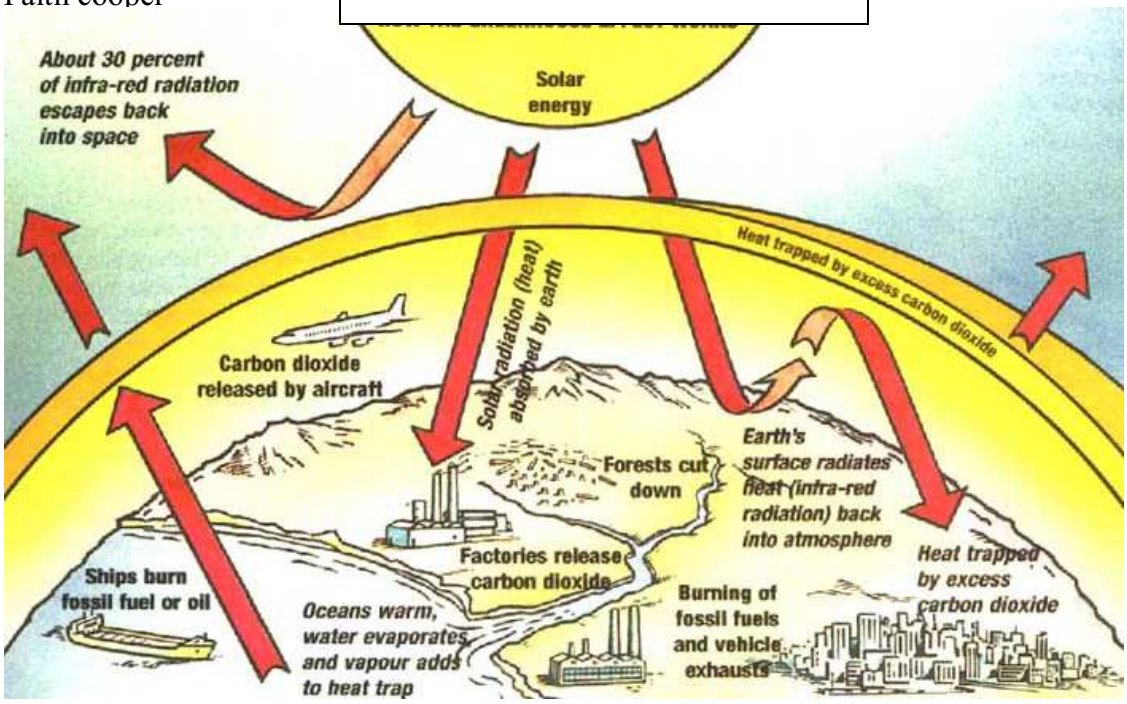
Faith cooper

Diagram A. How the greenhouse effect works?



Are white christmas' a thing of the past?

Do you remember when a white Christmas was the norm?

Due to an increase in the Earth's temperature; global warming, there have been noticeable changes in climate which also come with detrimental effects on the environment, animals and ourselves.
For example, our warmer earth leads to changes in rainfall patterns, a rise in sea levels, a wide range of impact on plants and wildlife, as well as us humans.

Although the green house effect is needed and is a good natural process that the earth needs; too much of this is bad for the Earth,
Global Warming is caused by the entrapment of heat through "greenhouse gases". Greenhouse gases are gases that keep heat that enters the atmospheres from returning therefore creating a build-up of heat. The sun can penetrate theses gases, but unfortunately cannot escape them so easily. The sun's rays initially are absorbed by atmosphere molecules, and then are detained by the gases as shown in diagram A. The gases produced by the many examples causing a blanket effect around the Earth causing the heat to be trapped by excess carbon. Without these gases, the world would be seventy-two degrees Fahrenheit cooler, too cold to support life. In the long run, if the amount of greenhouse gases in the atmosphere increases, the earth will eventually become too hot for habitation.

