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Introduction.

Global warming is understood from an overall, long term increases in the retention of the sun heat around Earth due to blanketing by

The average global warming temperature & major greenhouse gases, have fluctuated on the earth position relative to the sun has varied.

Global Warming

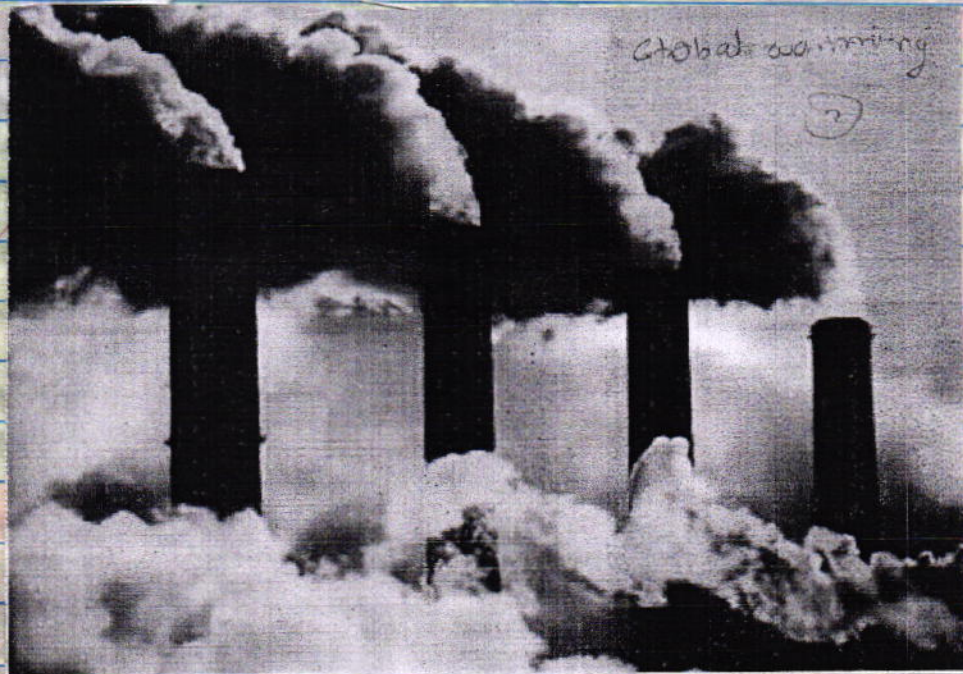
Understanding the causes of and responses to global warming requires interdisciplinary cooperation betⁿ social and natural scientists. The theory behind global warming has been understood by climatologists since at least the 1980s, but only in the new millennium, with an apparent tipping point in 2005, has the mounting empirical evidence convinced most doubters, politicians, and the general public as well as growing sections of business that global warming caused by human action is occurring.

DEFINITION OF GLOBAL WARMING

Global warming is understood from an overall, longterm increase in the retention of the sun heat around earth due to blanketing by "greenhouse gases" especially CO_2 and methane. Emissions of CO_2 have been rising at a speed unprecedented in human history, due to accelerating

Fossil fuel burning that began in the
began in the Industrial Revolution.

