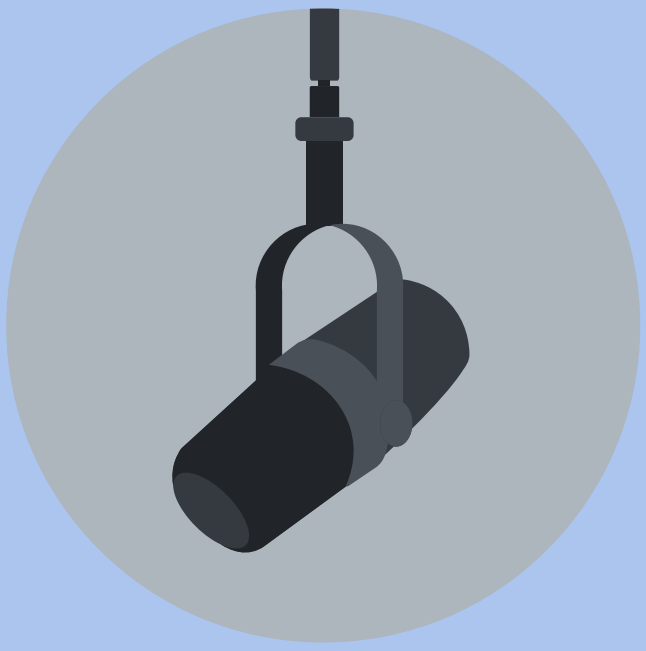
PODCAST: ADDITIONAL CONSEQUENCES AND FACTORS AFFECTING GLOBAL WARMING



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Podcast: Additional Consequences and Factors Affecting Global Warming

A rigorous analysis of all data and evidence shows that most of the observed global warming over the last 50 years cannot be explained by natural causes and instead requires a significant role of human activity.

To recognize human impact on the climate, scientists must consider many natural changes that affect temperature, precipitation, and other climate aspects on a local to global scale, over time scales ranging from days to decades and beyond.

One of the natural variations is El Niño (ENSO), a weather and oceanic phenomenon characterized by above-average water surface temperatures in the equatorial Pacific. It causes irregular alternation between warming and cooling (lasting about two to seven years) in the equatorial part of the Pacific Ocean, resulting in significant year-to-year regional and global changes in temperature and precipitation.

Volcanic eruptions also alter the climate by partially increasing the amount of small particles (aerosols) in the stratosphere, which reflect or absorb sunlight, leading to a short-term cooling of the surface that typically lasts about two to three years.

For hundreds of thousands of years, slow, recurring changes in Earth's orbit around the Sun, which alter the distribution of solar energy received by Earth, have been sufficient to trigger glacial cycles over the last 800,000 years.

Different influences on the climate lead to various patterns observable in climate records. This becomes evident when scientists look beyond changes in the planet's average temperature and examine geographical and temporal patterns of climate change more closely.

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Scientists routinely check whether purely natural changes in the Sun, volcanic activity, or internal climate variability can reliably explain the patterns of change they have observed in many different aspects of the climate system. These analyses have shown that the observed climate changes over the past few decades cannot be explained solely by natural factors.

Scientists have made significant progress in observations, theories, and modeling of the Earth's climate system, enabling them to predict future climate changes with increasing certainty.

However, several major issues hinder accurate estimates of the evolution of global or regional temperature trends from decade to decade into the future. First, we cannot predict how much CO2 will be emitted by human activities, as it depends on factors such as the development of the global economy and changes in energy production and consumption by society in the coming decades. Second, given the current understanding of the complexities of climate feedback mechanisms, there are a range of possible outcomes even under a specific CO2 emission scenario. Finally, over a time scale of about a decade, natural variability may modulate the effects of the underlying temperature trend.

In summary, all model forecasts indicate that over the next few decades, and even centuries, the Earth will continue to warm significantly. If there are no technological or political changes aimed at curbing emission trends compared to their current trajectory, average global warming of 2.6 to 4.8°C can be expected in the 21st century, in addition to what has already occurred.

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