



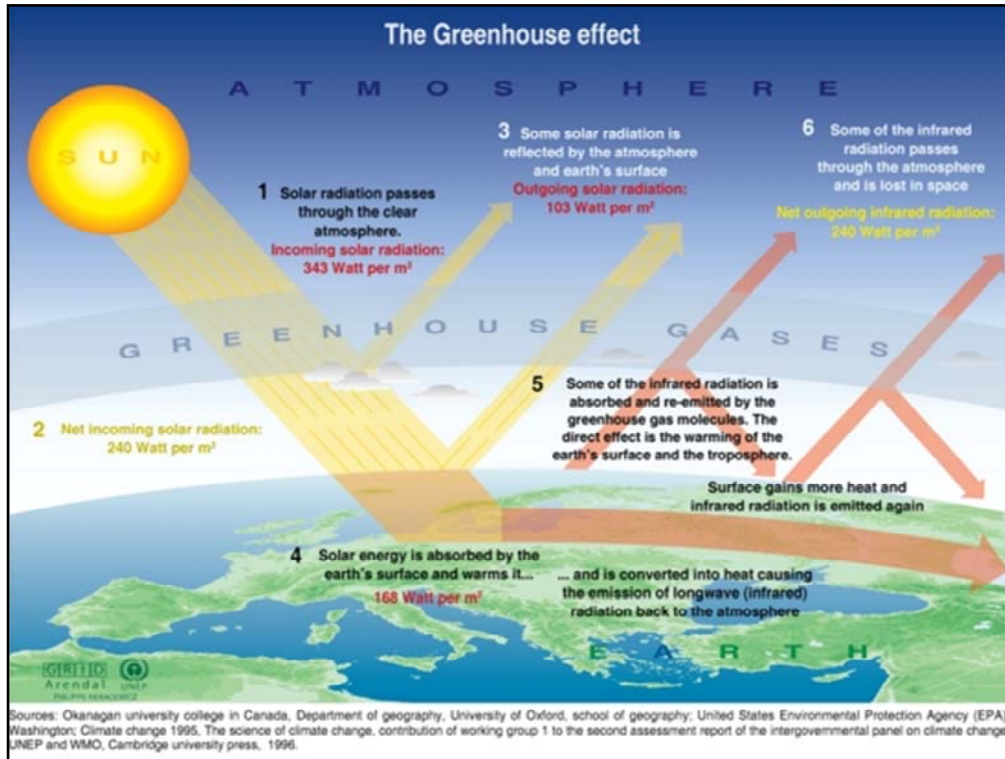
Richard G. Lugar Center
for Renewable Energy

Climate Change and Indiana

Presented by Kenneth R. Richards, PhD

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Associate Professor, School of Public and Environmental Affairs, IUB**

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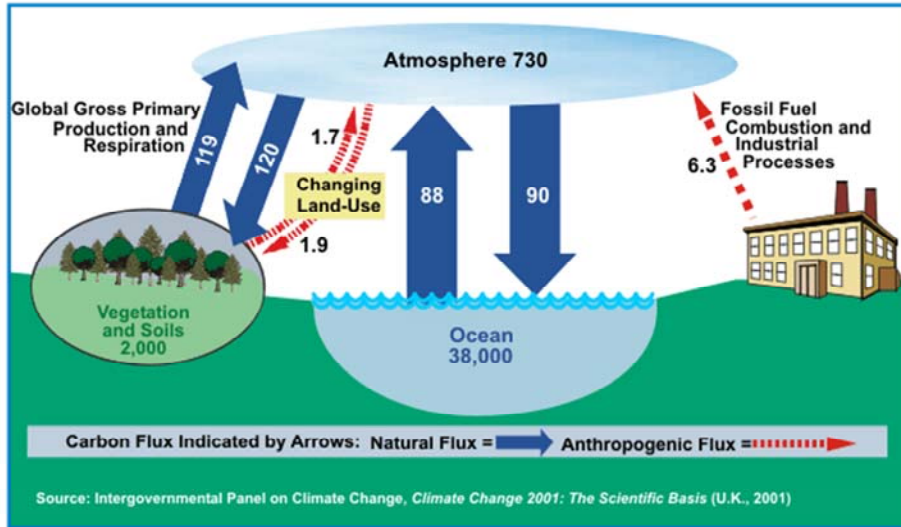