A lot of this is caused by human activity, which can be reduced. Human activity such as noise and sound pollution, the intense fumes that come from car exhausts, factories, also shown in diagram A and littering. The diagram explains:
The green house effect is a balance of incoming and outgoing infrared radiation. Meaning the Earth's temperature should stay constant, but within recent times human increase has lead to a significant increase In the amount of gases in the atmosphere. The green house effect is the rise in temperature that the Earth experiences, because of the green house gases that are being released into the atmosphere. Some of them being:

- ***Methane, (13%)***
- ***Nitrous Oxide, (15%)***
- ***Fluorocarbone, (5%)***
- ***Water vapour.***

These trap energy from the sun, creating a blanket around the Earth, which prevents heat escaping back into space. Without these gases the Earth would be much colder,(33 degrees Celsius) which would make it practically impossible for humans to survive, but if the blanket of greenhouse gases became thicker it would make the Earth much warmer than normal, potentially causing a lot of serious problems not just for humans but nature and animals too.

Burning coal and oil, which is needed everyday to power items, also produces these greenhouse gases.
Different power stations and deforestation release carbon dioxide into the atmosphere, and Rice fields and dumps release methane. Nitrous oxide, released by cars, which also helps to put these gases into our Earth's atmosphere. So in theory man could be to blame for global warming.

There is evidence that the greenhouse effect is happening in the UK as recorded temperatures show an on-going increase. Which means by 2020, temperatures for London and the rest of the UK could rise to 30-32 degrees Celsius, as the blanket of gasses around the Earth has become much thicker, and the co2 levels have escalated. Meaning more heat has been trapped close to the Earth's surface, trapping the infrared radiation. Below is a graph showing the co2 emissions increasing.
This chart (Diagram B) shows how the co2 emissions have steadily increased in forty-six years. With figures increasing from 312ppm too 381ppm. An alarming increase of almost 70 ppm.
Dr. Mike Hulme says.
" The amount of carbon dioxide in the atmosphere has risen by approximately 30-40%" Also being evidence towards global warming. Not only the carbon dioxide levels have increased but also the other gases that contribute to the greenhouse effect, in the atmosphere have risen and are continuing to rise as human activity continues.
The burning of coal, oil, and natural gas, as well as deforestation and various agricultural and industrial practices, are altering the composition of the atmosphere and contributing to climate change. These human activities have led to increased atmospheric concentrations of a number of greenhouse gases, including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and ozone in the lower part of the atmosphere. The importance of these gases is shown in Diagram C. Importance of the various greenhouse gases and small particles currently in the atmosphere. Bars extending above the horizontal line indicate a warming effect. Bars extending below the horizontal line indicate a cooling effect. The impacts of tropospheric ozone, stratospheric ozone, and particles are quite uncertain. The red bar indicates the range of possible effects for these gases; i.e., the effect is in the range of one end of the red bar to the other.

