What is Global Warming?

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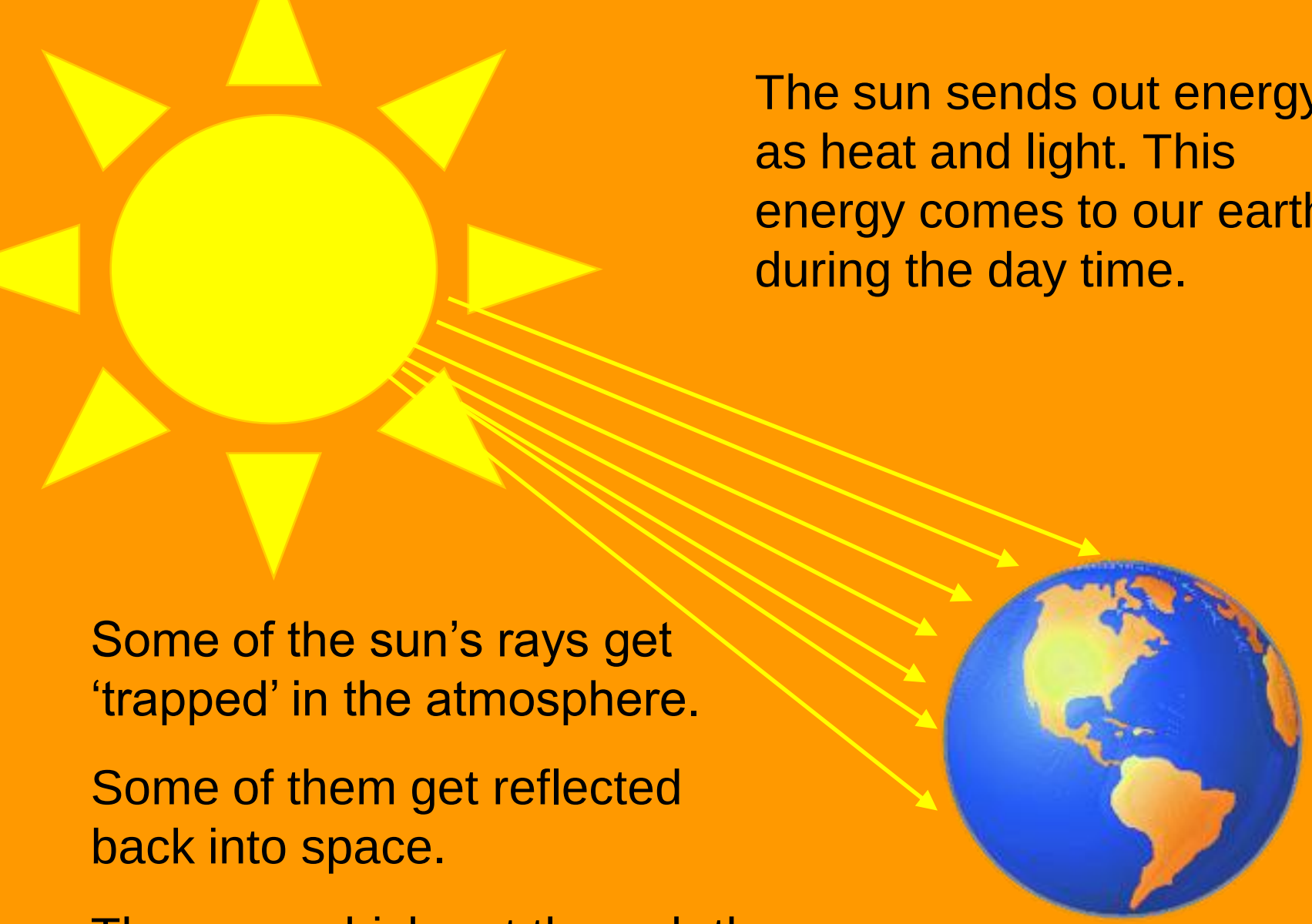
Lesson Objectives:

- To understand what is meant by ‘global warming’
- To know what we think causes global warming.
- To begin to understand how our activities can cause climate change.

The sun sends out energy as heat and light. This energy comes to our earth during the day time.