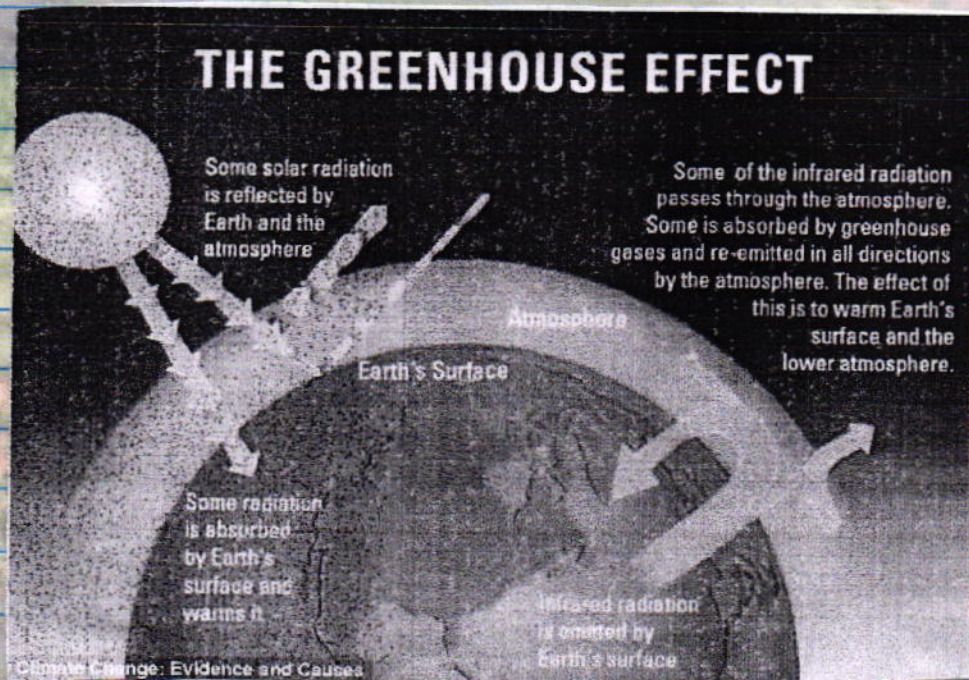
The effects of the resulting "climate
change" are uneven and can even
produce localized cooling (if warm currents
change direction). The climate change may
also initiate positive feedback in which
the initial impact is further enhanced by its own
effects. For example if melting ice reduces the reflective
properties of white surfaces (the "albedo" effect) or if
melting tundra releases frozen methane, leading to further
warming.



THE GREENHOUSE EFFECT

The "greenhouse effect" is the warming that happens when certain gases in earth's atmosphere trap heat. These gases let in light but keep heat from escaping, like the glass walls of a greenhouse.

First, sunlight shines onto the earth's surface, where it is absorbed and then radiates back into the atm. as heat. In the atm. "greenhouse" gases trap some of this heat, and the rest escapes into space. The more greenhouse gases are in the atm., the more heat gets trapped.



Aren't temperature changes natural...?

The average global temperature & concentrations of carbon dioxide (one of the major greenhouse gases) have fluctuated on a cycle of hundreds of thousands of years as the Earth's position relative to the sun has varied. As a result, ice ages have come and gone.

However for thousands of years now, emissions of GHGs to the atmosphere have been balanced out by GHGs that are naturally absorbed. As a result, GHG concentration and temperature have been fairly stable. The stability has allowed human civilization to develop within a consistent climate.

Occasionally, other factors briefly influence global temp. volcanic eruptions, for example, emit particles that temporarily cool the Earth's surface. Other but these have no lasting effect beyond a few years. Other cycles, such as El Niño, also work on fairly short and predictable cycles.

Now, human have increased the amount of carbon dioxide in the atmosphere by more than a third since the industrial revolution. Changes this large have historically taken thousands of years, but are now happening over the course of decades.

Why is this a concern.

