Global Warming, Why a Big Concern?

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Global Warming definition

Global Warming is the increase in average temperature in air near Earth's land and ocean. By 2005, the average global temperature has increased roughly 0.74 degree Celsius in comparison to the average temperature hundreds of years ago [1]. Average global temperature is expected to increase another 1.1 to 6.4 degree Celsius by the end of twenty first century [2].

Impacts of Global Warming

A small increase in average global temperature can have tremendous ecological and social impacts. These impacts include sea level rises from melting of polar ice and thermal expansion of sea water, El Nino and more frequent severe weather. Raised sea levels would cause flooding among tropical countries, resulting in loss of lives and economic devastation; fishery industries along the coast of South America would collapse due to effect of El Nino; regions around the world that suffer from flooding would experience more severe rainfall and places that suffer from drought would have hotter climate. In fact, a 3 degree Celsius increase of average global temperature is capable of causing 60% of species on Earth to become extinct!

The Cause of Global Warming

Two views exist in the general public today. One calls global warming as the Earth's natural cycle of warming and cooling citing historical references, while the other asserts it as being totally man-made. In 2007, the Intergovernmental Panel on Climate Change (IPCC) consisting of leading scientists from all around the world cleared doubts and concluded human activities as being the ultimately cause for the Earth's warm up.

Global warming is caused by an increase in concentration of green house gases, including carbon dioxide and methane in the atmosphere. The Earth receives constant solar radiation. Some of this heat energy is trapped by green house gases while others are reradiated back into space, keeping the Earth at a temperature suited to living organisms. However, with a surplus input of green house gases more heat are being trapped than given away, resulting in increased average temperature near Earth's land and ocean surface.

Anthropogenic burning of fossil fuels has been the main source of excess greenhouse gases. Fossil fuels are sediments of ancient forests. Continental movement millions of years ago buried vegetations rich in carbon underneath the Earth's crust. Intense pressure and heat from bedrocks caused buried vegetations to undergo chemical changes and become what we know as fossil fuel today. In the absence of these buried vegetations balance of carbon dioxide

concentration in the atmosphere was restored through time. Anthropogenic burning of fossil fuels releases these trapped carbon back into the atmosphere, increasing its concentration. In addition, as a result of increased average global temperature, permafrost, soil frozen all year long, is melting around the globe and releasing greenhouse gas methane. Methane is 20 times more potent in trapping heat than Carbon Dioxide. Increased global temperature will lead to melting of more permafrost, which in turn releases more methane and raises Earth's temperature even higher in a positive feedback.

References

1. Summary for Policymakers" (PDF). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change (2007-02-05). Retrieved on 2007-02-02. "The updated hundred-year linear trend (1906 to 2005) of 0.74 °C [0.56 °C to 0.92 °C] is therefore larger than the corresponding trend for 1901 to 2000 given in the TAR of 0.6 °C [0.4 °C to 0.8 °C]."

2. Hegerl, Gabriele C.; et al. (2007-05-07). "Understanding and Attributing Climate Change" (PDF). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change 690. Intergovernmental Panel on Climate Change. Retrieved on 2007-05-20. "Recent estimates (Figure 9.9) indicate a relatively small combined effect of natural forcings on the global mean temperature evolution of the seconds half of the twentieth century, with a small net cooling from the combined effects of solar and volcanic forcings"