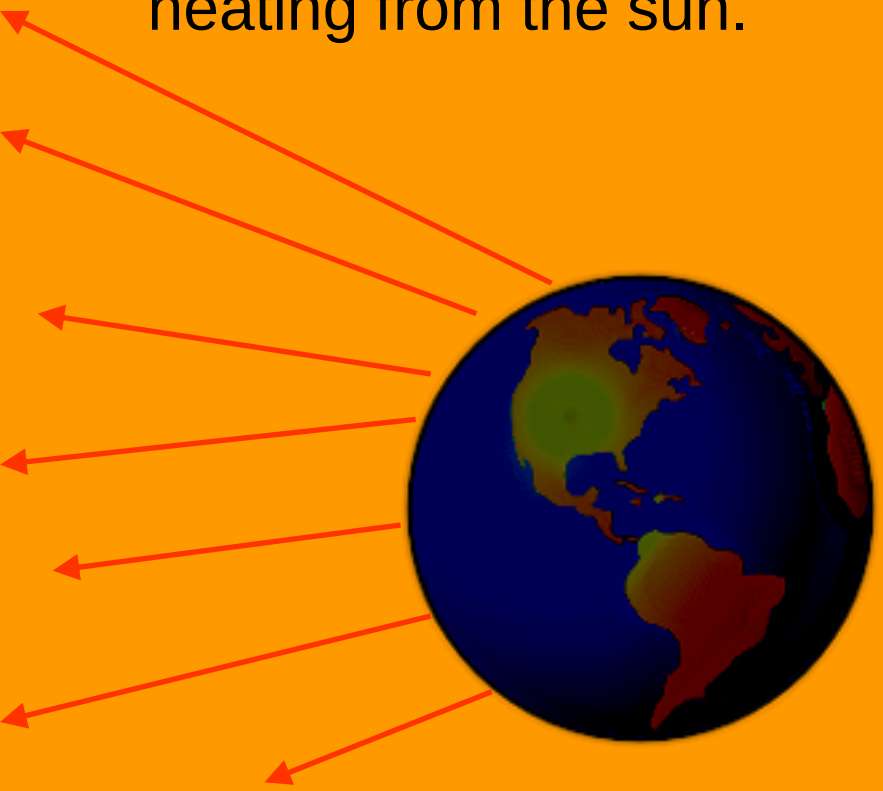


Some of the sun's rays get 'trapped' in the atmosphere.

Some of them get reflected back into space.

The ones which get through the atmosphere warm the earth up.

All the time, the earth radiates heat into space, which cools it down. We only really notice this at night, when there is no heating from the sun.



Some of the heat going out is trapped by the atmosphere. This is what makes our planet warm enough to live on.

But if too much heat is trapped, our planet will warm up and the climate will change.

What is the atmosphere and why does it trap heat?

The atmosphere is the air around the surface of the earth. It is made from a mixture of gases. We need it for animals and plants to survive.

Some of the gases act like a blanket, trapping heat. These gases are called **‘greenhouse gases’**.

This is known as the ‘**Natural Greenhouse Effect’.** Without it, the earth would be much colder.

(the atmosphere is really much thinner than it looks above)

So why is global warming happening?

Some things that people do are increasing the amounts of the greenhouse gases in the atmosphere, so more heat is trapped.

