

## IPCC 4<sup>th</sup> Assessment Report (2007)

Findings include .....

The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005.

Eleven of the last twelve years (1995–2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850).

At continental, regional and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.

Note: 2010 breaks previous records as Earth continues to get warmer

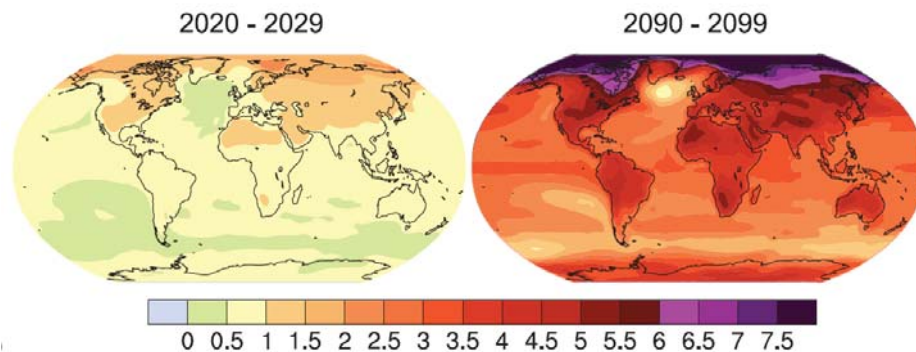
## IPCC 4<sup>th</sup> Assessment Report (2007)

Conclusions include

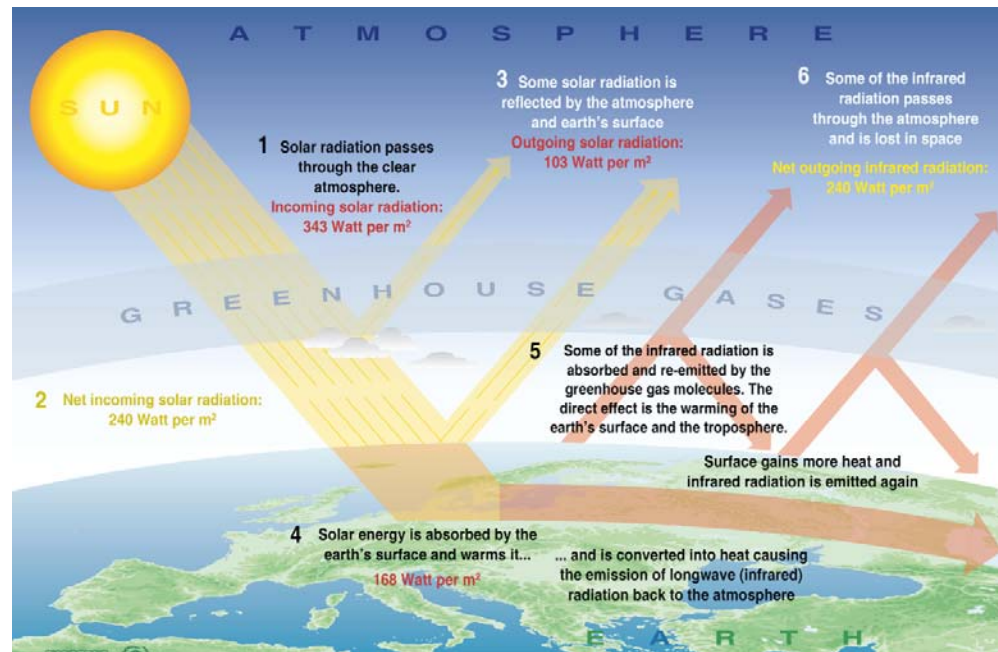
Global average surface air temperatures will rise from 1.8°C to 4.0°C (3°F to 7°F).

Global average sea level will rise .2 meters to .6 meters.

Future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and more heavy precipitation.



## Greenhouse Effect



## Greenhouse Gases as regulated by Kyoto

**Carbon dioxide (CO<sub>2</sub>)** From the decay of materials, respiration of plant and animal life, volcanic and thermal venting, and the natural and human-induced combustion of materials and fuels. It is removed from the atmosphere through photosynthesis and ocean absorption.

