

# **Global Climate Change**

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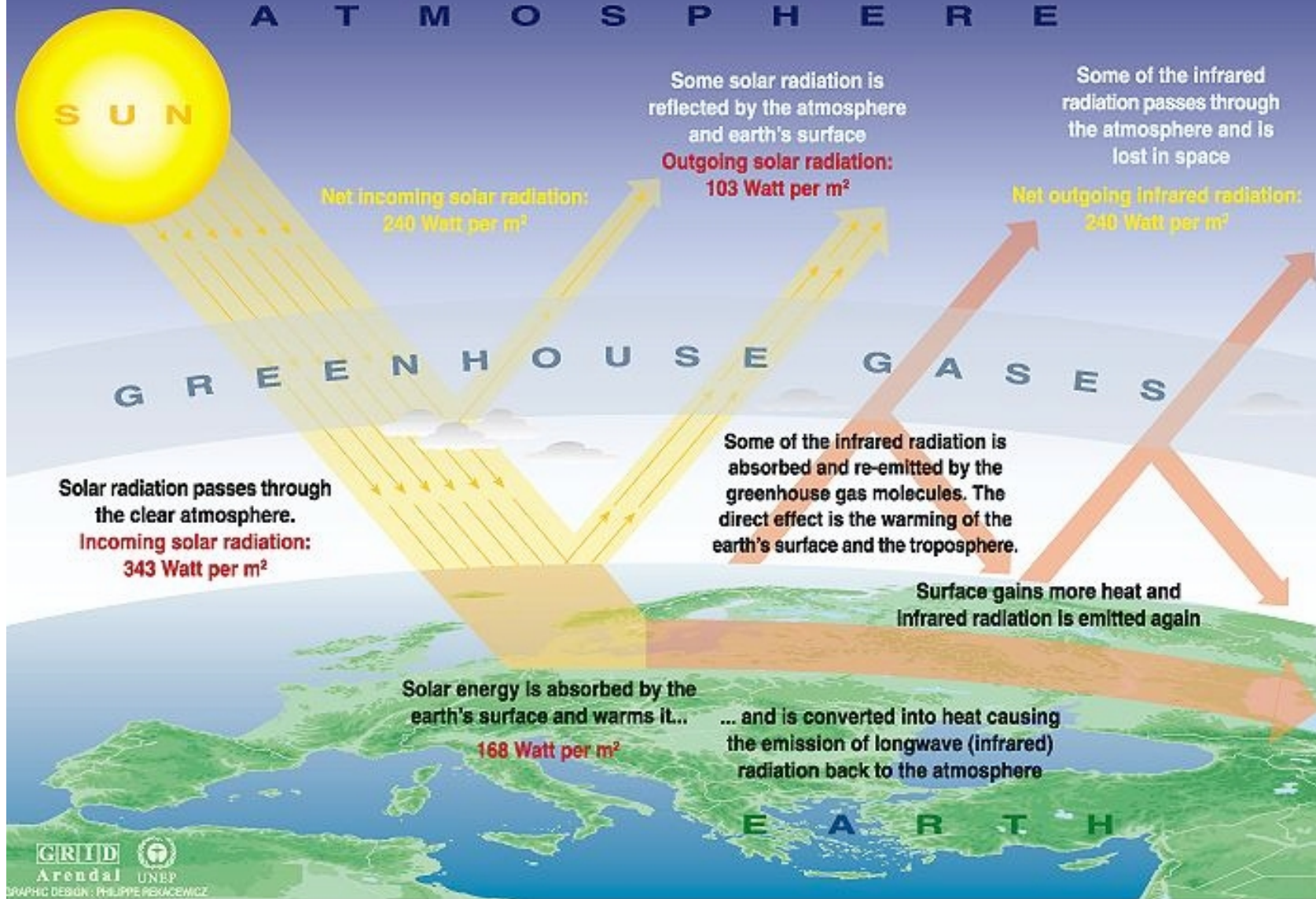


# What is Global Climate Change?

- ★ Changes in global temperature
- ★ Changes in patterns of precipitation and extreme weather events (increased risk of droughts and floods)
- ★ additional sea-level rise that will gradually inundate coastal areas
- ★ threats to biodiversity
- ★ potential challenges for public health.



# The Greenhouse effect



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

Source: <http://www.sustainable-scale.org/images/uploaded/GREENHOUSE%20EFFECT.JPG>



# What does that mean for us?

- ★ Continuation of historical trends of greenhouse gas emissions will result in additional warming over the 21<sup>st</sup> century, with current projections of a global increase of 2.5°F to 10.4°F by 2100, with warming in the U.S. expected to be even higher.



