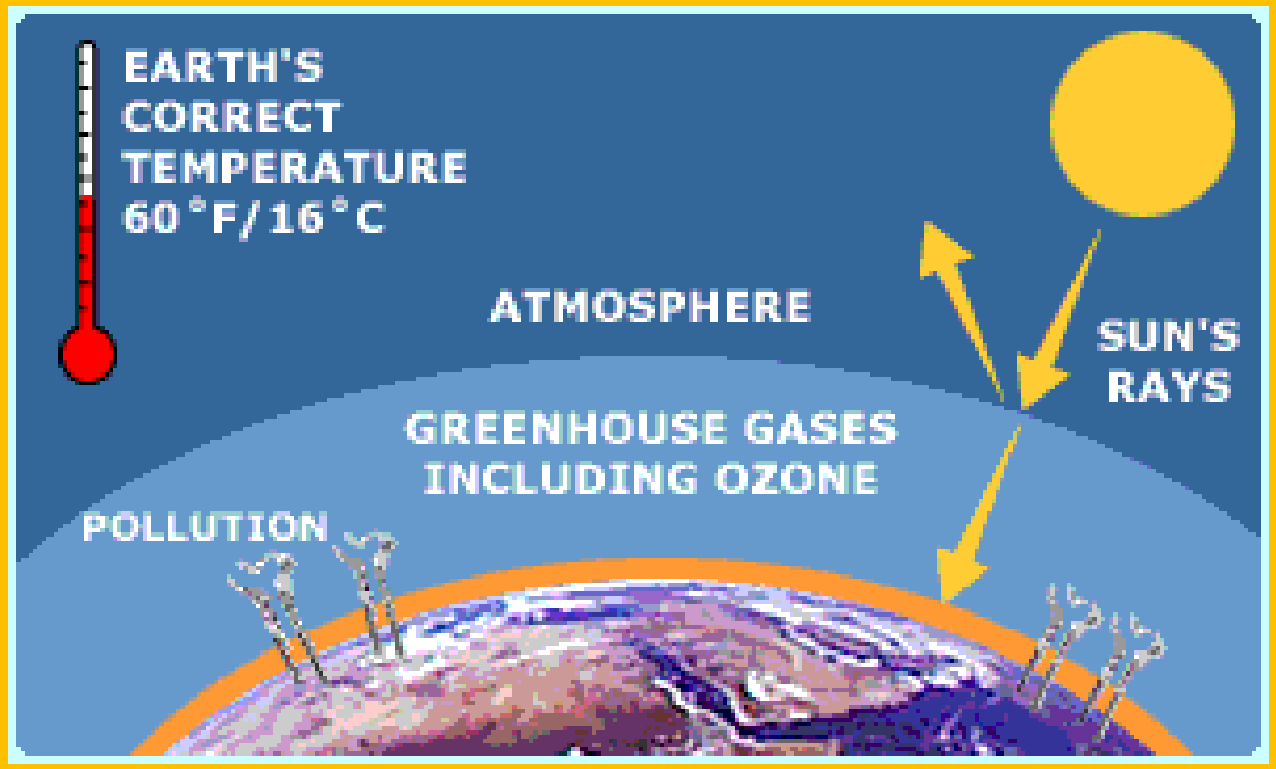
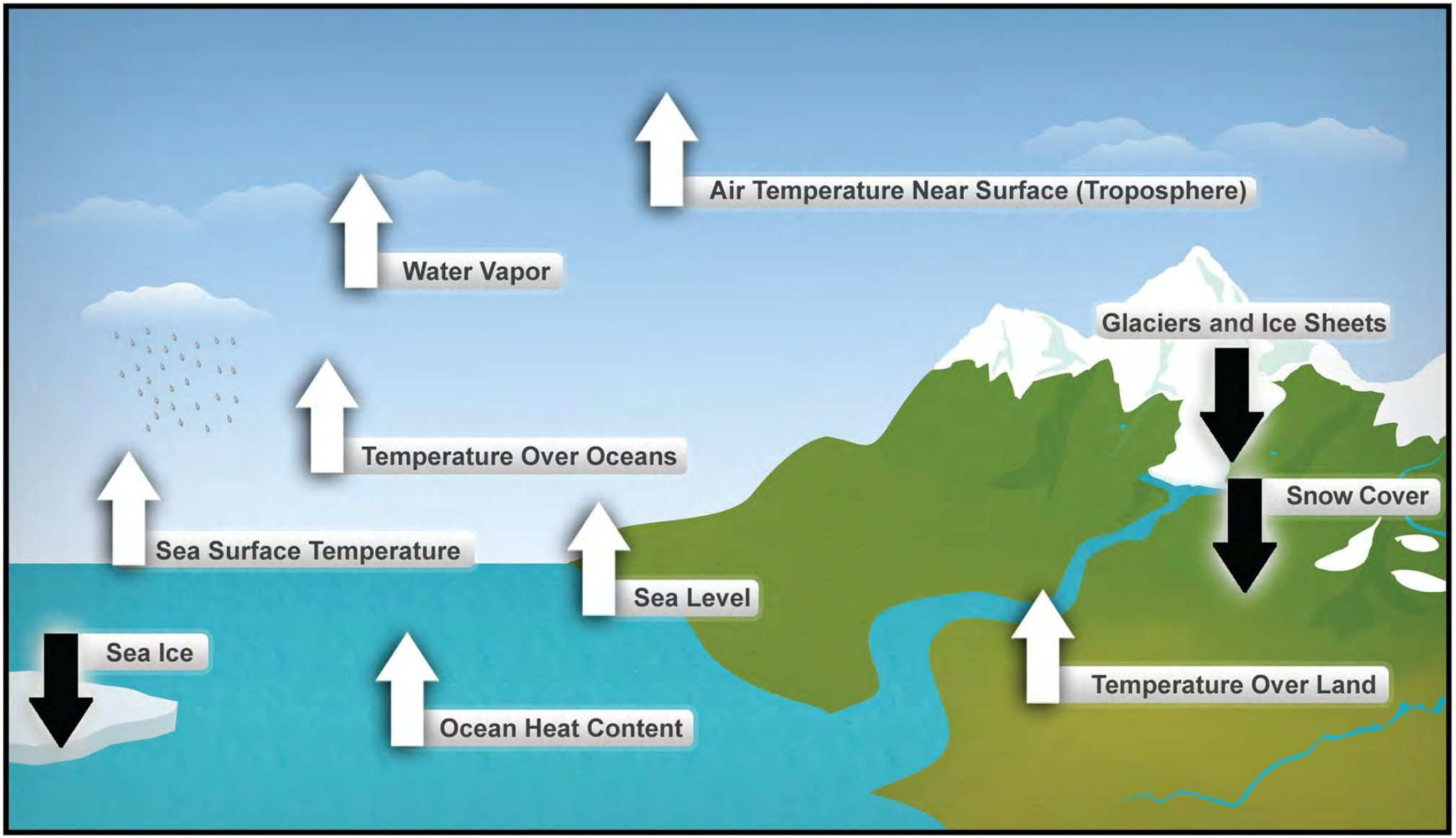
Global warming

What is global warming?

It is the rise in temperature of the earth's atmosphere.

