

Quiz - 2: History and Radiative Forcing

William Gutowski

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Questions: 10

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1. Radiative absorption (Points: 10)

Who first measured the infrared absorption properties of atmospheric molecules.

- a. Svante Arrhenius
- b. John Tyndall
- c. Horace de Saussure
- d. Guy Callendar

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2. GCM Complexity (Points: 10)

At the time of the IPCC Third Assessment Report, typical GCMs included

- A. atmospheric chemistry
- B. interactive vegetation
- C. atmospheric aerosols
- D. clouds
- E. volcanic activity

- 1. C, D, E
- 2. A, C, E
- 3. A, B, D
- 4. B, C, D

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3. GCM projections (Points: 10)

By 2005, the global average temperature had warmed by an amount that was less than the range projected by First Assessment Report GCMs

- True False

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4. Complementary Models (Points: 10)

These types of climate models complement GCMs typically by using higher horizontal resolution in some locations.

- a. Earth system models of intermediate complexity
- b. Global stratospheric models
- c. Regional climate models
- d. Global stretched-grid models

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5. Greenhouse effect (Points: 10)

The greenhouse effect is created by

- a. solar radiation absorbed by the earth's surface
- b. infrared radiation absorbed and re-emitted by clouds
- c. solar radiation reflected to space by clouds
- d. infrared radiation absorbed and re-emitted by carbon dioxide

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6. Radiative forcing types (Points: 10)

Anthropogenic radiative forcing that on average warms the planet involves

- a. aircraft contrails
- b. atmospheric aerosols
- c. greenhouse gases
- d. changes in surface albedo

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7. Biomass burning (Points: 10)

Aerosol concentrations from biomass burning

- 1. does not occur in winter.
- 2. is strongest in subpolar forests.
- 3. is highest in the Australian outback.
- 4. shifts between hemispheres with the seasons.

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8. Land-use change (Points: 10)

Since 1750, one of the places experiencing substantial growth in croplands is the U.S. Midwest.

- True False

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9. Anthropogenic versus natural radiative forcing (Points: 10)

According to the AR4, it is _____ that the net human influence on radiative forcing since 1750 is at least 5 times the solar influence.

- a. unlikely
- b. virtually certain
- c. likely
- d. about as likely as not

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10. Indicators of anthropogenic carbon dioxide (Points: 10)

Which of the following indicate that humans are causing the observed increasing levels of atmospheric carbon dioxide?

- a. The amount of atmospheric methane has leveled off.
- b. Atmospheric oxygen is decreasing as carbon dioxide increases.
- c. The ratio of Carbon-13 to Carbon-12 has been decreasing.
- d. The Montreal protocol has stabilized its concentration in the atmosphere.

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