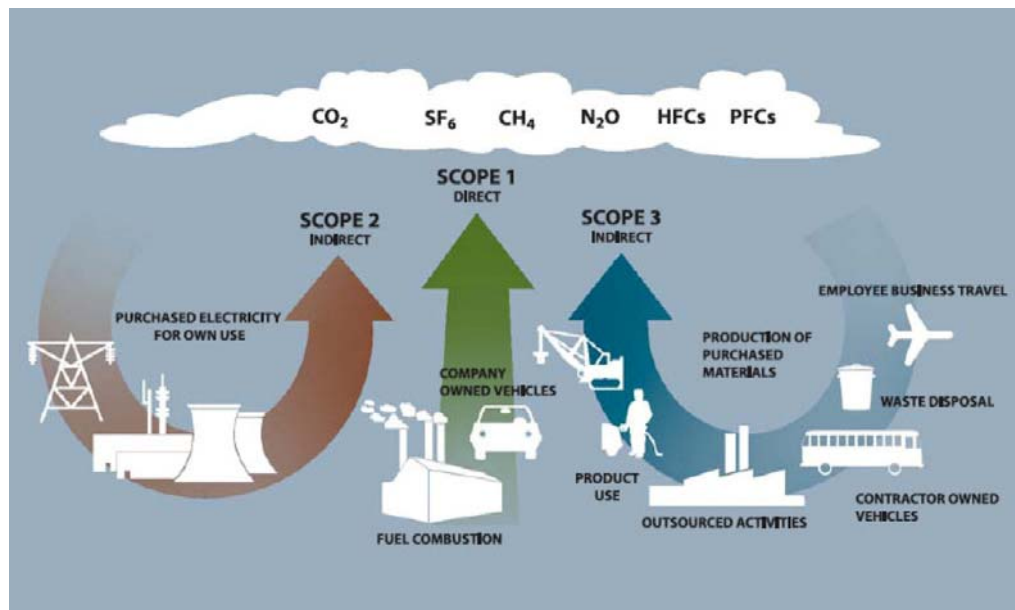
**Methane (CH<sub>4</sub>)** From the anaerobic (without oxygen) decay of matter. Primary sources include wetlands, rice paddies, animal digestive processes, fossil fuel extraction, pulp and paper processing and decaying garbage.

**Nitrous oxide (N<sub>2</sub>O)** Soils and oceans are the primary natural source of nitrous oxide. Humans contribute through soil cultivation and use of nitrogen fertilizers, nylon production, and the burning of organic material and fossil fuels.

**Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs)** Halocarbons are human-produced chemical compounds containing members of the halogen family (bromine, chlorine, and fluorine) and carbon.

**Sulphur hexafluoride (SF<sub>6</sub>)** From electric power industry circuit breakers, gas-insulated substations and switchgear.

## Greenhouse Gases as regulated by Kyoto



## Millennium Ecosystem Assessment (2005)

All of Earth's ecosystems have been significantly transformed through human actions and the pace of change is accelerating. This change is resulting in a net loss of ecosystem services (as demand increases).

Up to 30% of mammal, bird, and amphibian species are currently threatened with a medium to high certainty of extinction.