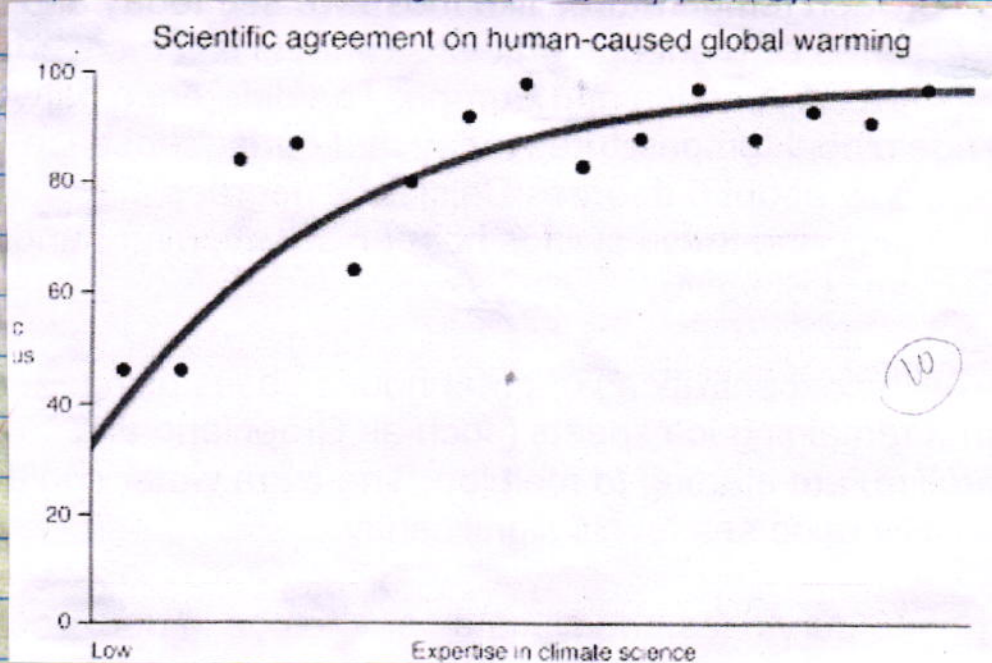


The rapid rise in greenhouse gases is a problem because it is changing the climate faster than some living things may be able to adapt. Also, a new and more unpredictable climate poses unique challenges to all life.

Historically, Earth's climate has regularly shifted back and forth betⁿ temperatures like those we see today and temp. cold enough that large sheets of ice covered much of North America and Europe. The difference betⁿ average global temp. today & during those ice ages is only about 5 degree Celsius.

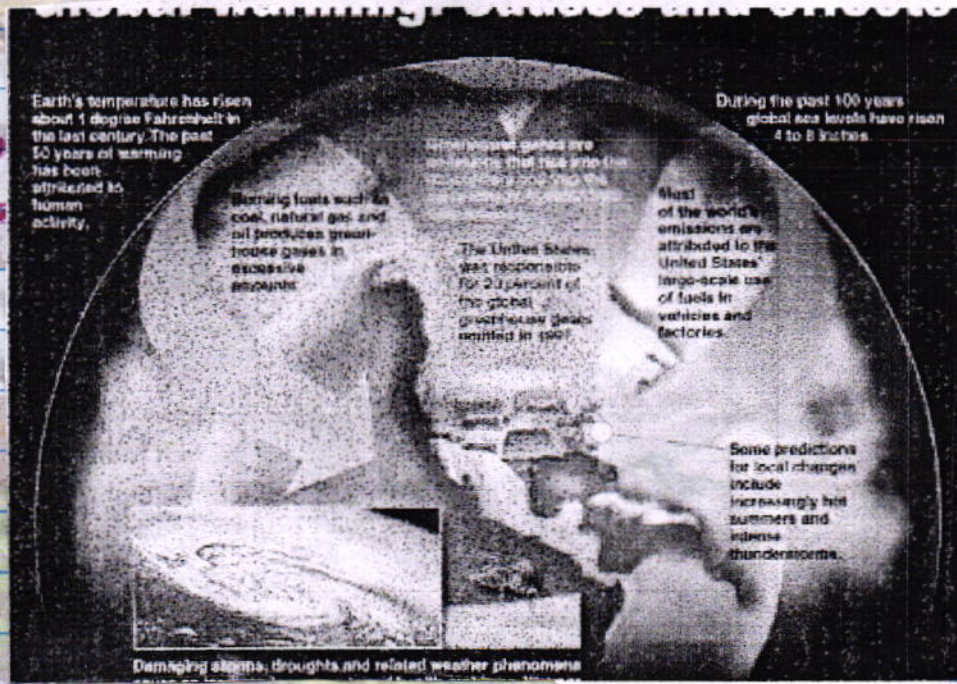
SPEEDING UP THE PROCESS

Global warming involves an unprecedented speeding up of the rate of change in natural processes, which now converges with the (previously much faster) rate of change in human societies, leading to a crisis of adaptation. Most