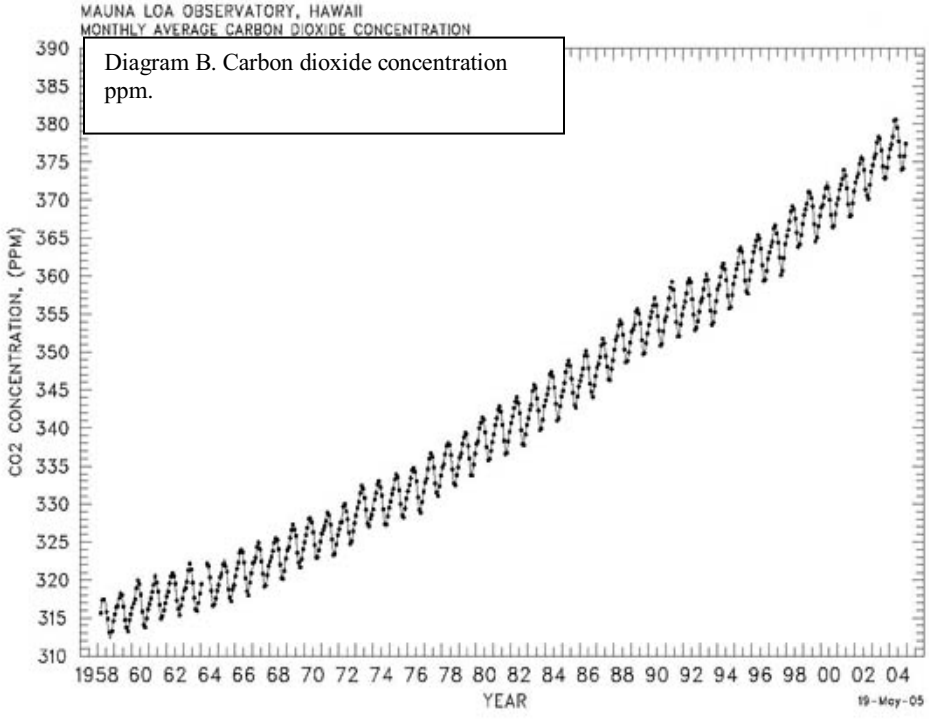


Diagram B. Carbon dioxide concentration ppm.

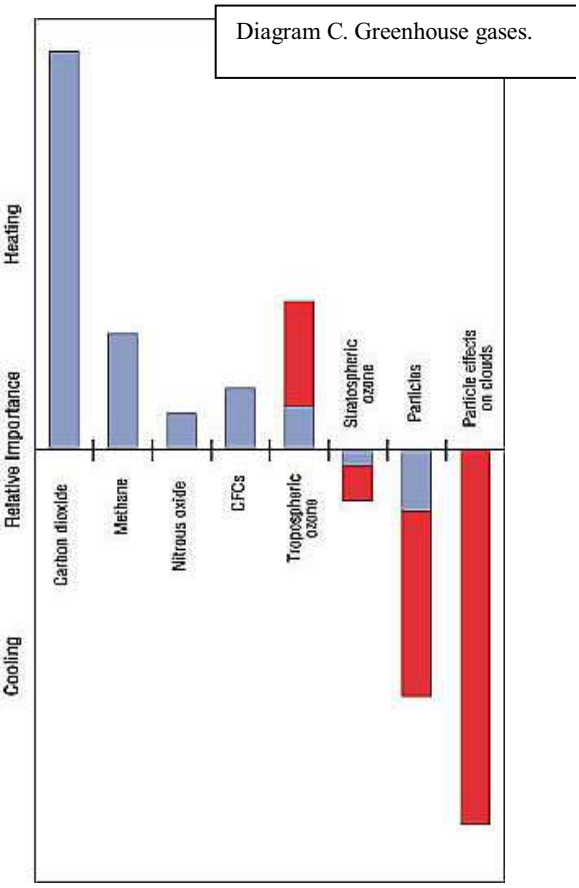


Diagram C. Greenhouse gases.

Carbon dioxide is produced when coal, oil, and natural gas (fossil fuels) are burned to produce energy used for transportation, manufacturing, heating, cooling, electricity generation, and other applications. The use of fossil fuel currently accounts for 80

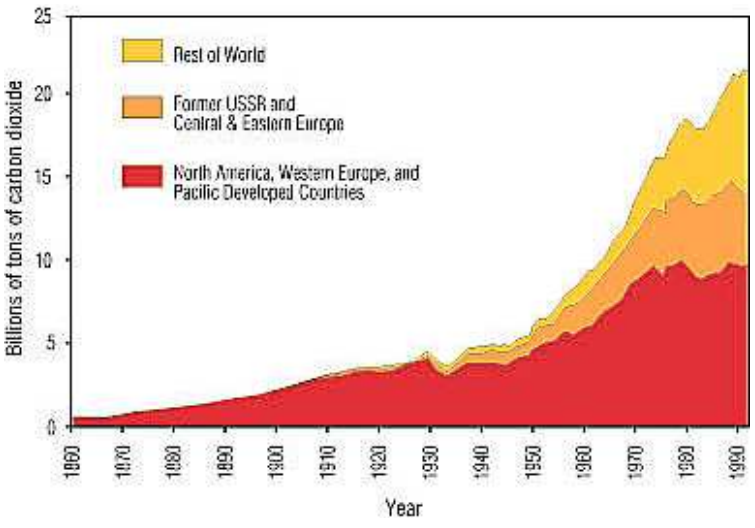
to 85% of the carbon dioxide being added to the atmosphere.

Land use changes, e.g., clearing land for logging, ranching, and agriculture, also lead to carbon dioxide emissions. Vegetation contains carbon that is released as carbon dioxide when the vegetation burns.