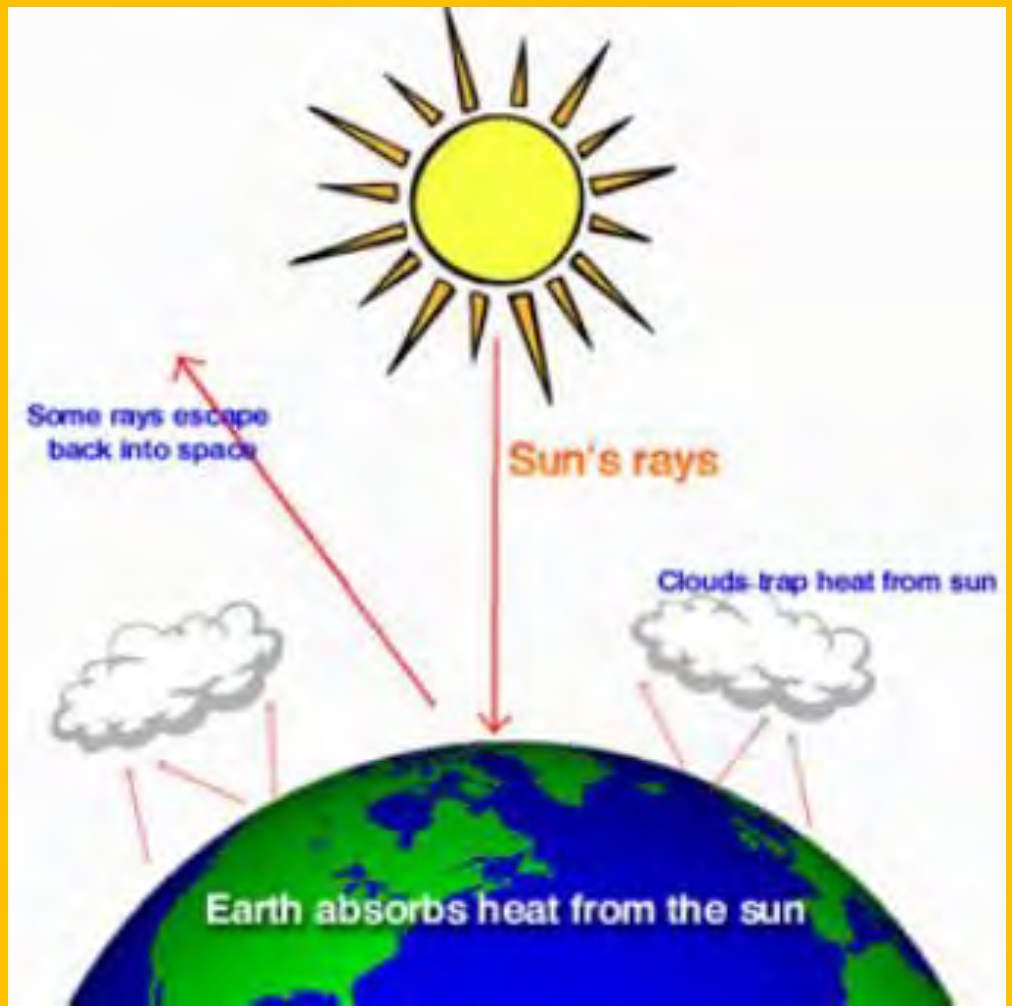


Ten Indicators of a Warming World



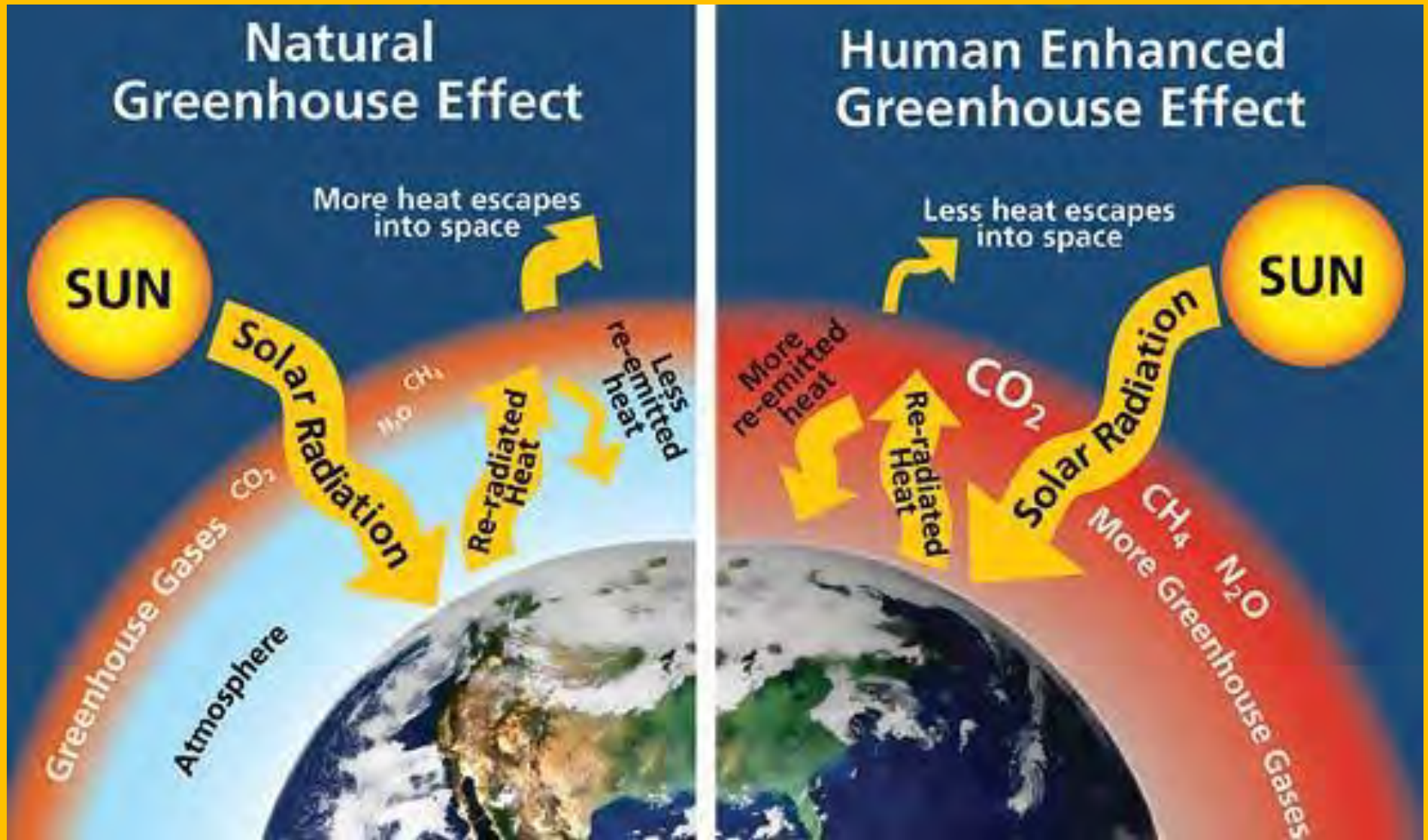
A normal situation = before

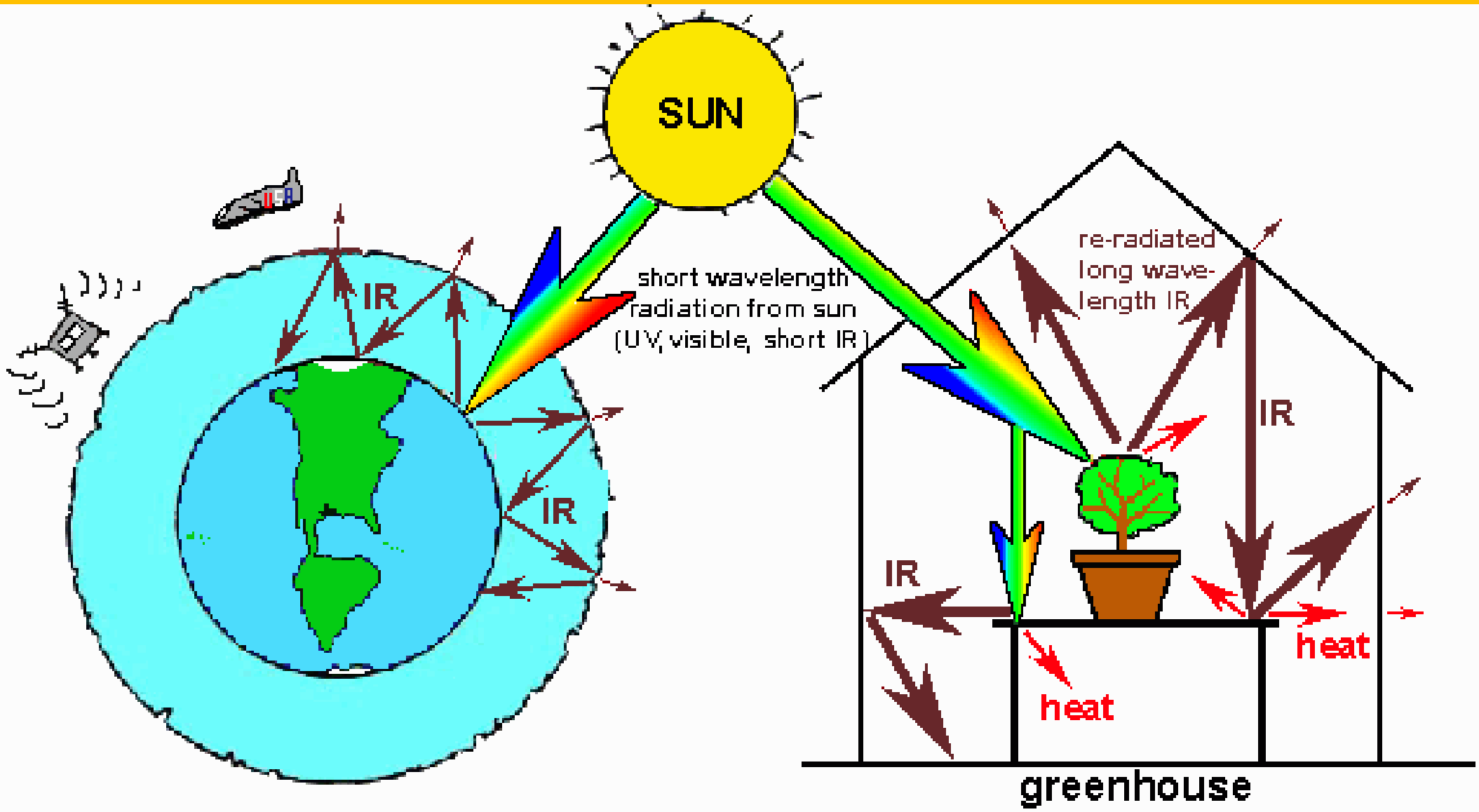
The sun heats (warms) the Earth : its rays pass through the earth's atmosphere and are then reflected back out to space again => the atmosphere and the natural greenhouse gases protect the earth and keep the Earth at the right temperature for animals, plants and humans to survive.



An abnormal situation = now

There are more greenhouse gases, less heat escapes into space = > the temperature rises on Earth




SUN
short wavelength
radiation from sun
(UV, visible, short IR)
IR
IR
re-radiated
long wave-
length IR
IR
IR
heat
heat
greenhouse

What are the greenhouse gases?

They are all natural gases :

1- water vapour

2- carbon dioxide

3- methane

4- nitrous oxide

5- ozone (it protects the earth from dangerous rays called UVB.