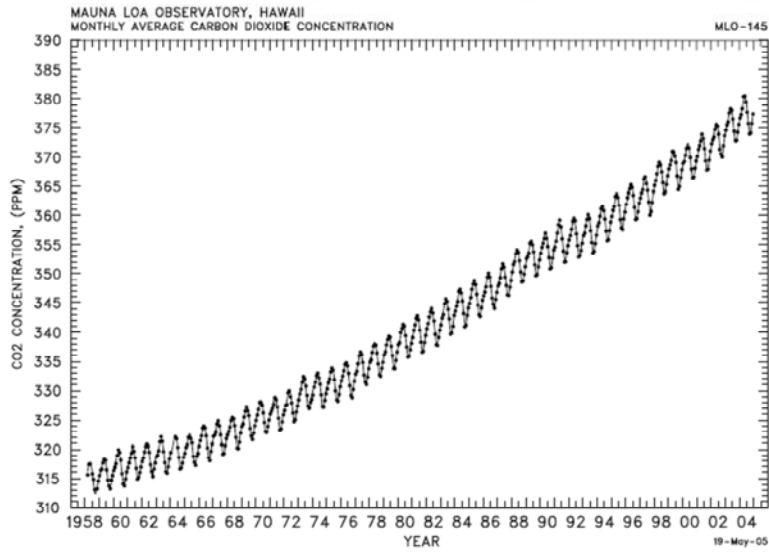
So what causes global warming?

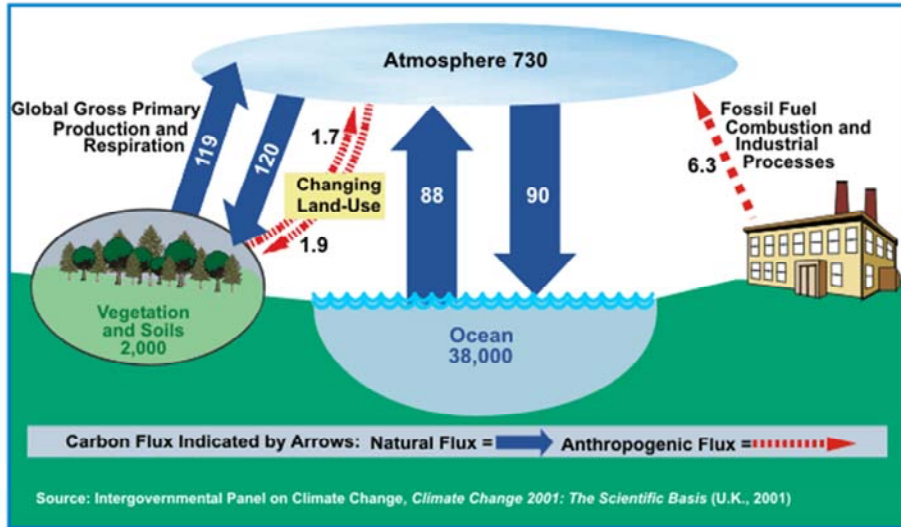
Life can exist on earth because of the Earth's natural greenhouse effect, which keeps our air at a relatively warm temperature compared to other planets. Solar radiation passes through the Earth's atmosphere and warms the Earth's surface. The excess solar radiation is supposed to bounce off the Earth's surface and radiate back into space. But what happens now instead is that all these excess greenhouse gases (like carbon dioxide) trap the excess solar radiation in the atmosphere and lead to higher average temperatures.