Normally, lost vegetation would be replaced by re-growth with little carbon dioxide. However, over the past several hundred years, deforestation and other land use changes in many countries have contributed substantially to atmospheric carbon dioxide increases. Although deforestation is still occurring in some parts of the northern hemisphere, on the whole, re-growth of vegetation in the north appears to be taking some carbon dioxide out of the atmosphere. Most of the carbon dioxide emissions from deforestation are currently occurring in tropical regions.

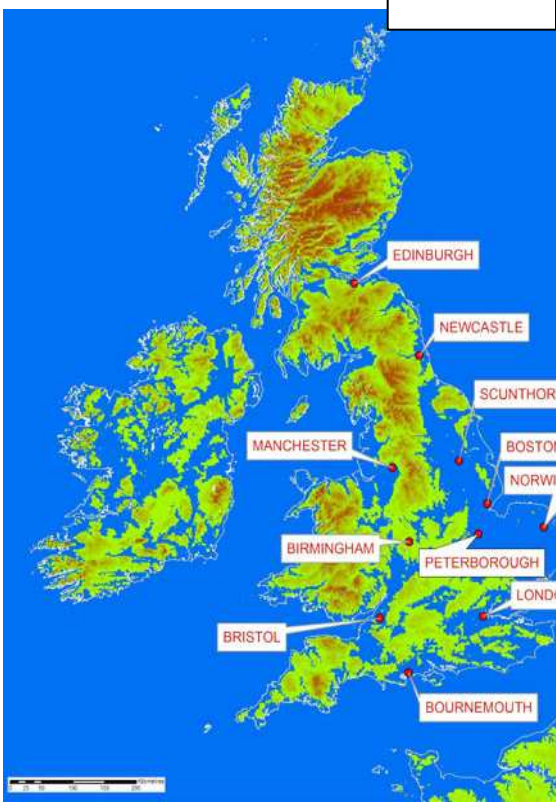
Land use changes are responsible for 15 to 20% of current carbon dioxide emissions.
This means with the increase in temperature our winters are no longer going to be as cold as in the past. Not cold enough for a ' White Christmas' at least.
These temperature differences will have some effects; in particular I am studying the effects in the UK. For example sea levels have risen as the sea is now warmer, everywhere. A futuristic version of the Uk , shown on Diagram D, showing how much land is lost underwater.
Dr. Dave Philemon says.
"For every 30 centimetres of sea level rise, 30 metres of beach are lost." This could potentially mean in years to come the UK could be underwater. Us finding large parts of our low-lying coastal areas being inundated with water, flooded. Floods will become more frequent in the UK, which could also cause a lot of financial difficulties.

Diagram D. Carbon dioxide emissions from human activity.



Carbon dioxide emissions from the burning of coal, oil, and natural gas are shown for the period 1860 to 1992 for three groups of countries.

Diagram E.



A map of the UK after a sea level rise of 84 metres - 275 feet. This is what would be left of the UK if all the world's ice melted due to global warming.

This image concludes that global warming and the greenhouse effect are gradually getting worse and in years to come the effects and controversy it will bring could be drastic as there is too much evidence of global warming and the greenhouse effect occurring in the UK.
Man needs to start attempting to become eco-friendly and reduce these greenhouse emissions that are being released into our atmosphere so carefully before what is predicted for the future of the UK occurs before we know it.
The world's temperatures are expected to increase by 6.4 degrees Celsius this century.

Is Global Warming a good thing or a bad thing to the UK? - Negative effects.

Although people may think that global warming is a positive thing all round, in theory thinking hotter weather as well as snowy white winters. Or how about a sunny winter?

Image#1. a summery winters day?

Reduction in heating costs and more tourists: resulting in more money for the UK in general. Better lifestyles as outdoor living may be more favoured as green and open spaces will be used more intensively. You might think. What could go wrong?
By researching this, in actual fact global warming has many more negative effects, that haven't yet been taken into account by a lot of the population, although defensively some are not obvious.

London may be particularly sensitive to increases in temperature in the future because of the urban heat island effect; this will have detrimental effects on air quality, summer electricity demand, and comfort in the cities buildings and transport networks.