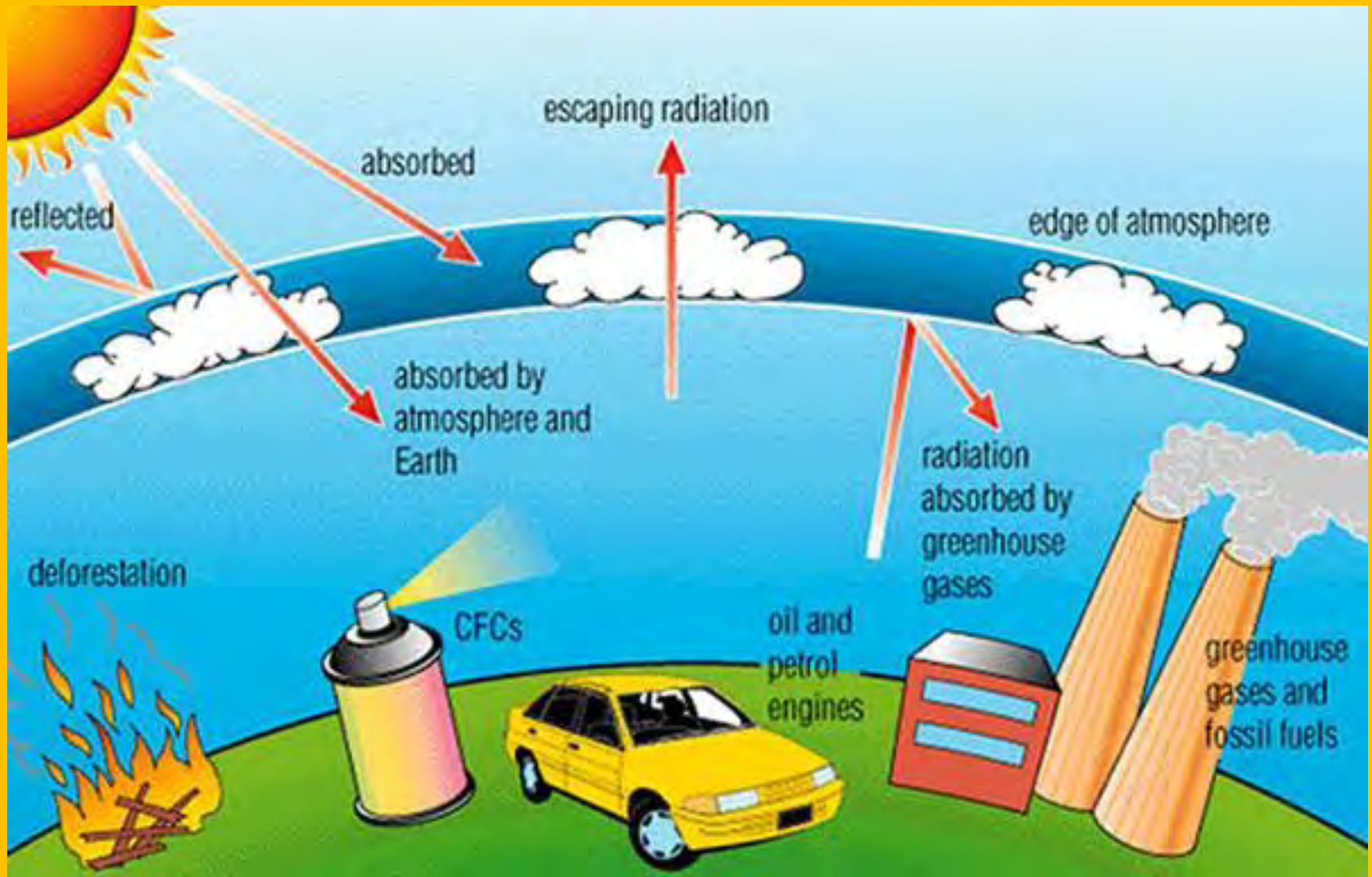
6- chlorofluorocarbons (CFC's)

Why are there more greenhouse gases ?

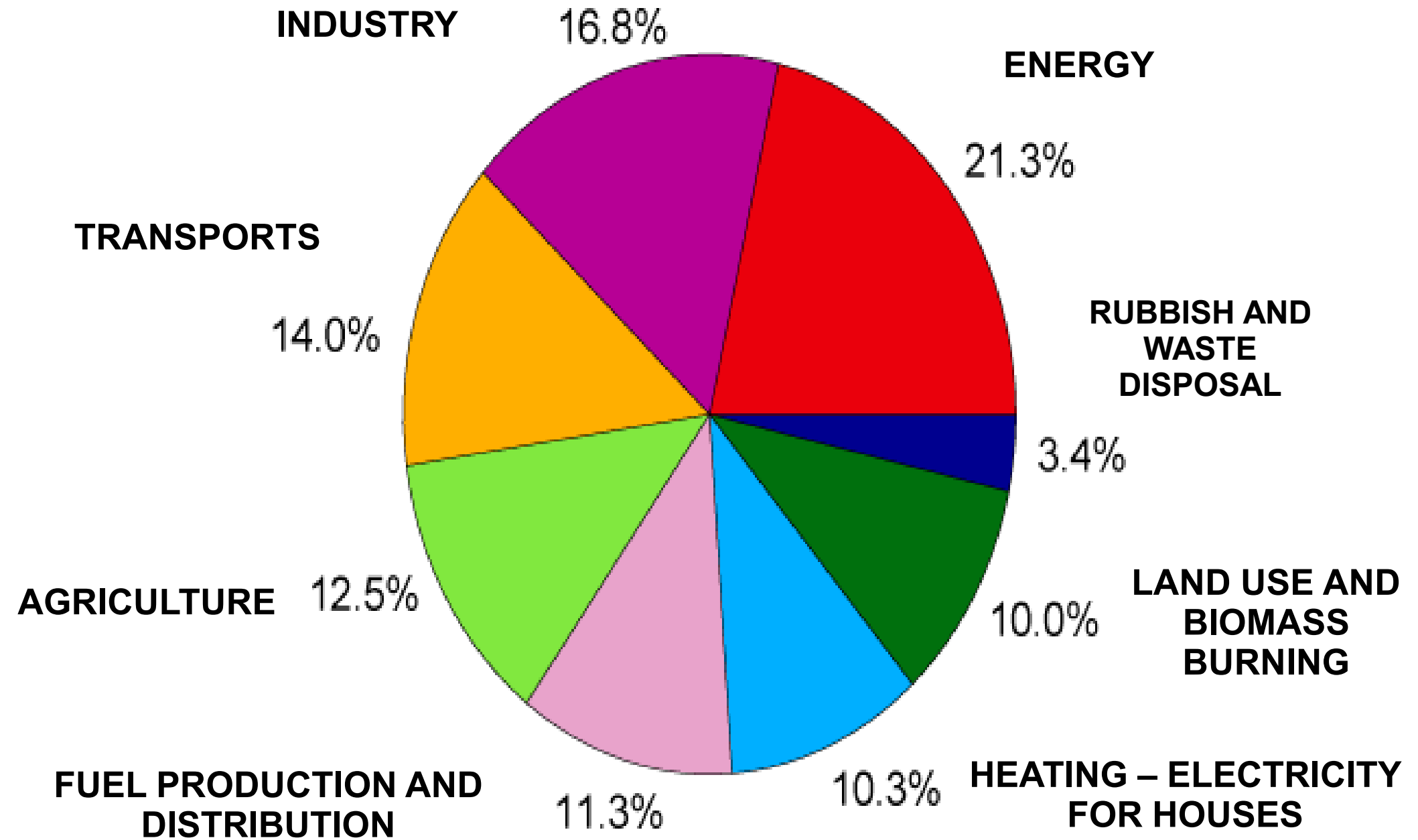
Because today, humans produce more gases than they did 100 years ago :