Major Greenhouse Gas Sources

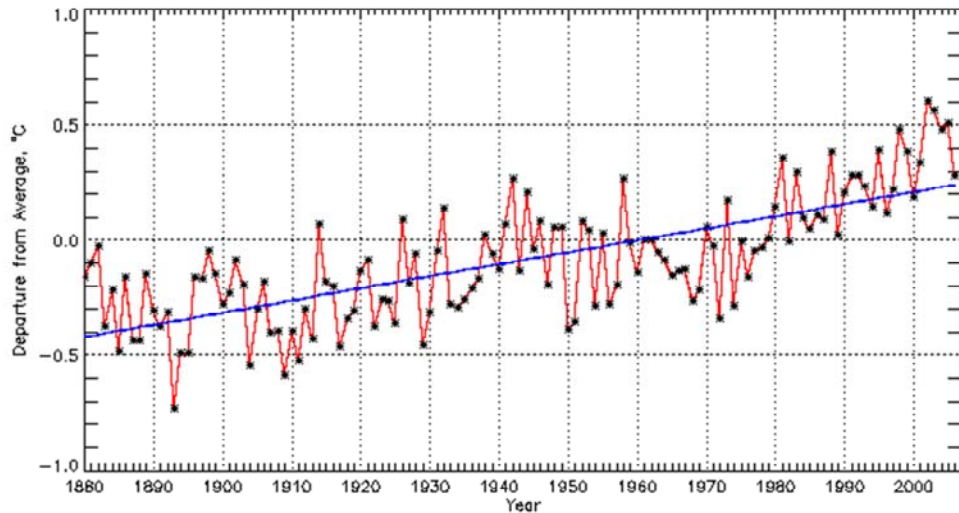
Greenhouse Gas	Major Sources
Carbon dioxide	Burning of fossil fuels, deforestation, land-use conversion, cement production
Methane	Fossil fuels, livestock, rice farms, landfills
Nitrous oxide	Fertilizers, industrial processes
HCFC's	Liquid coolants, foams
CFC's	Liquid coolants
PFC's	Aluminum production







Global Temperature Changes: 1880 - Present



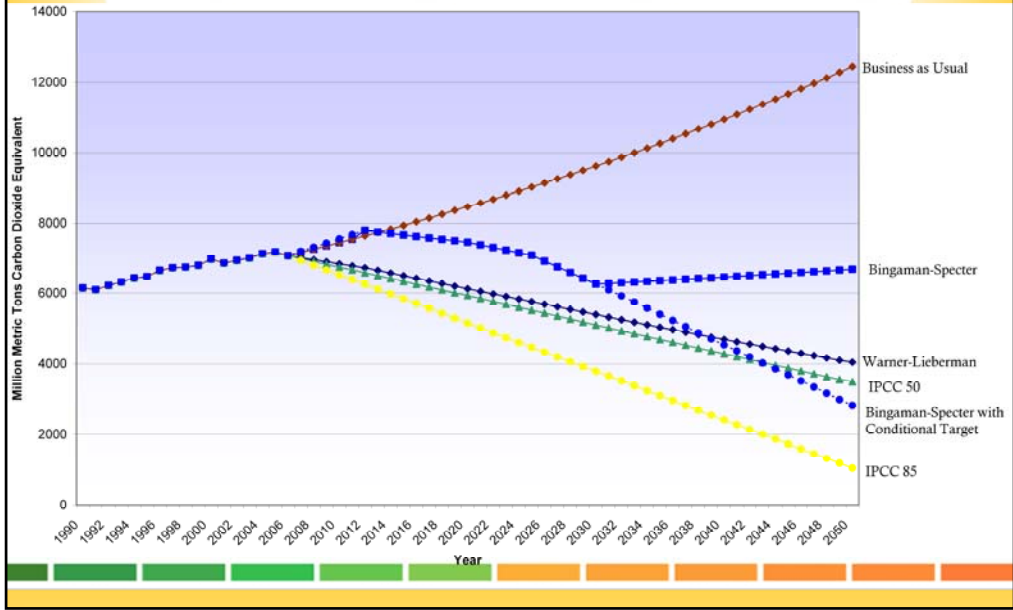
Source: U.S. National Climatic Data Center, 2007

As you can see from this line graph, global warming in the last 100 years has caused about a 0.74 °C (1.33 °F) increase in global average temperature (IPCC – Fourth Assessment Report)

**S. 2191 America's Security Act
(Warner-Lieberman)**

vs.

**S. 1766 Low Carbon Economy Act
(Bingaman-Specter)**





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