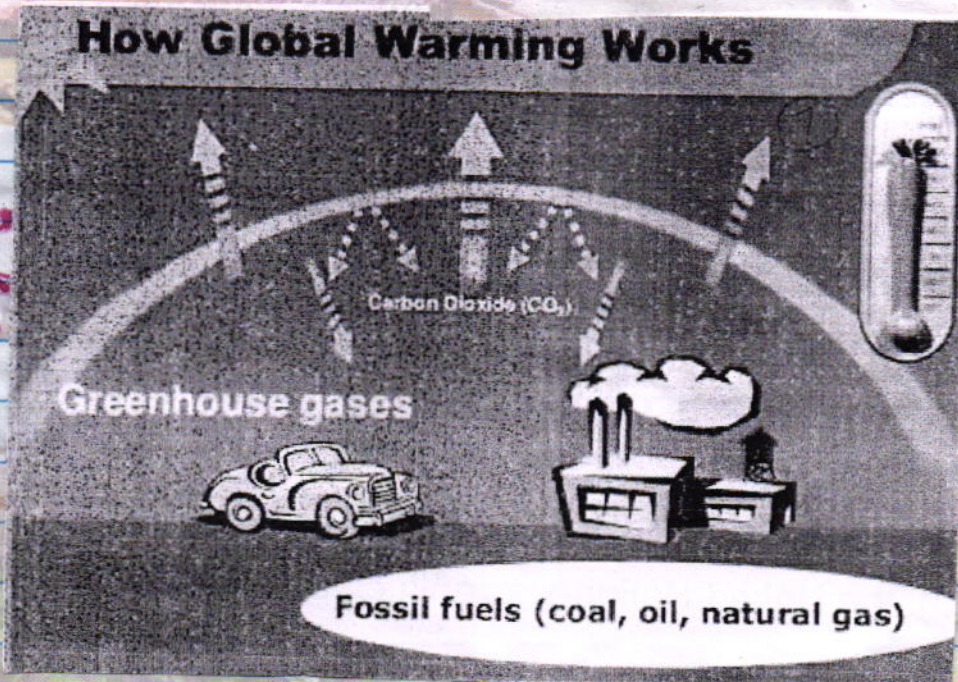
authoritative scientific bodies predict that on present trends a point of no return could come within ten years, and that the world needs to cut emissions by 50 percent by mid twenty first century.

EFFECT OF GLOBAL WARMING



- The planet is warming, from North pole to South pole, and everywhere in between. Globally, the mercury is already up more than 1 degree Fahrenheit (0.8 degree Celsius) and even more in sensitive polar regions. And the effects of rising temp. aren't waiting for some far-flung future. They're happening right now. Signs are appearing all over and some of them are surprising.
- The heat is not only melting glaciers & sea ice it's also shifting precipitation patterns and setting animals on the move.

GROWING EVIDENCE OF GLOBAL WARMING

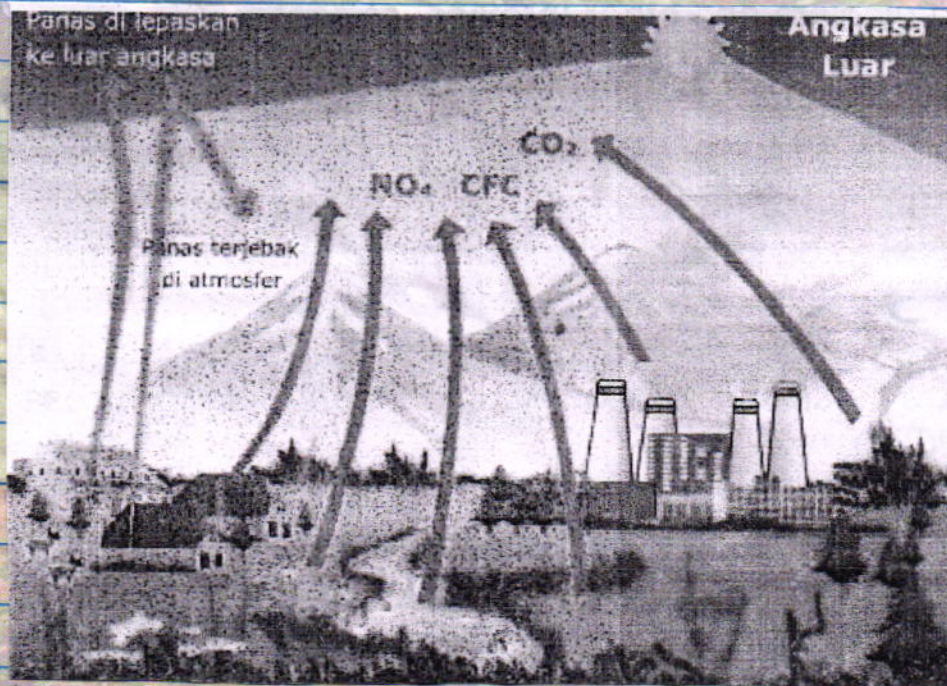


While originally eccentric, global warming was placed firmly on the agenda in 1985, at a conference in Austria of eighty-nine climate researchers participating as individuals from twenty-three countries. The researchers forecast substantial warming, unambiguously attributable to human activities.