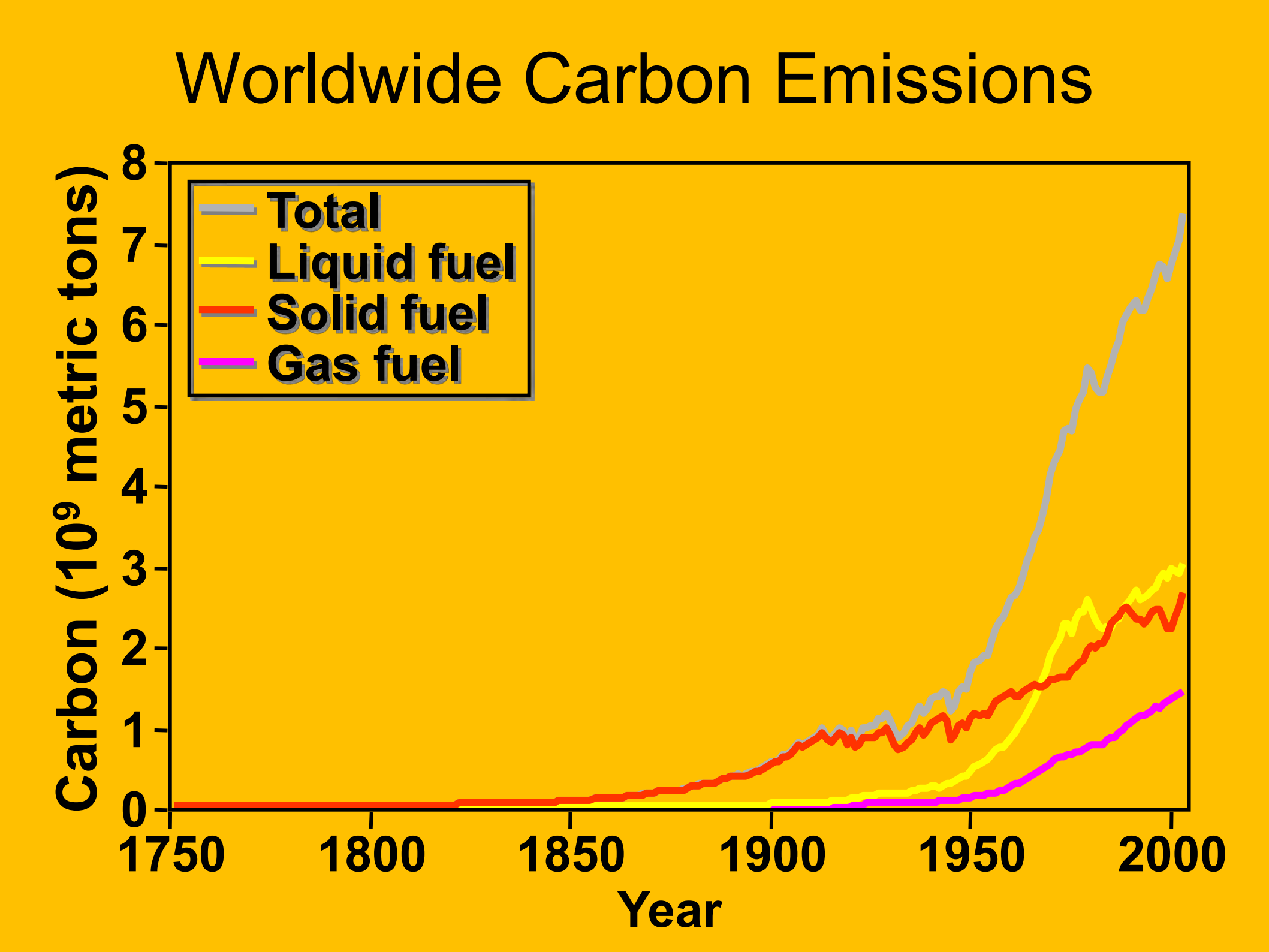
1- they burn coal and petrol, known as 'fossil fuels'

2- they cut down rainforests and other forests (deforestation)



Annual Greenhouse Gas Emissions by Sector




Worldwide Carbon Emissions
Total
Liquid fuel
Solid fuel
Gas fuel
Carbon (10^9 metric tons)
0
1
2
3
4
5
6
7
8
1750
1800
1850
1900
1950
2000
Year

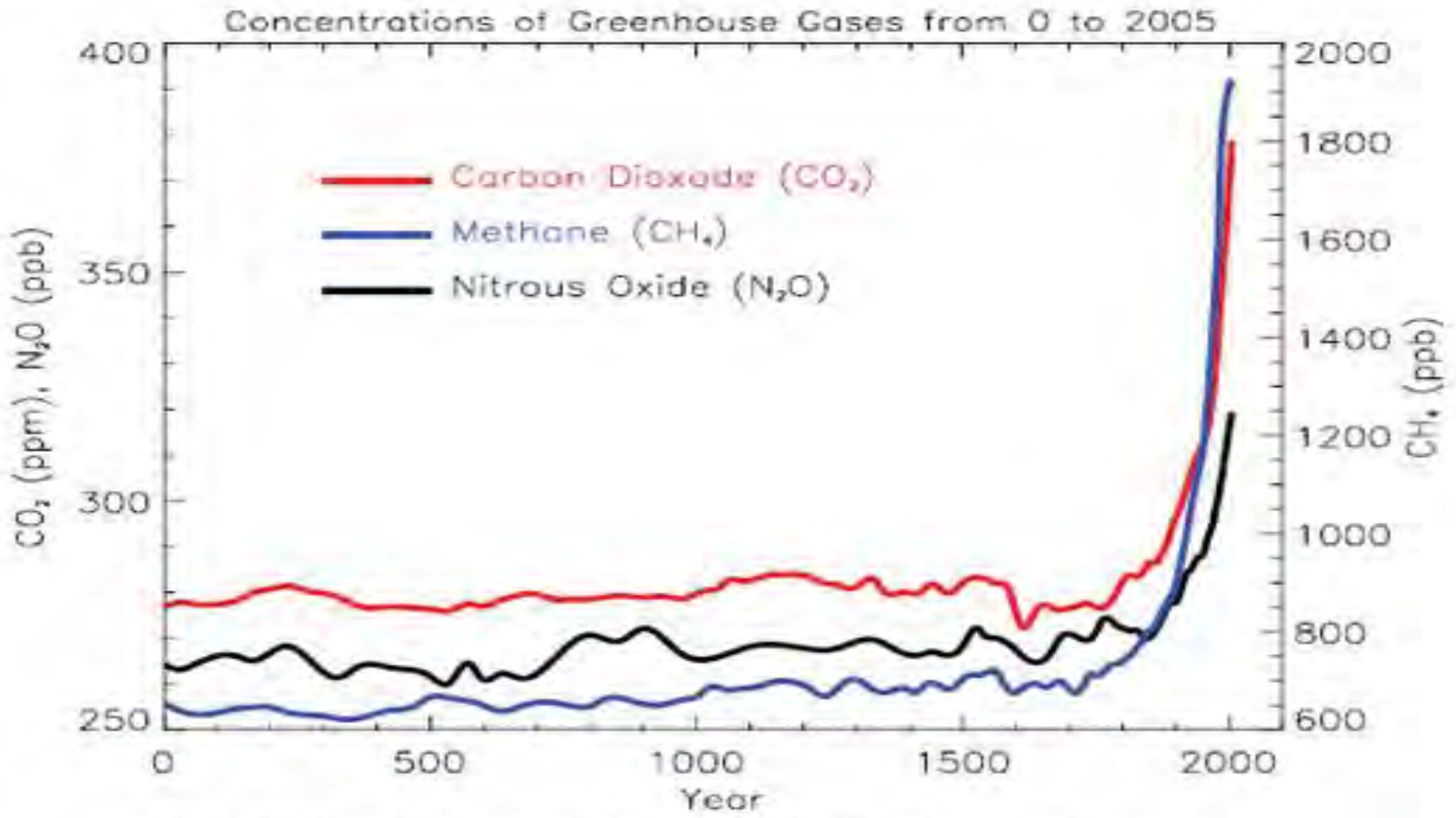


Figure 1. Atmospheric concentrations of important long-lived greenhouse gases over the last 2,000 years. Increases since about 1750 are attributed to human activities in the industrial era. Concentration units are parts per million (ppm) or parts per billion (ppb), indicating the number of molecules of the greenhouse gas per million or billion air molecules, respectively, in an atmospheric sample.

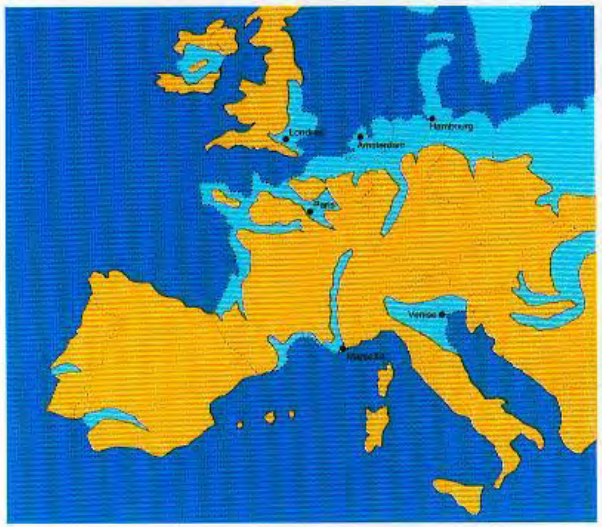
IPCC AR4 FAQ

What are the consequences ?

If the Earth gets hotter :

1- Icebergs will melt = > sea levels will rise = > cities and regions will be flooded

2- Water expands when it's heated = sea levels will rise = > cities and regions will be flooded



Global warming is the primary cause of current sea level rise.

TEMPERATURES ARE RISING

Heat-trapping gases from human activity have increased global average temperatures by 1.4° F since the 1880s.

ICE IS MELTING

Shrinking glaciers and ice sheets are adding water to the world's oceans.

OCEANS ARE WARMING

Sea water expands as its temperature rises.