# What Causes Global Climate Change?

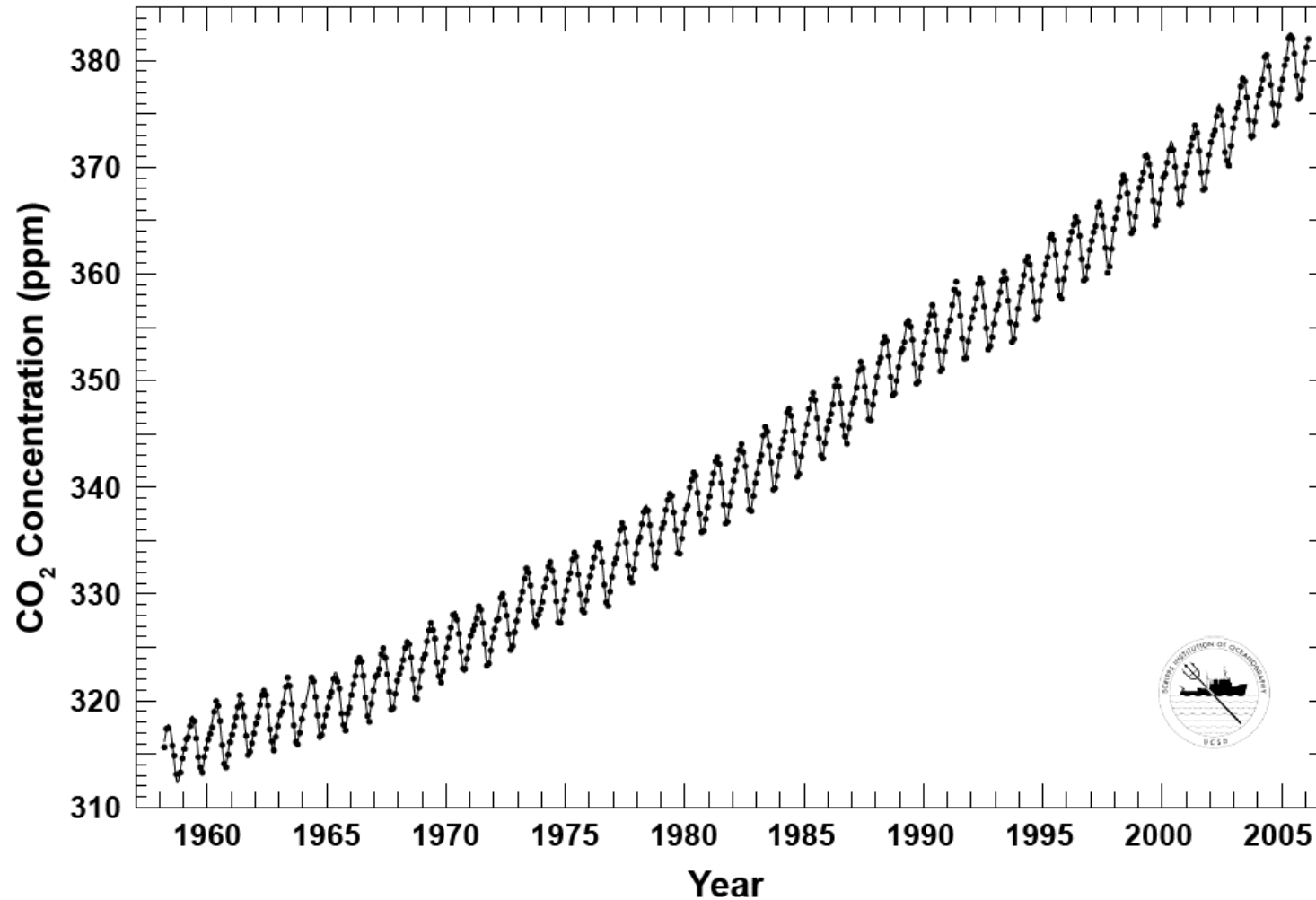
- ★ Increases in greenhouse gas concentrations, particularly water vapor, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CFCs, and HCFCs
- ★ Decreases in the cover of ice sheets changes the albedo of the earth
- ★ Land use changes and changes in the water cycle may also influence global climate change.



# Mauna Loa Observatory, Hawaii Monthly Average Carbon Dioxide Concentration

Data from Scripps CO<sub>2</sub> Program

Last updated February 2006



[http://www.esrl.noaa.gov/gmd/obop/mlo/programs/coop/scripps/img/img\\_scripps\\_co2\\_record.gif](http://www.esrl.noaa.gov/gmd/obop/mlo/programs/coop/scripps/img/img_scripps_co2_record.gif)



# Lake ice data

- ★ Another longterm data record collected for several lakes
- ★ Predictions: If global temperatures are increasing, we might see...
  - Later ice formation in winter (“ice-on”)
  - Earlier ice thawing in spring (“ice-off”)
  - Shorter ice duration (number of days lake is frozen during winter)

