Climate Change: Scientific Milestones and Discoveries

Climate Science History · Answer Key · 20 Questions

1. In 1856, which scientist conducted experiments with glass jars filled with various gases and sunlight, concluding that an atmosphere of carbonic acid would cause an increase in surface temperature?

A) Eunice Newton Foote
B) John Tyndall
C) Svante Arrhenius
D) Guy Stewart Callendar

2. Who provided the first calculation of the potential warming effect of doubling atmospheric carbon dioxide in 1896, estimating a temperature rise of 5 to 6 degrees Celsius?

A) James Hansen
B) Svante Arrhenius
C) Guy Stewart Callendar
D) Charles David Keeling

3. In 1958, Charles David Keeling began continuous monitoring of atmospheric CO2 at which specific location, providing the first definitive evidence of rising greenhouse gas concentrations?

A) Mauna Loa Observatory
B) South Pole Station
C) Cape Grim
D) Barrow Observatory

4. Which 1938 researcher was the first to correlate observed global temperature increases with industrial CO2 emissions, a finding later dubbed the 'Callendar Effect'?

A) Roger Revelle
B) Gilbert Plass
C) Guy Stewart Callendar
D) Milutin Milankovitch

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5. What physical law, first articulated by John Tyndall in 1861, explains how certain gases trap heat by absorbing infrared radiation while remaining transparent to visible light?

A) Planck's Law
B) The Beer-Lambert Law
C) The Greenhouse Effect
D) The Stefan-Boltzmann Law

6. Which scientist discovered the 'Milankovitch cycles' in the 1920s, providing the first mathematical framework explaining how orbital variations trigger glacial-interglacial cycles?

A) Vladimir Köppen
B) Alfred Wegener
C) Milutin Milankovitch
D) James Croll

7. In 1975, who coined the term 'global warming' in a seminal paper titled 'Climatic Change: Are We on the Brink of a Pronounced Global Warming?'

A) Wallace Broecker
B) Syukuro Manabe
C) Richard Wetherald
D) Stephen Schneider

8. The first General Circulation Model (GCM) to accurately simulate the effect of increased CO2 on global climate was developed in 1967 by which two scientists?

A) Hansen and Lebedeff
B) Manabe and Wetherald
C) Charney and Bretherton
D) Lorenz and North

9. In 1899, Thomas Chamberlin was the first to propose that the oceans act as a massive reservoir for which gas, influencing long-term climate cycles?

A) Methane
B) Nitrous Oxide
C) Carbon Dioxide
D) Sulfur Dioxide

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10. Which landmark 1979 report, chaired by Jule Charney, was the first official consensus document to estimate that doubling CO2 would increase global temperatures by 1.5 to 4.5 degrees Celsius?

A) The Charney Report
B) The Rio Declaration
C) The Montreal Protocol
D) The First IPCC Assessment

11. What major discovery did Claude Lorius make in 1987 by analyzing the Vostok ice core samples?

A) Evidence of rapid CO2 rise in the 19th century
B) A direct correlation between atmospheric CO2 and temperature over 160,000 years
C) The role of methane clathrates in abrupt warming
D) The first detection of CFCs in Antarctic ice

12. In 1965, the President's Science Advisory Committee released 'Restoring the Quality of Our Environment,' which was the first US government report to explicitly warn about what?

A) Nuclear fallout
B) Atmospheric CO2-induced climate change
C) The depletion of the ozone layer
D) Acid rain

13. Which scientist proposed the theory of 'Thermohaline Circulation' (the Great Ocean Conveyor Belt) in 1987, explaining how ocean currents regulate global climate?

A) Wallace Broecker
B) Stefan Rahmstorf
C) Carl Wunsch
D) Henry Stommel

14. The first satellite instrument to provide continuous global temperature measurements of the troposphere was the Microwave Sounding Unit (MSU), launched in what year?

A) 1968
B) 1979
C) 1988
D) 1995

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15. In 1957, Roger Revelle and Hans Suess published a paper identifying the 'Revelle Factor,' which describes what critical ocean-climate mechanism?

A) Ocean acidification rates
B) The ocean's limited capacity to absorb industrial CO2
C) The melting rate of sea ice
D) The feedback loop of methane release

16. Who was the first researcher to identify the absorption spectra of water vapor and carbon dioxide in the infrared range, providing the first quantitative basis for greenhouse gas theory?

A) John Tyndall
B) Joseph Fourier
C) Samuel Langley
D) Claude Pouillet

17. The first international interdisciplinary climate research organization, the World Climate Research Programme (WCRP), was established in which year?

A) 1972
B) 1980
C) 1988
D) 1992

18. In 1930, E.O. Hulbert was the first to calculate the greenhouse effect of which gas, noting it could cause significant warming if atmospheric concentrations increased?

A) Ozone
B) Carbon Dioxide
C) Methane
D) Water Vapor

19. Which scientist is credited with being the first to model the Earth's energy balance in 1824, proposing that the atmosphere acts like a glass vessel to trap heat?

A) Joseph Fourier
B) John Tyndall
C) Svante Arrhenius
D) Thomas Young

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20. The first global assessment report by the Intergovernmental Panel on Climate Change (IPCC) was published in which year?

A) 1988
B) 1990
C) 1992
D) 1995