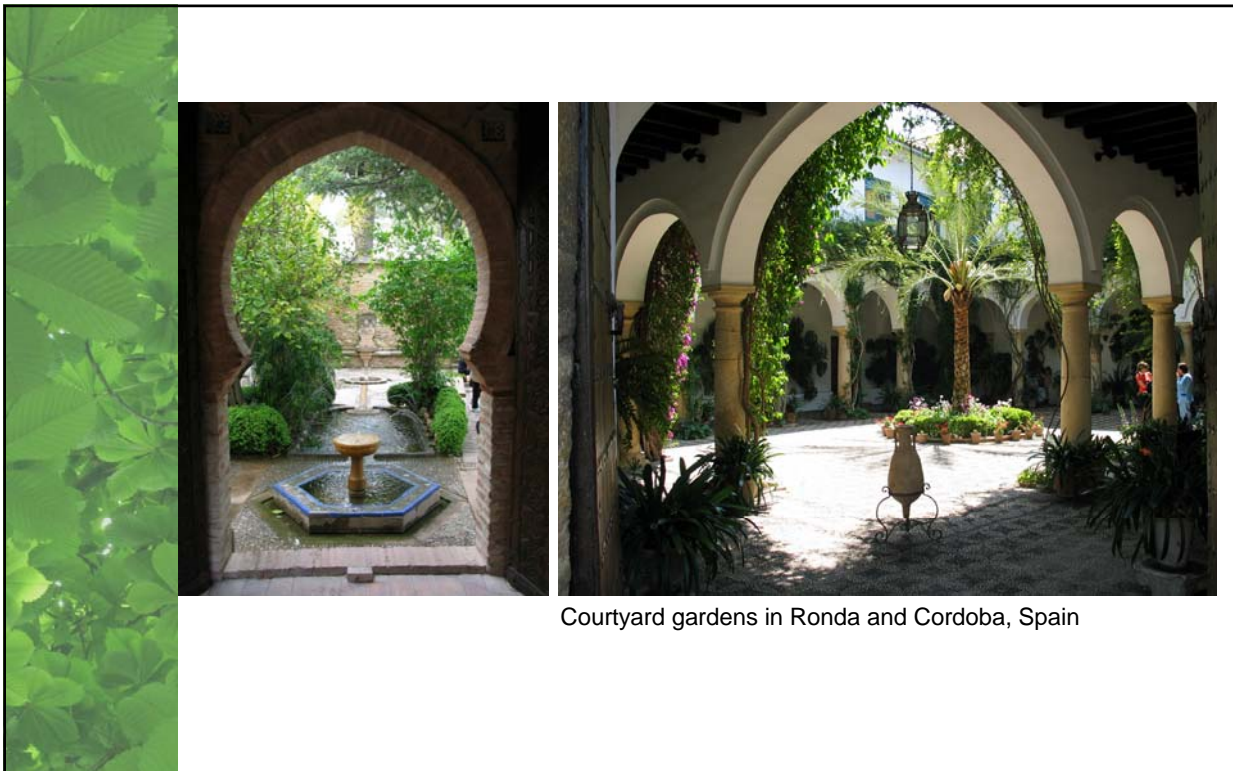
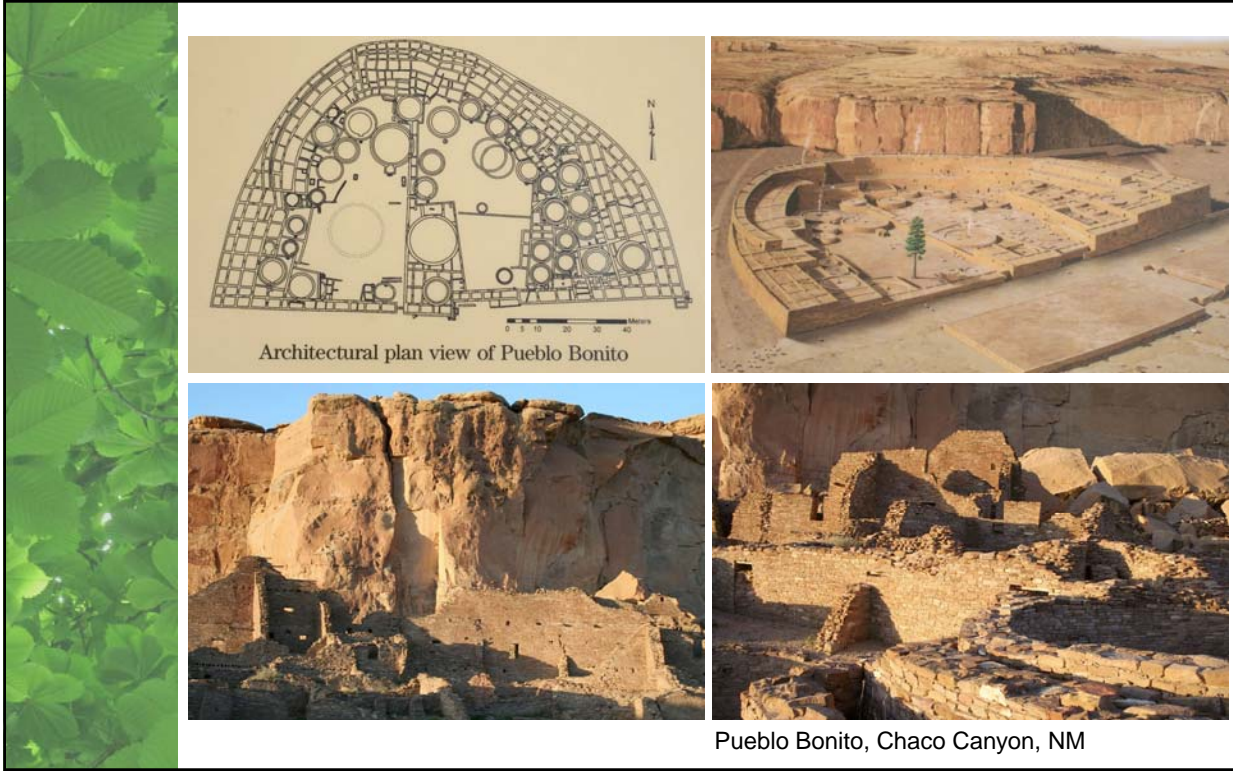
Since industrial fishing began, the total mass of commercially exploited marine species has been reduced by 90% in much of the world.