Higher temperatures-
General public would defiantly say this was an advantage to global warming hitting the UK, as English weather is typically unpredictable. But there is likely to be an increase in the demand for cooling; air conditioners and electric fans, which at first is good profit for the sellers of the items but in the long run this means higher electricity bills in the long hot summers to come.

Flooding-
This could also become an issue weather it is hot or not.
The hot weather brings forward the risks of potential flooding for many parts of London. London is exposed to far greater potential damage from flooding than any other urban area in the UK; this is due to the value of resources and the fact that a high proportion of London lies within the floodplain of the river Thames and its tributaries. London will experience even more of a water deficit. Areas prone to flooding already, such as Boscastle. Will suffer severely as the extreme weather tumbles down the town.

Hotter weather? -
With the climate changing and the temperatures increasing you would assume this means less bitter rainy days indoors. Your wrong!
There will be more frequent intense winter rainfalls, which will increase the likelihood of ***flooding,*** as I stated before, as well as flash floods.
With this abnormal water, the ***sea levels*** will also increase which will require more closures of the Thames barrier. This freak weather for the UK will bring a significant increase in storms and the pressure within them.

Yet another negative fact about the increased heat; water resources, there will be a bigger ***water demand*** whilst in these dry hot summers, less summer rains will reduce soil moisture and therefore will have the chance to replenish groundwater supplies.

Health-
This is a very important factor, which could be disrupted. As higher levels of mortality are expected, related to summer heat and stress. Furthermore, air quality poses health problems too, mainly for asthmatics as well as causing damage to plants and buildings too.

Over the long term there is likely to be an increase in the spread of disease such as Malaria, which could reach parts of the UK. Urban air pollution is likely to get worse, and its associated ill-health effects worsened.

Heat-
This could cause heat-introduced deaths; these are also likely to increase, especially among the elderly and very young.
Adverse weather conditions such as storms and floods, will exact their own costs, both human and economic:

lives will be lost and insurance claims will rise.

This added heat would also be catastrophic to the ***ecosystems biodiversity.*** The hotter weather will attract foreign pests, exotic species as well as the spread of disease. In residential areas, cockroaches would become more common along with fleas and mites.
Farmers fear the destructive Colorado beetle cold get more of a foothold if the weather warms.

Increased ***summer drought*** Will cause stress to wetlands, crops and beach woodlands, habitats of many animals will be interrupted. A dry crop field shown in the image below. (image#2)

Image#2. Very dry crop field.

This also the earlier springs, which means longer frost-free seasons, less snowfall could effect the annual egg-laying season. First flowering and health related plants.

The heat-
This will also affect public transport, in particular London's public transport.

Image#3. Overcrowded underground.

Services are vulnerable to disruption from flooding and extreme weather. These conditions are expected to increase in frequency as well as intensity. Increased temperatures to the London underground, worsened by the ***urban heat island effect***, will lead to passenger discomfort, as there are so many people. Shown in image#3. Possibly many health related issues occurring underground. It will become unbearably hot underground and it will increase the risk of fainting or worse.
With these hotter conditions it is likely that some transport elements will be damaged. For example: buckled rails and rutted roads. Which will come with repair costs.

Finance-
This will be affected as well as everything else; the London insurance industry could be exposed to a higher increase volume of claims from this intense weather, storms and floods.
London is one of the highest economic and financially centres in the world.
A lower income in households is also another negative effect. Households may find it difficult to access sufficient insurance cover from floods.

Almost certainly, the hotter climate will bring a lot more tourism to the areas of the UK. Which does actually sound like a positive point. But when looked into; higher temperatures could lead to residents migrating London for a more comfortable environment on holidays and breaks.
Tourists bring leisure and recreational facilities and tourist attractions will need to have the ability to cope with the climate change by providing a pleasant environment for the visitors.

Finally, ***Forestry-***
Forestry in the UK and agricultural practices will need to adapt; milder weather bill benefit some crops but at the same expense of others. Forestry will be affected, for example, the native broadleaf trees could suffer as a result of droughts whereas conifer plantations are likely to become more productive. More conifers will increase the problems associated with acid rain and simultaneously, have serious implications for the ecosystems of our woodlands.