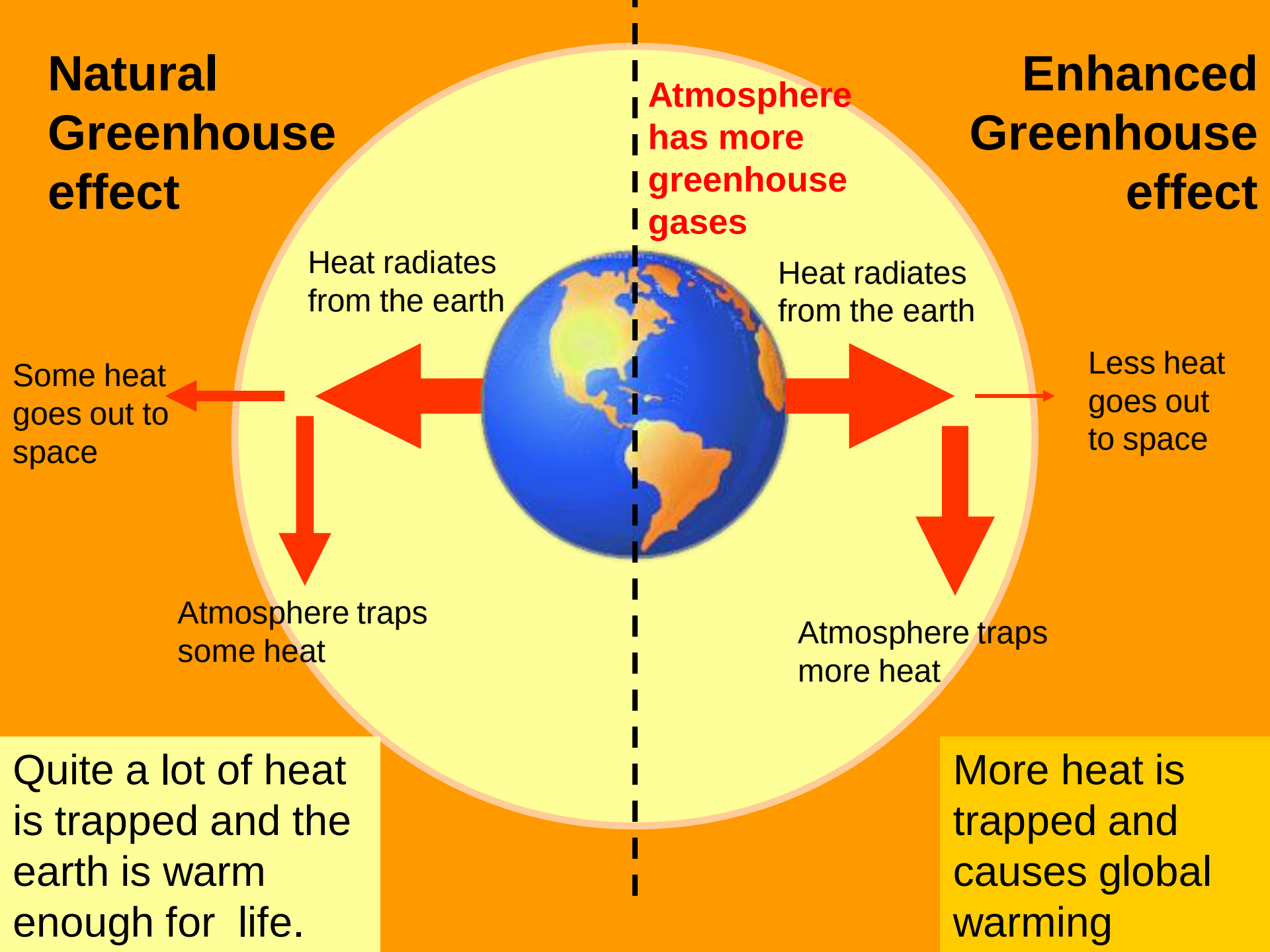
The heating of the earth through human activities is called the **‘Enhanced Greenhouse Effect’** and this is causing the earth to heat up, or **global warming.**

Global warming doesn’t just mean that the earth gets hotter, it means that the whole **climate is changing.**

(the atmosphere is really much thinner than it looks above)

Natural Greenhouse effect

Enhanced Greenhouse effect



Quite a lot of heat is trapped and the earth is warm enough for life.

More heat is trapped and causes global warming

Which gases in the atmosphere trap heat?

The atmosphere is made of 78% Nitrogen and 21% Oxygen. But these gases **don't** trap heat and cause global warming or climate change.

What % of the atmosphere is left?

The gases which trap heat make up less than 1% of the atmosphere! They are called the 'greenhouse gases'.

The main greenhouse gases are:

Carbon dioxide

Methane

Nitrous oxide

Ozone

Water vapour

Halocarbons

Human activity increases the amount of these gases in the atmosphere

How do humans increase carbon dioxide levels in the atmosphere?

Burning **fossil fuels** releases the carbon dioxide stored millions of years ago. Most of the increased carbon dioxide comes from fossil fuels

Deforestation releases the carbon stored in trees. Less trees also means less **carbon dioxide** can be removed from the atmosphere.

How do humans increase methane levels in the atmosphere?

Methane is produced when bacteria rot **organic matter**

Increased rice growing

Increased livestock farming

Increased rubbish in landfill

Methane is also released when **fossil fuels are extracted**

The amount of **methane** in the atmosphere has increased by two and a half times since the Industrial Revolution.

We humans are thought to be the main cause of global warming and climate change……..

but we still have the chance to do something about it.