

Greenhouse Effect

Greenhouse effect: n_____ effect of the gases in earth's atmosphere to trap incident solar radiation, earth is an average of _____EC warmer than if no greenhouse effect (average earth temp would be - _____EC instead of current _____EC)

Global warming: t_____ that the accumulation of specific gaseous compounds is causing an uncontrollable increase in the earth's temperature with potentially devastating g_____ effects

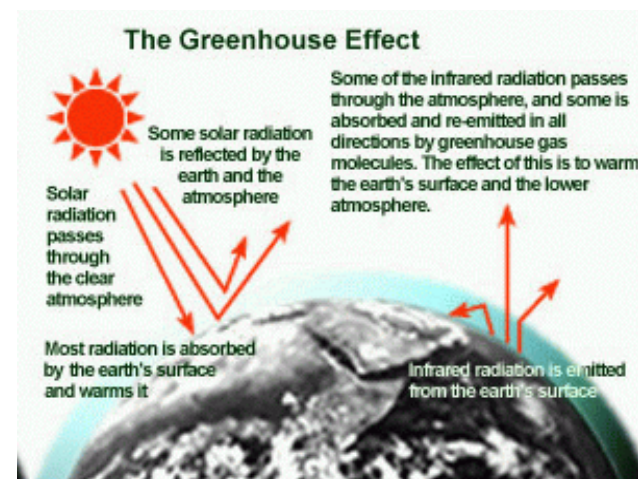
What is known:

- naturally occurring greenhouse gases include w_____ vapor, carbon dioxide, methane, nitrous oxide, and ozone
- concentrations are increasing due to a _____ sources
- water vapor is the most a_____ greenhouse gas, but its concentrations are closely related to global temperatures and are relatively constant
- p_____ of high concentrations of CO₂ in past have been accompanied by high temperatures at the Earth's surface, and periods of low carbon dioxide had relatively low surface temperatures.
- sea level has risen _____ inches over the past century
- global mean surface temperatures have increased _____ - _____EC since the late 19th century
- Greenhouse gases have long lifetimes, ranging from _____ years for methane to about _____ for carbon dioxide to _____ years for nitrous oxide. Anthropogenic increases in these gases will influence the earth's climate for many centuries. The climate system has high i_____, primarily due to the long time scales of ocean dynamical processes.
- S_____ particles that form from sulfur dioxide emitted primarily by the burning of coal contribute to local cooling although the magnitude is uncertain.
- Decreases of ozone in the lower stratosphere have contributed to c_____ effects in that region.

What we "think" will happen:

- the stratosphere will continue to c_____ as CO₂ concentrations r_____. Ozone depletion will add to the cooling.
- water vapor in the lower troposphere (0-3 km) will increase about _____% for every 1°C of warming. Relative humidities will stay approximately the same.
- The warming of the last c_____ is consistent with model projections of global warming due to CO₂ modified by the regional cooling effect of sulfate particles.
- d_____ of CO₂ over pre-industrial levels (likely to occur in the later half of the 21st century unless emissions are significantly reduced) is projected to lead to a global warming of 1.5 to 4.5°C (2 - 8°F).
- by 2100 we can expect temperature increase of _____°C to _____°C.
- Sea-level rise is most likely to be _____ (± 25) cm by year 2100 with continued rise beyond that time highly likely. Continued high (quadrupled) CO₂ could lead to _____ ± m rise in sea level.
- Global mean precipitation will increase at _____ (± 0.5)% per 1°C of warming.

(see <http://www.meteor.iastate.edu/gccourse/model/co2/seedsci.html>)



<http://yosemite.epa.gov/oar/globalwarming.nsf/content/climate.html>