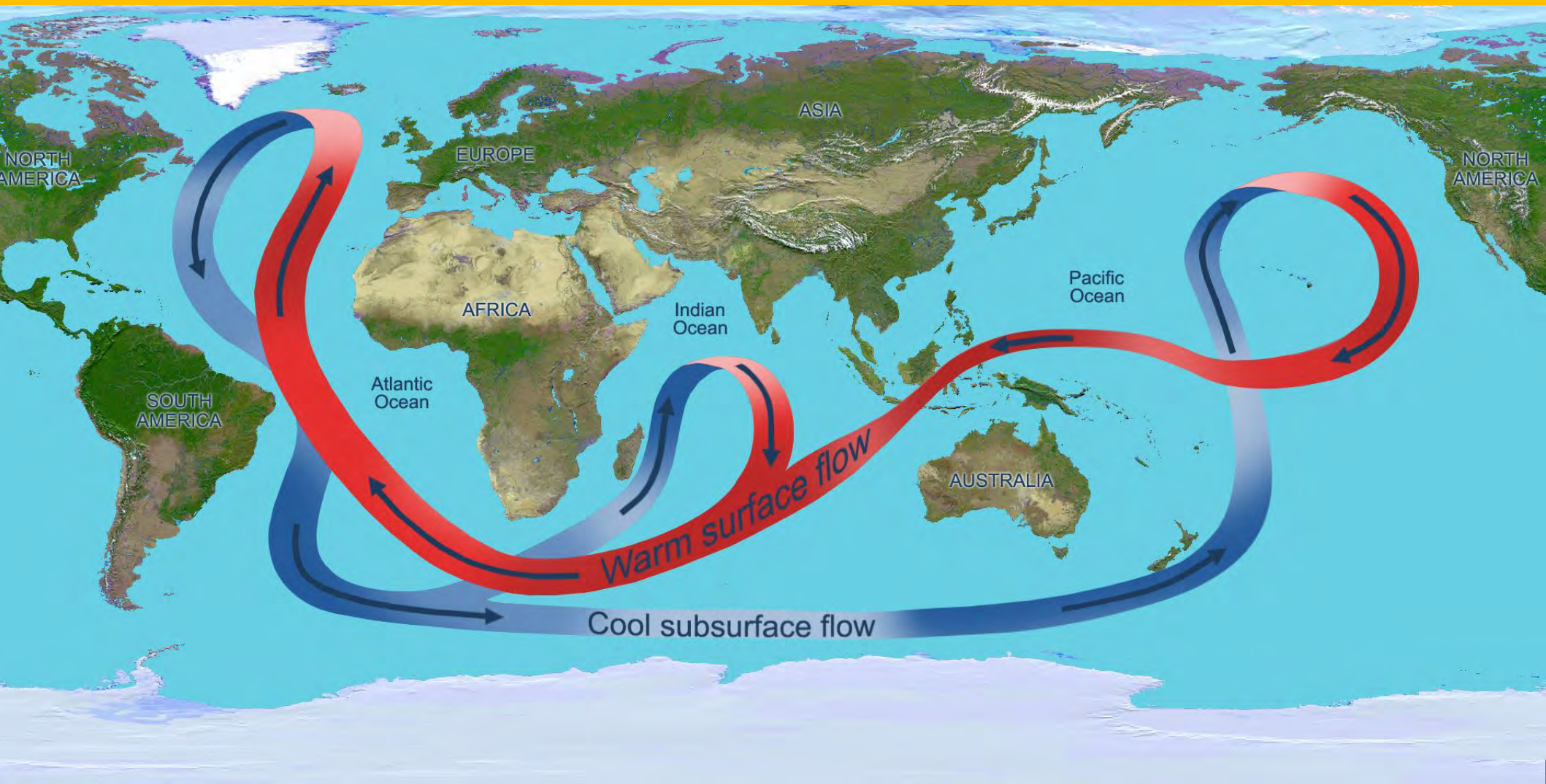
CONTRIBUTIONS TO GLOBAL SEA LEVEL RISE (1972-2008):

- MELTING LAND ICE: 52%
- WARMER OCEANS: 38%
- OTHER: 10%

If the Earth gets hotter :

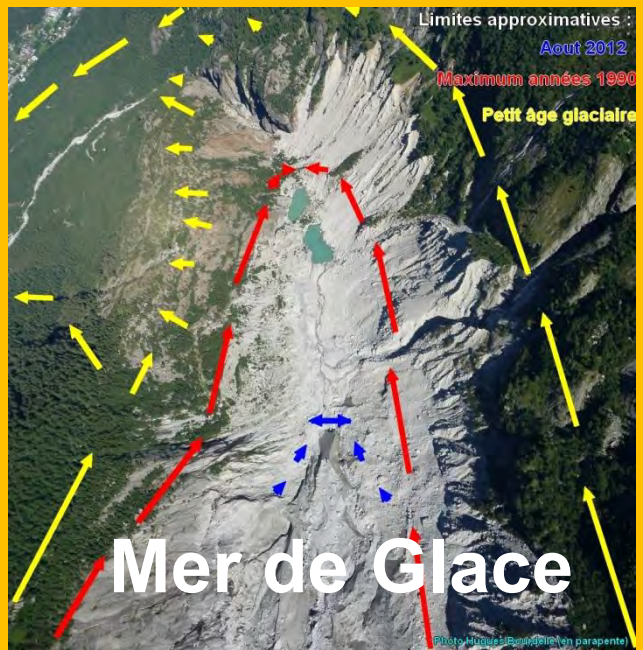
Sea and ocean temperatures will rise = > the thermohaline circulation (based on temperature and salinity) will change

= > the climate will change in different parts of the world



If the Earth gets hotter :

Some places that usually get lots of rain and snowfall will be hotter and drier, other places will become wetter. There will be more droughts. Most areas will be warmer.



If the Earth gets hotter

Winter will be colder and there will be extreme temperatures in some temperate areas

If the Earth gets hotter :

There will be more wildfires in some regions

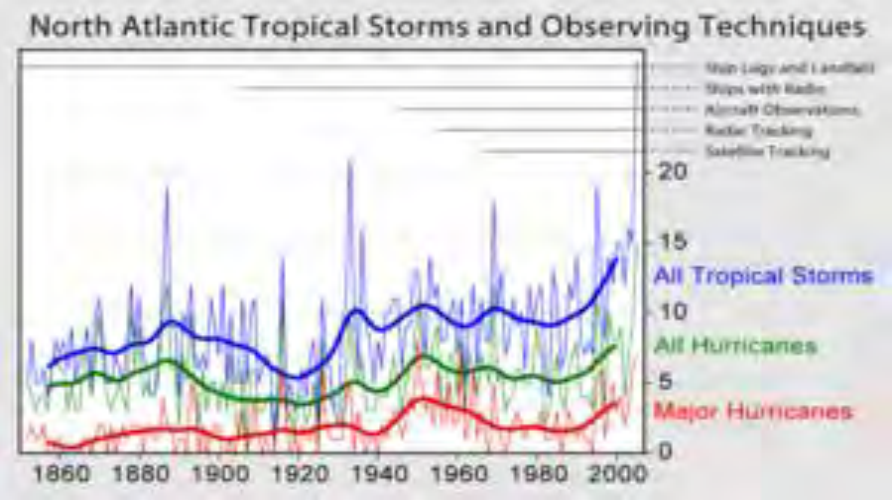
If the Earth gets hotter :

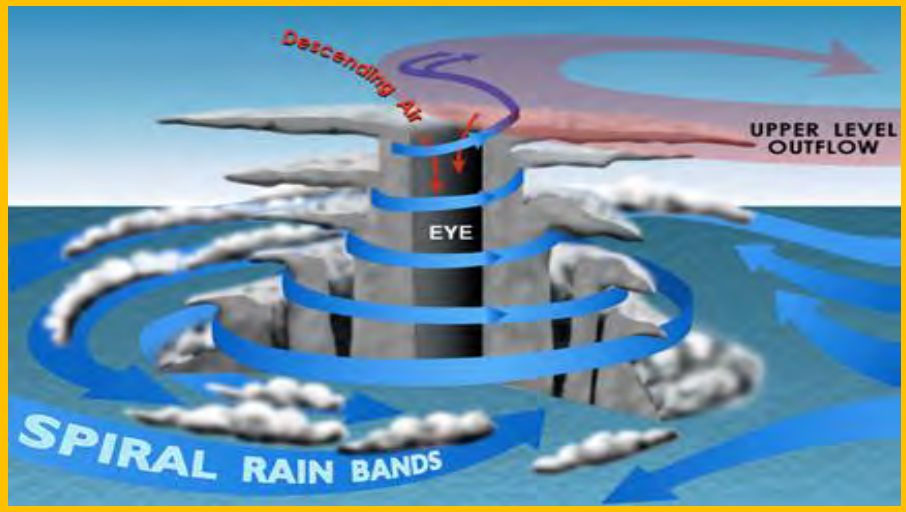
Lakes and rivers will dry up.

Less water will be available for drinking, showers and swimming pools.

If the Earth gets hotter :

There will be more hurricanes, tornadoes and other storms, because of the changes in heat and water evaporation.





If the Earth gets hotter :

There will be major landslides and ground movements everywhere

If the Earth gets hotter :

Some plants and animals will die or become extinct because of the heat and because of the pollution = 40 to 70 % of the species are in danger.

Many plants and animals are migrating to higher elevations or toward higher latitudes. Some animals will have difficulty moving to or adapting to new habitats.