Just before the end of the twentieth century, American researchers released ice-thickness data, gathered by nuclear submarines. The data showed that over the previous forty years the ice depth in all regions of the Arctic open ocean had declined by approximately 40%.

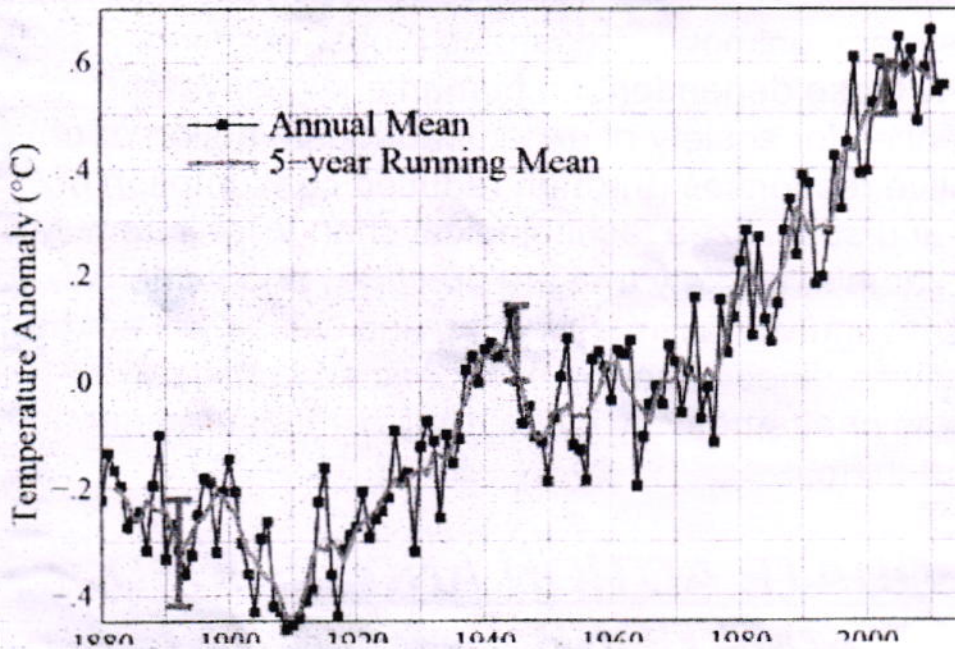
ANOMALIES AND REFUTATIONS.

The science of global warming has progressed through tackling anomalies cited by skeptics. Critics of global warming made attempt to discredit the methodology of climatologist Michael Mann's famous "Hockey stick" graph (1st published in Nature in 1998). Mann's graph showed average global temp over the last 1,000 years, with little variation for the 1st 900 & a sharp rise in the last century. After more than a dozen replication studies, some using different statistical techniques & different combinations of proxy records (indirect measures of past)



SCIENTIFIC CONSENSUS.

Global Land-Ocean Temperature Index



In May 2001 sixteen of the world's national academies of science issued a statement, confirming that the IPCC should be seen as the world's most reliable source of scientific information on climate change, endorsing its conclusions and stating that doubts about the conclusions were not justified.

INADEQUATE ACTION AND NEEDED TRANSFORMATIONS.

Kyoto targets are at best a useful 1st step.

However, even these targets, which seek to peg back emissions to 1990 levels by 2010, are unlikely to be met world CO₂ emissions in 2004 continued to rise in all regions of the world by another 4.5 percent, to a level 26% higher than in 1990.

STOP GLOBAL WARMING



STOP
GLOBAL
WARMING

- emission rates, the concentration would reach 700 ppm by the end of the twenty-first century. The continuing industrialization of China, recently joined by India, points to the possibility of even faster rises than these projections indicate.

