

Quiz - 8: Projected Climate Change

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Questions: 10

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1. Projections of climate (Points: 10)

Which of these are factors considered uncertain enough that simulations of future climate are called "projections" and not "forecasts"?

- a. Human emissions of greenhouse gases
- b. The timing and strength of volcano eruptions
- c. Changes in how land is used
- d. All of the above

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2. SRES scenarios (Points: 10)

Link each scenario with its associated emissions future.

Column preview

A1B	low
B1	high
A2	medium

Matching pairs

A1B	- Select choice -
B1	- Select choice -
A2	- Select choice -

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3. Projected temperature change (Points: 10)

The projected warming in the atmosphere over the 21st century is greatest

- a. first in the Southern Hemisphere, but later in the Northern Hemisphere.
- b. at about 200 hPa (upper atmosphere) in the tropics
- c. at the South Pole.
- d. near the surface at all latitudes.

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4. Committed climate change (Points: 10)

According to GCMs, if the levels of greenhouse gases were fixed at their year 2000 levels, global average temperature would

- a. remain at its year 2000 value.
- b. return to values of the 1950s.
- c. increase by about 0.5 deg C over the 21st century.
- d. rise by about 3.0 deg C over the 21st century.

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5. Sea-level rise (Points: 10)

These factors are estimated to give a positive contribution to sea level rise over the 21st century [multiple correct responses. Choose all of them for full credit.]:

- a. melting of the Antarctic ice sheet
- b. thermal expansion of sea water
- c. melting of glaciers and ice caps
- d. melting of the Greenland ice sheet

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6. SRES emissions scenarios (Points: 10)

For which of these scenarios does the *emission* of fossil carbon dioxide eventually start to decrease with time in the 21st century? [Multiple correct answers. Choose all correct answers for full credit.]

- a. A1B
- b. B1
- c. A2
- d. All of the above

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7. Uncertainty in projected radiative forcing (Points: 10)

The largest source of uncertainty in projecting radiative forcing for the future is the uncertainty in modeling

- a. infrared radiation.
- b. line-by-line computations of radiation.
- c. atmospheric water vapor effects on infrared radiation.
- d. atmospheric aerosols.

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8. Scaling of change patterns (Points: 10)

When latitudinal temperature changes are scaled by their corresponding global-average temperature change, the changes over land

- a. show the same response vs. latitude for different scenarios.
- b. show divergent responses vs. latitude for different scenarios.
- c. become swamped by inter-scenario differences.
- d. become effectively constant with latitude.

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9. Temperature change vs. scenario (Points: 10)

Which SRES scenario tends to produce the largest global surface warming at the end of the 21st century?

- a. A2
- b. B2
- c. A1F1
- d. A1B

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10. Arctic sea-ice change (Points: 10)

Over the 21st century, GCMs using the A2 scenario project that during late summer (July-August-September) Arctic sea-ice cover will diminish by about how many million square kilometers?

- a. 2.0
- b. 8.5
- c. 0.5
- d. 5.5

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