EXTINCTION-MAJOR CAUSES

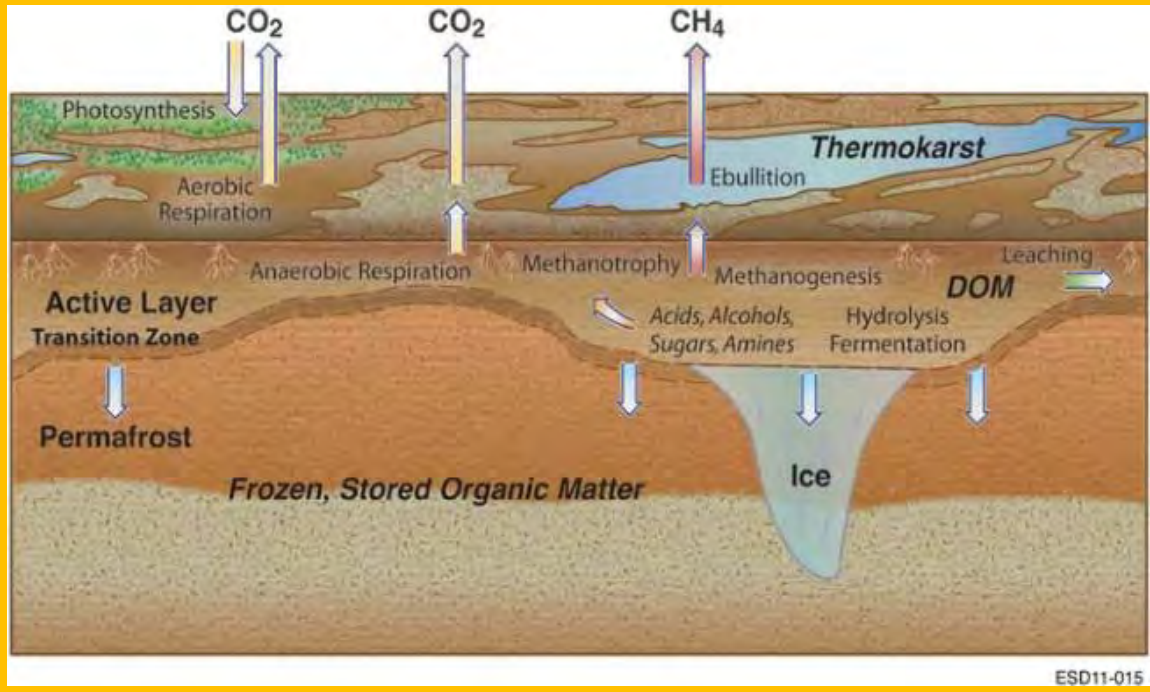
- Deforestation/habitat loss
- Hunting/poaching
- Over exploitation
- Introduction of exotic species
- Global warming
- Predation,diseases,competition,pollution

If the Earth gets hotter :

There will be more carbon dioxide in the air = the atmosphere will be more polluted

If the Earth gets hotter

Methane, a greenhouse gas, will be released



If the Earth gets hotter

Some populations will be at greater risk. People who live in coastal regions, in countries which are getting too dry where they suffer from hunger, or in countries which are too cold will migrate to other countries. This may cause major crisis and conflicts.

If the Earth gets hotter :

1- Many infectious diseases will migrate (some insects will settle in different countries).

2- There will be more allergies in temperate areas (pollens, …).

If deforestation continues (120.000 km2 lost each year):

1- The temperature will rise because trees cool the atmosphere and store greenhouse gases (CO2)

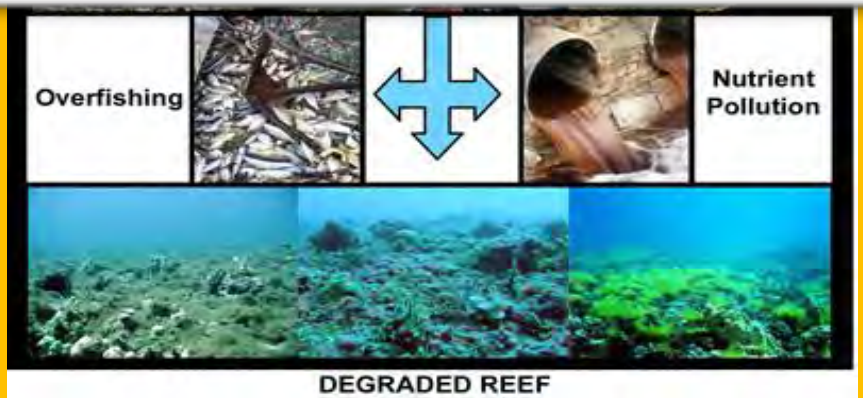
2- Soil erosion will accelerate and there will be major landslides and floodings.

3- Many animals, insects will lose their habitat = loss of biodiversity

4- Many people depend on forests for their food, fuel and livelihoods = they will lose what they have.

If the air is more polluted

Oceans will absorb extra carbon dioxide in the atmosphere. They will become more acidic. Corals and shells will suffer and many will die.



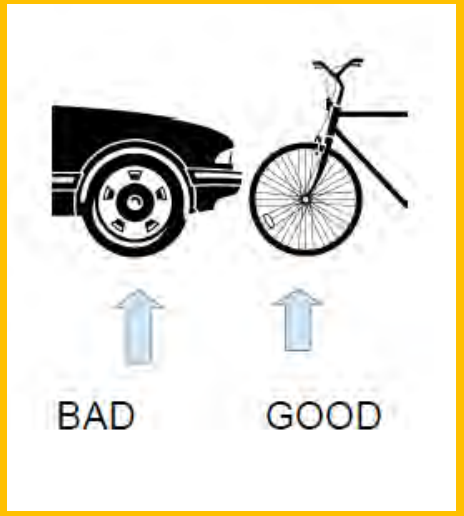
CLIMATE CHANGE AND YOU


WHERE DO WE GO
THERE IS NO PLANET B
FROM HERE?

Everything can change if we change our habits now.

Yet, it will take a long time to see the effects (between 50 and 100 years).

You can walk or cycle to school
You can go to school by bus.



If your parents drive you to school, you can take your classmates along for the ride = this is carpooling.

A Rafale jet needs between 100 and 350 liters of kerozene per minute

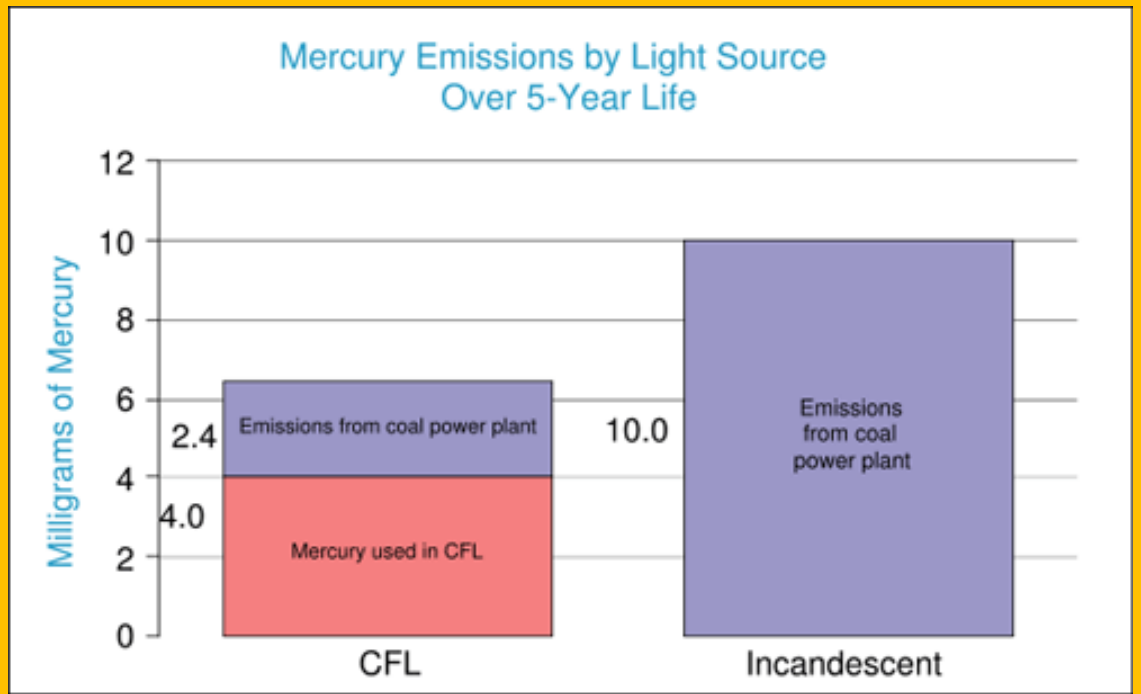
You can use less energy at home and at school =>

You can switch off the lights when you leave a room

At home, you mustn't leave the TV or video on standby.

You can make some simple substitutions

Replace just 1 incandescent light bulb with 1 compact florescent bulb = it saves about 75 kilos of carbon dioxide per year



Only fill the kettle up with the amount of water you need to boil.

Use the washing machine at 40 degrees, this helps save energy

Fresh vegetables cook more quickly and are usually more nutritious than frozen or canned foods. Canned and frozen vegetables are often over-processed, contain additives, contribute to air pollution (transport and packaging) and add to our waste problem