If unpredictable, amplifying feedback loops are triggered, improbable catastrophes become more likely. The Gulf Stream flow could be halted, freezing Britain & Northern Europe. Droughts could wipe out the agriculture of Africa and Australia, as well as Asia, where millions depend on Himalayan melt water and monsoon rains. If the ice caps melt completely over the next centuries, seas could rise by 7 meters, devastating all coastal cities.

What Causes Global Warming?

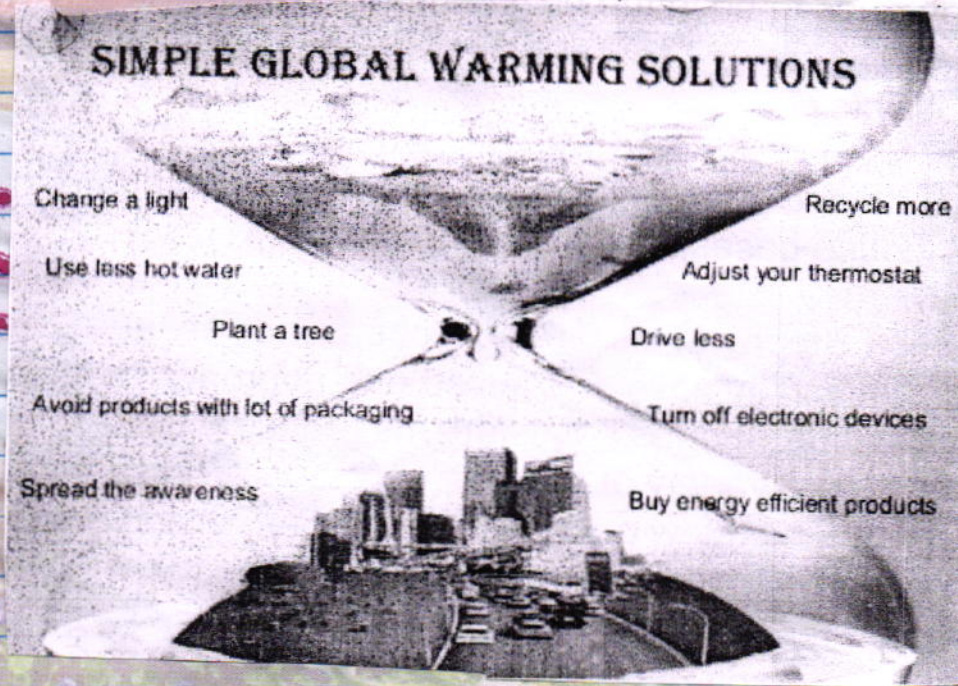
Scientists have spent decades figuring out what is causing global warming. They've looked at the natural cycles and global warming events that are known to influence climate, but the amount and pattern of warming that's been measured can't be explained by these factors alone. The only way to explain the pattern is to include the effect of greenhouse gases (GHGs) emitted by humans.

To bring all this information together, the United Nations formed a group of scientists called the International panel on climate change, or IPCC. The IPCC meets every few years to review the latest scientific findings and write a report summarizing all is known about warming.



Causes of Global Warming

Global Warming Solutions.



The evidence that humans are causing global warming is strong, but the question of what to do about it remains controversial. Economics, sociology, and politics are all important factors in planning for the future.

Even if we stopped emitting greenhouse gases (GHGs) today, the earth would still warm by another degree Fahrenheit or so. But what we do from today forward makes a big difference depending on our choices. Scientists predict that the earth could eventually warm by as little as 2.5 degrees or as much as 10 degrees Fahrenheit.

A commonly cited goal is to stabilize GHG concentrations around 450-550 parts per million (ppm) or about twice pre-industrial levels. This is the point at which many believe the most damaging impacts of climate change can be avoided. Current concentrations are about 380 ppm, which means there isn't much time to lose. According to the IPCC we'd have to reduce GHG emissions by 50% to 80% of what they're on track to be in the next century to reach this level.

In this possible ?

many people and governments are already working hard to cut greenhouse gases and everyone can help.

Yug
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