



Global Warming: Causes, Effects, Solutions

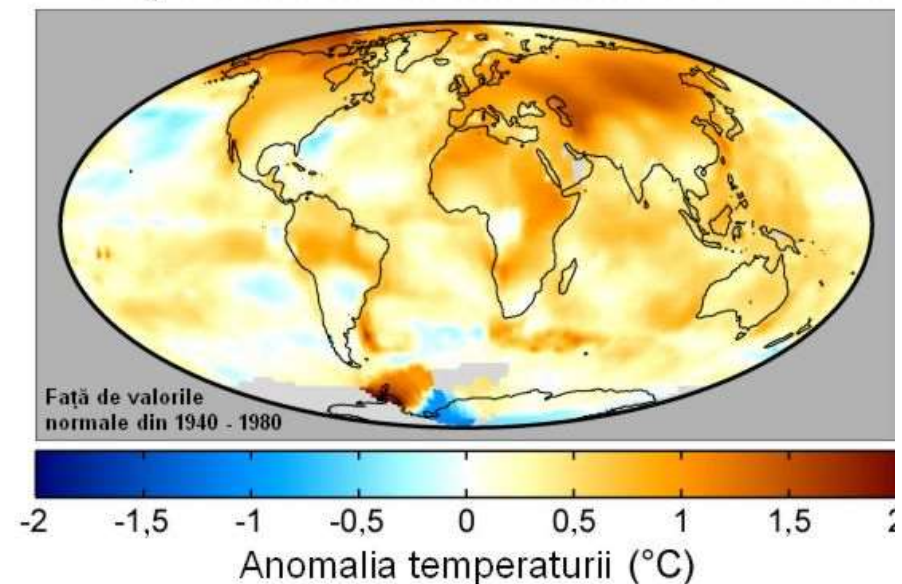




What is Global Warming?

- ❑ The continuous increase of average recorded temperatures of the atmosphere and ocean waters.
- ❑ Climate change is a natural phenomenon (cooling and warming periods) – 11,500 years ago, the global temperature was 5°C lower.
- ❑ Variations in solar radiation, volcanic activity, and the greenhouse effect are natural factors influencing climate change.

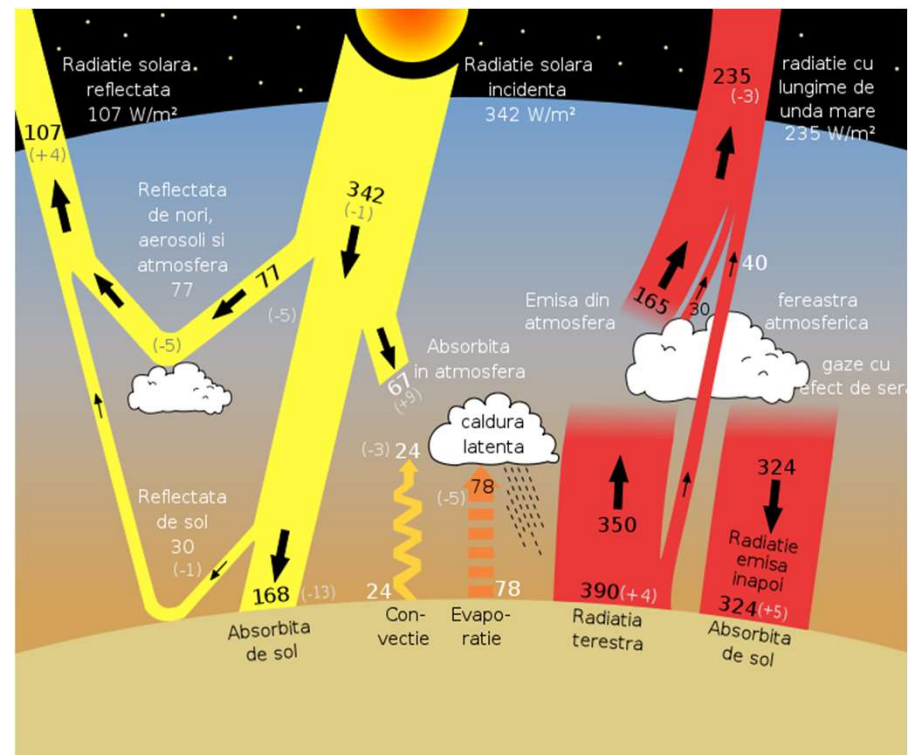
Temperaturi medii între anii 1995 - 2004





The Greenhouse Effect

- ❑ A natural phenomenon where part of the Earth's infrared radiation is retained by the atmosphere.
- ❑ Caused by greenhouse gases that reflect this radiation back. Ensures sufficient warming of the Earth for plant life to thrive.
- ❑ Water vapor, carbon dioxide, methane, and ozone (emitted naturally or artificially) are the main greenhouse gases.





Scientific Evidence

- Climate warming is a phenomenon unanimously accepted by the international scientific community. A rapid increase in temperature has been recorded over the past 50 years.
- The average air temperature near the Earth's surface has increased by 0.74 ± 0.18 °C in the last century. A 2°C increase could lead to irreversible and catastrophic environmental changes.
- Europe's climate has warmed by nearly 1°C in the last century, faster than the global average.





Scientific Evidence

- ❑ Intergovernmental Panel on Climate Change (IPCC) – the international authority on climate change research.
- ❑ The Fourth Assessment Report (2007) was the result of 6 years of research and contributions from 2,500 experts worldwide. In 2007, the IPCC and former U.S. Vice President Al Gore were awarded the Nobel Peace Prize.