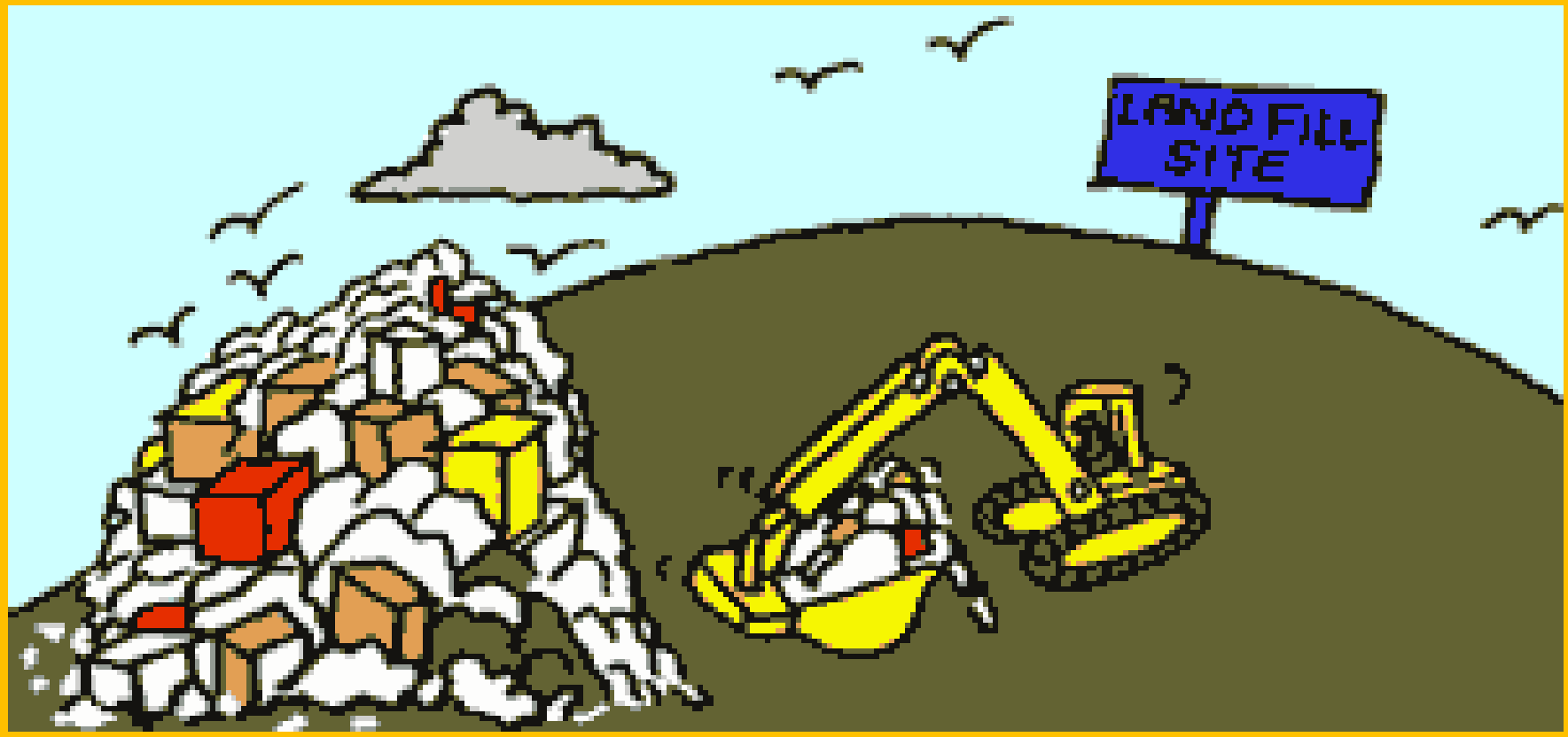
=> You can buy local food and organic food instead of canned or frozen food.

You can turn down the thermostat

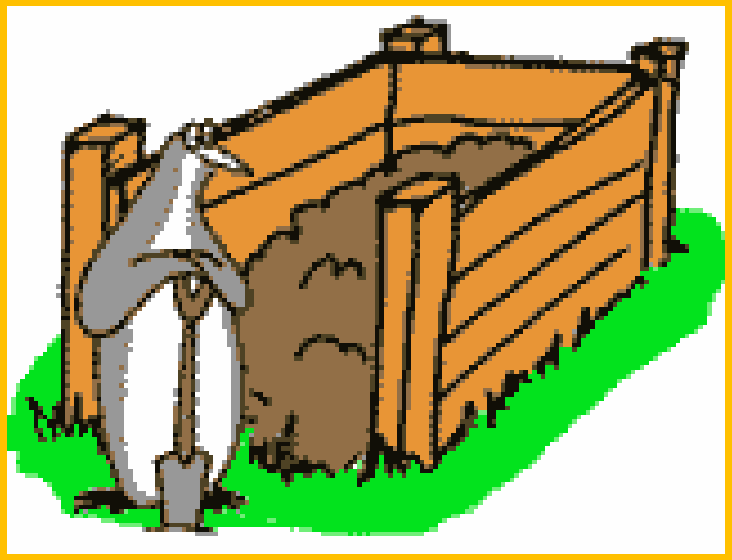
When it's hot, dress cool
When it's cool, dress hot!

REUSE
REDUCE
RECYCLE

Rubbish produce methane, a greenhouse gas = try to reduce your garbage production



To reduce rubbish, you can recycle and make compost



Re-use plastic shopping bags, don't get new ones

PLASTIC BAGS

How convenience is killing our planet

THE PROBLEM

1 Trillion

Number of plastic bags produced worldwide in 1 year.

Time taken for 1 plastic bag to fully degrade.

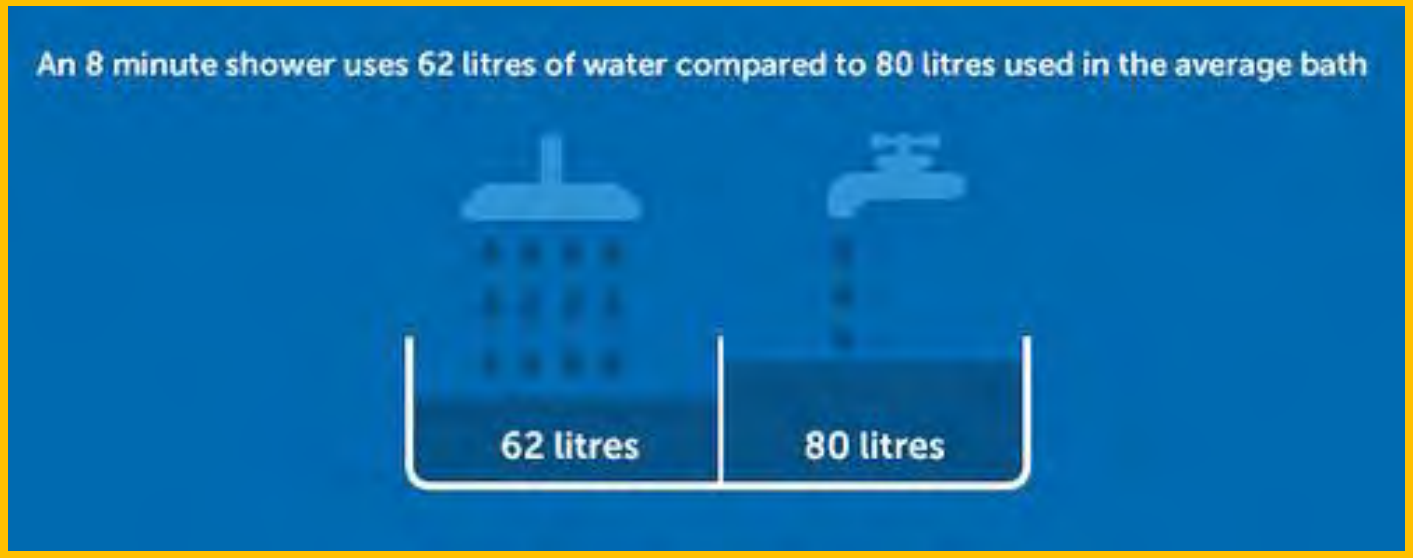
Net weight of plastic bags discarded in a year.

Try and buy products that don't use much packaging.

WATER
USE IT
WISELY.