My research also suggests that the varieties of plants grown in the UK will also be affected by the global warming.
As the weather would become too hot for certain fruit and vegetables to be grown here. Wheat and barley would have to be grown further north as it would be too hot in the south of the UK. So, loss of crops, which could also put some farmers out of work. But in turn new crops may be able to grow in these new conditions. Like maize peaches and nectarines.

Is Global Warming a good thing or a bad thing to the UK? - Positive effects.

As well as the many negative effects, which come hand in hand with global warming which I have previously discussed, there are also many positive aspects I can discuss about global warming and its effects on the UK ,.

The first effect of global warming, enjoyed widely in the UK, The higher temperatures. We all enjoy it when the weathers good. Imagine that constantly!
Against the demand for electrical cooling products there will be a reduction in the winter heating products, providing a financial advantage for bill payers in households.

Following this, global warming is also said to be an improvement in the health department. These higher temperatures, winter too. Is likely to bring a reduction to classic winter colds and the spread of virus' will decrease.

Furthermore, other advantages such as tourism growing in the UK, and healthier lifestyles are being built here. Increased temperatures will attract more tourism and visitors to London areas, which benefits the tourist sector.

Therefore there would then have to be an increase in recreational and leisure facilities. As well as tourist attractions available to the general public, bringing healthier lifestyles, due to more green and open areas being used more regularly and outdoor living may be favoured if the weather is nice and hot.
With the extra tourism it will also make it a lot easier to get a job. As it may offer new opportunities to the financial sector.

Town planners are trying to counteract the negative effects caused by global warming in the UK urban areas by building sustainable houses, which are good for the environment. By 2080 homes will have to be able to shut out the heat as well as being able to save water and use minimal amounts of electricity.
For example, on some buildings now they have planted sedum plant on the roofs. Which is left growing there on the roofs of buildings, the principal being that in theory this should amount up to preserving water. In the water cycle the sedum intercepts the rainfall and then the water is used to flush toilets ect.

Saving energy and water is becoming a vital thing to do now in the UK. This is why the hybrid car is being advertised across the UK. It is a car that doesn't need to run on petrol. Instead it runs on hydrogen. Could this be the fuel of the future?

Another point being, the crops grown in the UK. With these new hotter temperatures, the length of the growing season will increase, trees such as Scots pine will grow higher up hillsides and more deciduous trees will grow at lower levels. Mainly focused in Aberdeen.

The hot weather will increase, resulting in mote Mediterranean-like summers. Especially for the British, welsh and Irish coasts. Britain's, Brighton coast is a popular one.

Plants and cops need specific temperatures and weathers in order to grow. These hotter temperatures might show that some of the crops and plants that are well known to the UK will become unable to grown here anymore. Maize, vines, oranges, figs and peaches.
It's likely that some plants and crops will become virtually impossible to grow in these southern England conditions. Higher yields of potatoes, sugar, beat, and outdoor tomatoes. And the overall area, as well as yields of cereals will increase.

Farmers in southern England have taken advantage of the hotter summers and springs, and have started growing plants that are normally grown in much hotter climates. The temperature has to be above seven degrees Celsius for growing season to begin. Many farmers are hoping to grow the "forgotten fruit". British fruits such as quinces and mulberries.

Image#4. Kiwi growing in the UK, due to the hotter climate.

There has already been some success in growing these hotter climate fruits as southeastern Kent has managed to grow apricots, which have failed to grow in previous years. As well as the apricot fruit the kiwi fruit is being encouraged to grow across southern England, which currently grows in South America and Africa.

In turn of the fruit and plants we are gaining from this climate change there is also

fruits that will be lost, as the temperatures will get to high for certain plants to grow. The first example of this; we have ditched the marrow in favour of the sun-loving squash. These warmer conditions are also affecting traditional fruit trees such as apple, pear and plum.

Lastly, it is not just crops that will be affected, different species of animals too, from my research it shows that dramatic changes that will put wildlife along Britain's 9,040 miles of coastline. The arrival of Basking sharks in Britain's waters and also the little egret and Glanville fritillary butterfly are set to thrive as the climate becomes warmer in the UK. There are also species, which will be taken in turn of these new additions but not so much from the UK, likely to be the polar ice caps.