Causes of Global Warming

- ❑ Scientific findings indicate that rapid changes in atmospheric composition are caused by human activities.
- ❑ Most of the increase in average temperature in the second half of the 20th century is likely due to anthropogenic greenhouse gases (IPCC).
- ❑ The main cause of pronounced warming in the last 100 years: increase in atmospheric CO₂. CO₂ emissions stem from: Burning fossil fuels for transport, heating, air conditioning, electricity production, and industry Deforestation, which reduces CO₂ absorption by plants.





Effects of Global Warming

- ❖ Atmosphere: increased evaporation, rainfall, and violent storms
- ❖ Hydrosphere: melting of polar ice caps and glaciers, sea level rise, ocean acidification, disruption of global ocean circulation
- ❖ Lithosphere: soil temperature increase leads to drying, favoring wildfires
- ❖ Biosphere: local climate changes, seasonal disruptions affecting bird migration and early plant blooming



Effects of Global Warming

Mumbai, India (2005):
1 million homeless
due to torrential rains





Cyclone Nargis, Myanmar (2008): ~100,000 fatalities



Efecte ale incalzirii globale (continuare)



Europe, Summer 2003: ~52,000 deaths from extreme heat



Effects of Global Warming

Observed sea ice September 1979



Observed sea ice September 2003



Source:
Arctic Climate Impact Assessment (ACIA), 2004.
Impacts of a Warming Arctic.

Melting Arctic Ocean: Comparison between frozen water surface in 1979 and 2003



Melting snows on Mount Kilimanjaro (NASA, 1993 and 2000)



19 iunie 2005

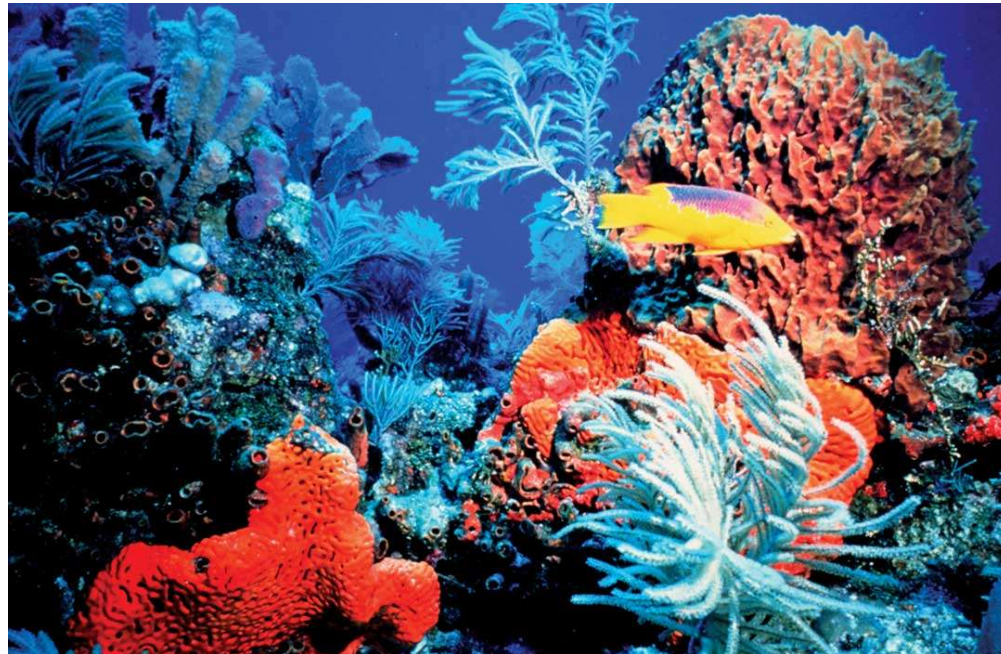


7 iulie 2003



12 mai 2001

Retreat of Helheim Glacier in Greenland



Ocean Acidification and Wildfires



Consequences of Global Warming

- Decline in drinking water reserves by 2020, affecting:
 - ❖ *1.2 billion people in Asia*
 - ❖ *250 million in Africa*
 - ❖ *81 million in Latin America*
- Agricultural yield reduction:
 - ❖ *50% in Africa (2020)*
 - ❖ *30% in Central and South Asia (2050)*
 - ❖ *30% in Latin America (2080)*
- Competition for natural resources and increased conflicts in disaster-affected areas
- Sea level rise will impact low-lying areas like the Netherlands, Bangladesh, and Venice – millions may need to relocate.
- Health: Rising temperatures increase cardiovascular and asthma risks





Measures to Limit Global Warming

- 1997 Kyoto Protocol: 160 countries pledged to reduce greenhouse gas emissions
- 2009 – Turning Point: Climate negotiations in Copenhagen to establish a new global emissions reduction agreement post-2012
- Romania's Delegation: Will support the EU's position to limit warming to 2°C above pre-industrial levels and reduce greenhouse gas emissions by at least 50% by 2050 (compared to 1990)



What Can You Do?

Simple daily actions can reduce emissions and global warming:

- **Recycle:** Recycling one aluminum can saves enough energy to power a TV for 3 hours or a light bulb for 20 hours
- **Plant a tree**
- **Take short showers instead of baths – use 4x less energy**
- **Replace regular bulbs with energy-saving ones**
- **Don't leave electronic appliances on standby**
- **Use public transport, bikes, or walk**
- **Calculate your annual personal CO₂ footprint**





Conclusion

- ❖ Global warming is an undeniable phenomenon
- ❖ Scientific research confirms that increased CO₂ concentration in the atmosphere, mainly from human activity, is the main cause
- ❖ Effects are seen in rising global temperatures, melting ice and snow, and rising sea levels
- ❖ Humanity can and must take action to reduce emissions and slow or stop global warming





The work team

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