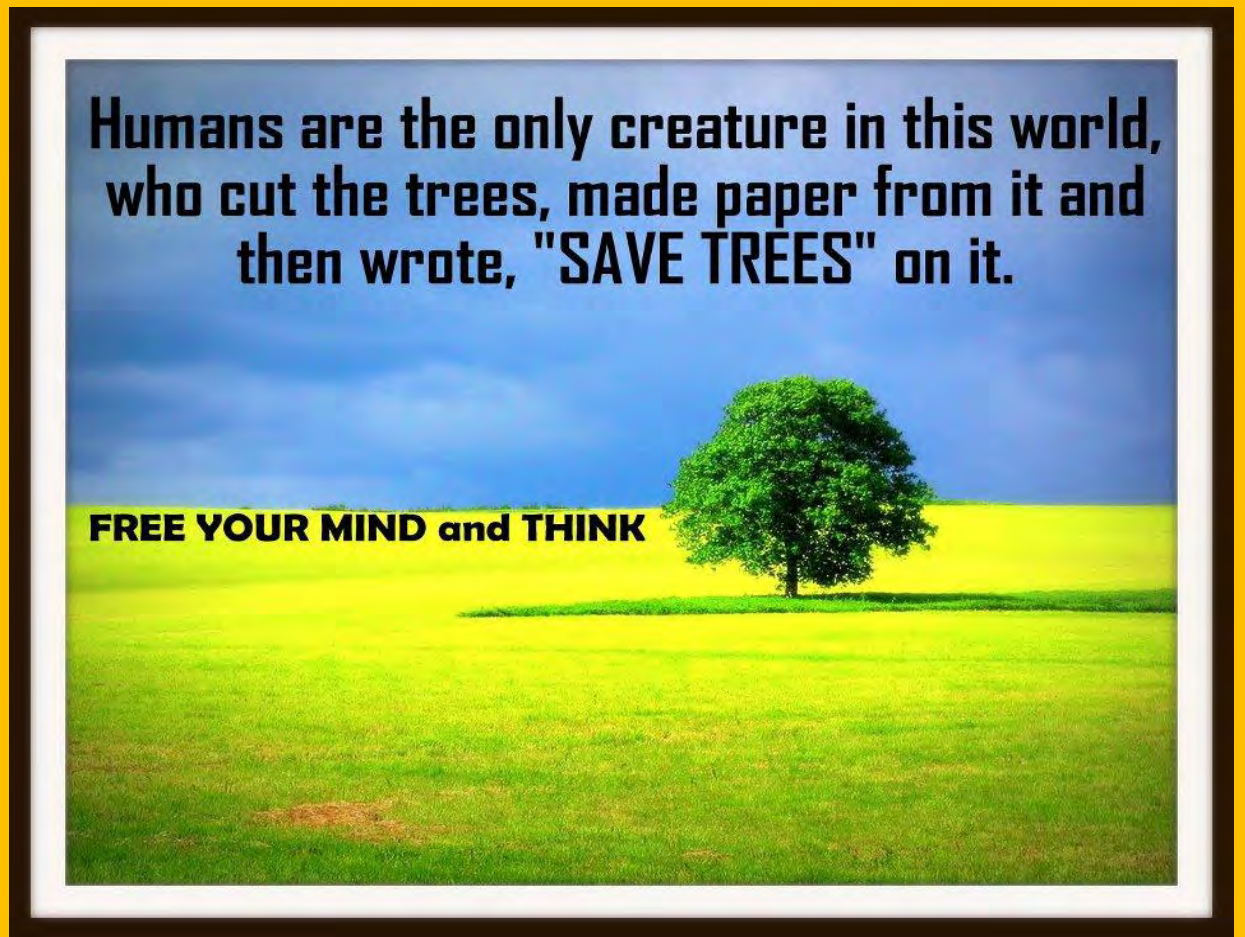
You can save water

Take a shower instead of a bath



Be careful when you brush tour teeth !!

Put a brick in a plastic bag into your toilet cistern, then the toilet will use less water each time you flush.



Use paper on both sides.

To save trees, you can use handkerchiefs instead of tissues and cloth towels instead of paper towels

You can donate unwanted gifts, appliances and clothes to a charity shop.

Small changes really add up

Replace your old refrigerator with a new Energy Star:
Annual savings:
€ 87; 350 kilos CO_2

Set your thermostat down a few degrees in the winter
Annual savings:
€125; 700 kilos CO_2

Drive JUST 10 fewer kilometres per week
Annual savings:
$78; 260 kilos CO_2

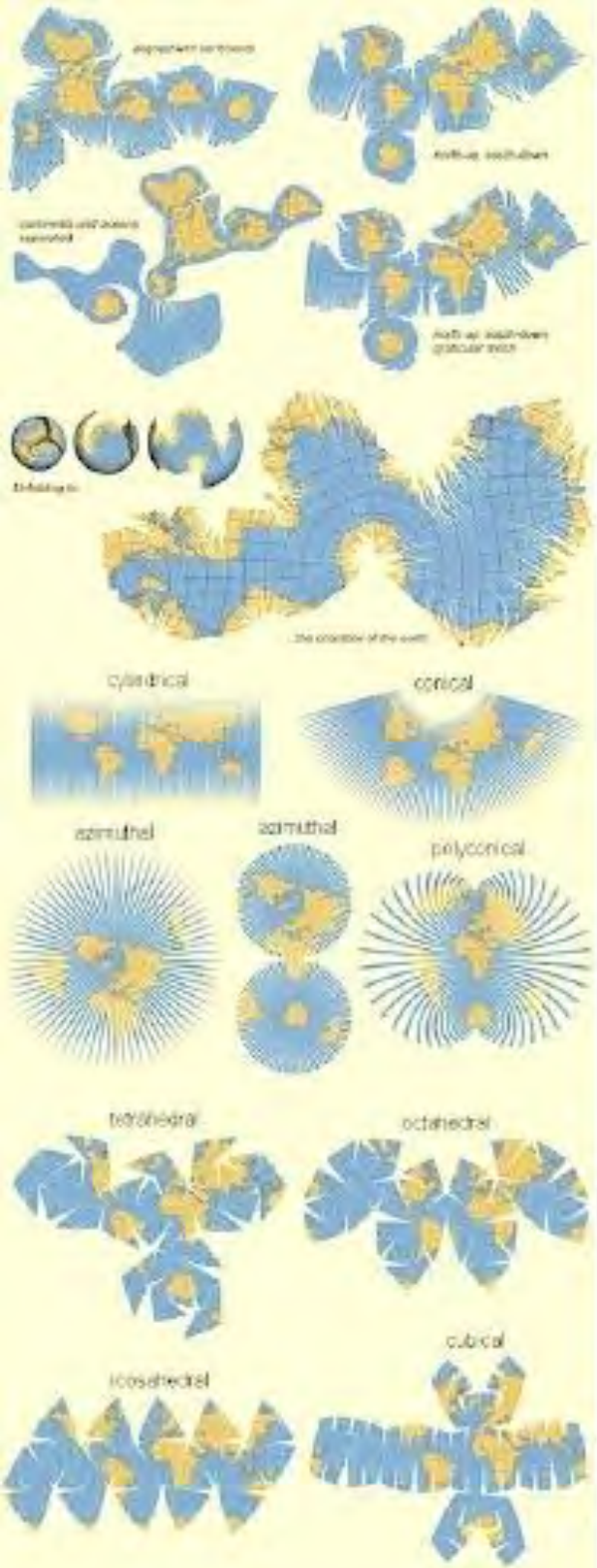
Wash clothes in cold water only
Annual savings:
€ 68 ; 250 kilos CO_2

Reduce your garbage by 10% through greater recycling or reduced packaging
Annual savings:
600 kilos CO_2

Insulate your doors and windows
Annual savings:
€ 77; 325 kilos CO_2

Our take-home message...

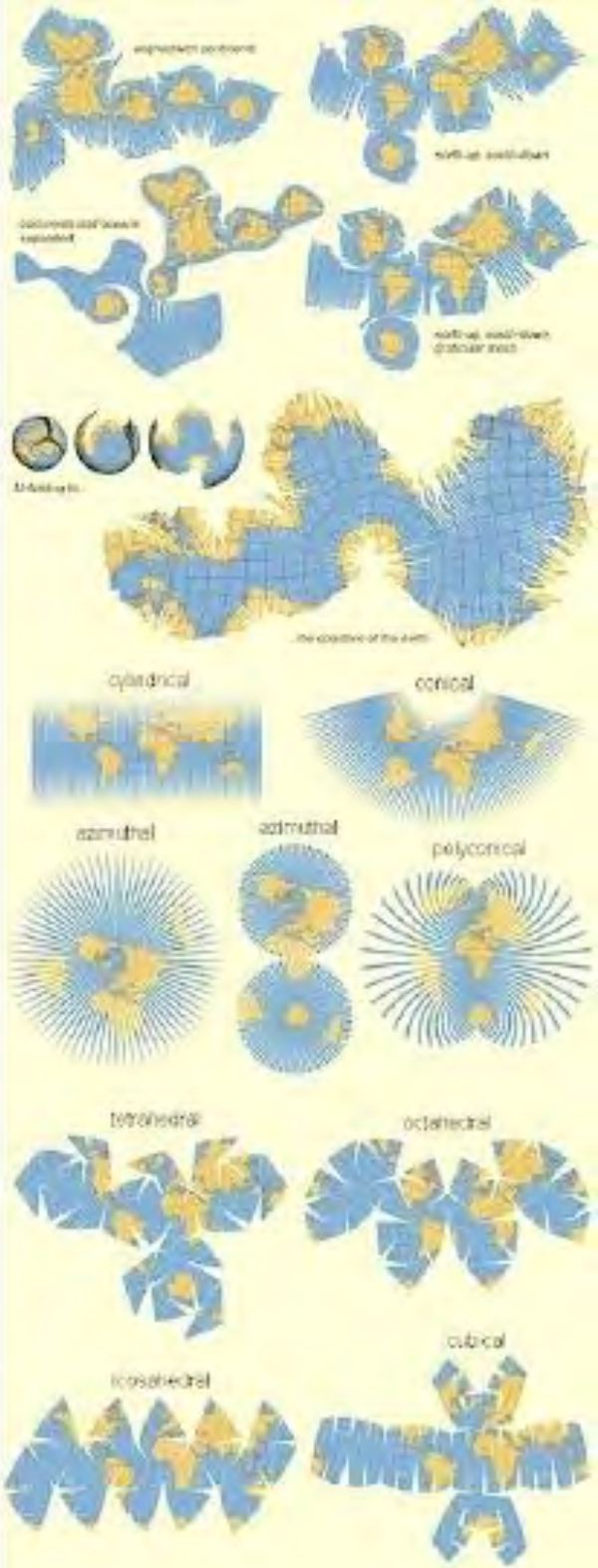
Each of us must take steps to protect our Earth's climate.



Let's ~~Shape~~ Save the

WORLD

TOGETHER



What should governments do ?

They should use :
1- solar energy
2- wind power
3- wave power
4- water power
5- methane produced on landfilled sites

What could governments do ?

They could help car makers develop cars that use less gasoline or run on electricity or other alternative fuels.

They could promote public transport to reduce pollution and traffic-jams.

What could your school do ?

Insulate doors and windows

Replace old doors and windows

What could your school do ?

Use presence detection systems to save energy

Replace the old flush systems or put a brick in old ones

What could your school do ?

Promote recycling

Promote car-pooling

What could your school do ?

Replace incandescent light bulbs with compact florescent bulbs

Reduce copies and promote the use of computers and of emails

EGO

ECO

I don't understand why when we destroy something created by man we call it *vandalism*, but when we destroy something created by nature we call it *progress*. –Ed Begley Jr.

We are destroying a wonderful planet. And the choice to stop this madness is in our hands. So little by little, we have to start to create a better world for us and for the coming generations.