The assessment shows that with appropriate actions it is possible to reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required are substantial and not currently underway.



# Acid Rain

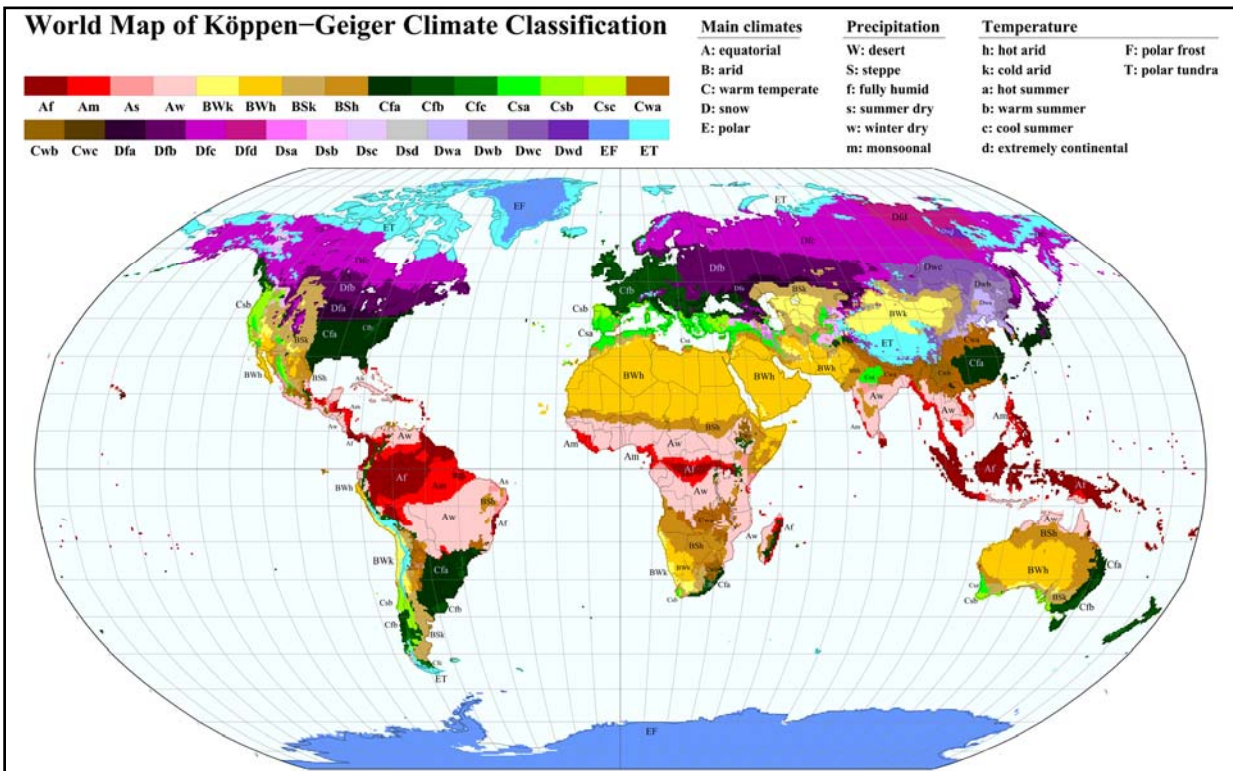








New England Salt Box with deciduous tree to South





<http://www.onearth.org/blog/watch-131-years-of-global-warming-in-26-seconds>

## Watch 131 Years of Global Warming in 26 Seconds

BY CLIMATE CENTRAL  
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