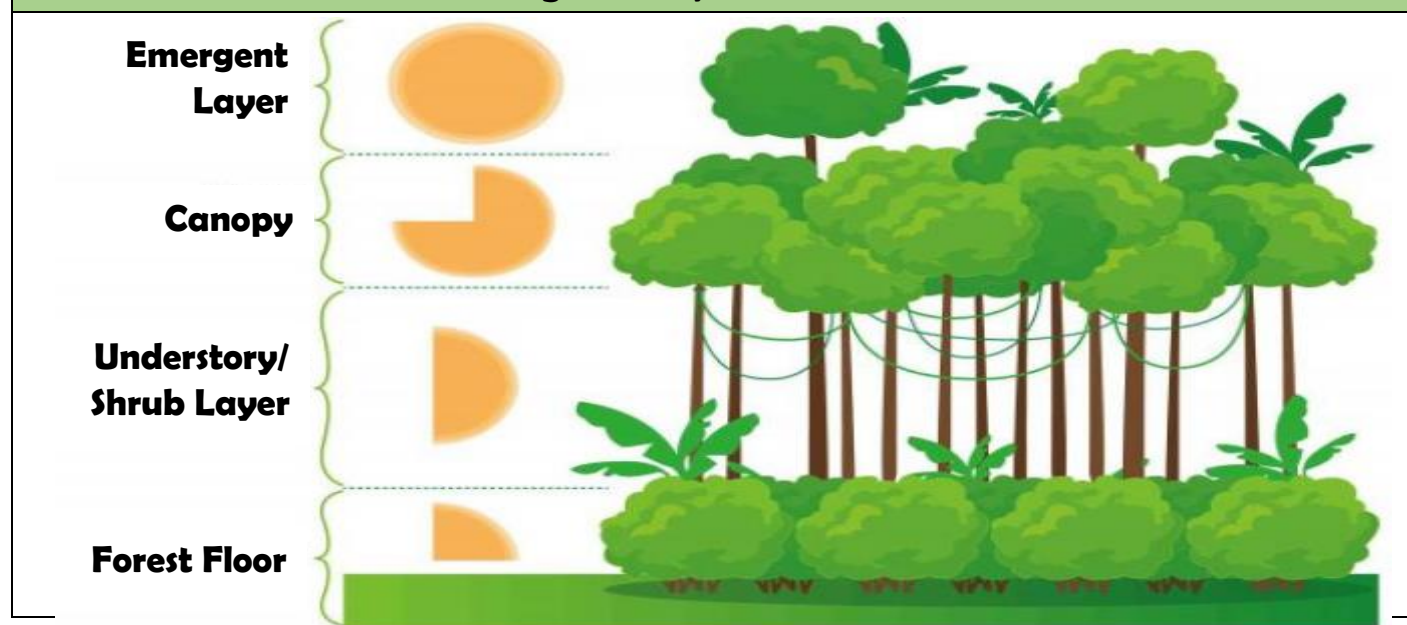

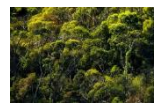




THE RAINFOREST KNOWLEDGE ORGANISER

Diagram – Layers of the Rainforest



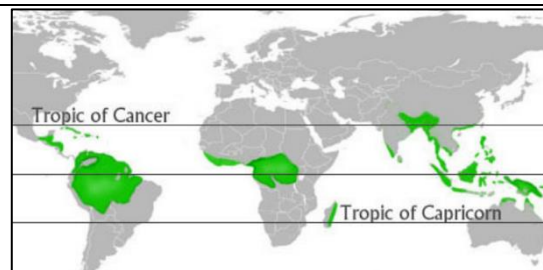
Layers of the Rainforest

 <p>Emergent Layer</p> <p>The emergent layer is the name given to the very tops of trees that grow above the canopy level. There is lots of sunshine and rainfall here, and only the strongest and tallest plants grow to this height. Anything above 45 metres (150 feet) are emergent, however some trees can grow to a massive 70 metres (230 feet)! Only some birds, bats, butterflies and small monkeys live here.</p>	 <p>Canopy</p> <p>The canopy is a dense layer of vegetation at around 30-45 metres (100-150 feet). It is sometimes called the 'ceiling' of the rainforest, as it blocks a great deal of sunlight with its thick, overlapping leaves. As a result, the layers below the canopy level are often quite shaded. Lots of animals: e.g. insects, bats, birds and monkeys can be found in the canopy layer.</p>
 <p>Understory/ Shrub Layer</p> <p>The understory level is a muddle of intertwining shrubs, young trees, vines, saplings, and palms. It is very hot and damp here, and the air very still. Compared to the canopy, plants here receive little sunlight. This lack of light limits the growth of plants, and so they must have special adaptations in order to survive here. For example, leaves on plants here tend to be much broader. Snakes, lizards and sloths are examples of animals living here.</p>	 <p>Forest Floor</p> <p>The forest floor is exceptionally hot and humid, due to the constant shade from the levels above. Despite this, the forest floor remains an important part of the rainforest's eco-system. The forest floor is where decomposition takes place – dead plants and animals are broken down and their nutrients recycled. Most of the largest animals of the rainforest live here, for example elephants, tigers, the tapir and the jaguar.</p>












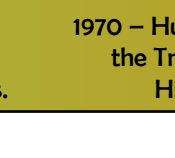
Where are the Rainforests?

Rainforests are usually found between the Tropic of Cancer and the Tropic of Capricorn (the tropics), where it is close to the Equator. It is very warm and there is lots of rainfall.

The biggest rainforest in the world is the Amazon rainforest in South America. These are the locations of the 10 largest rainforests in the world (not in order): Mexico, Venezuela, Bolivia, Brazil, Colombia, Suriname, Peru, Congo DRC, Indonesia, Papua New Guinea.



Animals of the Rainforest – including description, location, and key facts!

Harpy Eagle		Harpy eagles are the largest and most powerful raptors found in the rainforest. Harpy eagles perch on emergent trees scanning the canopy for prey, for example sloths and monkeys. They are occasionally eaten by snakes and jaguars.	South/Central America Emergent	Length: approx. 1m Weight: approx. 6kg
Morpho Butterfly		Morpho butterflies are several species that are known for their bright colours and large size. They live for about 115 days. Their low weight and ability to fly means that the emergent layer is perfectly safe for them.	South/Central America Emergent	Length: approx. 6cm Weight: approx. 1.5g
Howler Monkey		Howler monkeys are among the largest of the Central/South American monkeys. They are known for their exceptionally loud call, which can be heard 3 miles away! They mainly eat canopy leaves and fruits.	South/Central America Canopy	Length: approx. 1m (half of this is tail!) Weight: approx. 6kg
Flying Fox Bat		Flying fox bats are the largest bats in the world. They feed mainly on nectar, blossoms, pollen, and fruit. Unlike other bats, they don't have echolocation. Instead, their sense of smell and eyesight are well-developed.	Asia/Australia/Africa Canopy	Length: approx. 40cm Weight: approx. 0.6kg
Red-Eyed Tree Frog		The red-eyed tree frog lives in areas of rainforest near inland water, e.g. rivers and ponds. When threatened, it opens its eyes, in an attempt to startle predators before it escapes.	South/Central America Canopy	Length: approx. 6cm Weight: approx. 10g
Sloth		Sloths are known for their exceptionally slow movement and for hanging upside down in trees. Their slow speed has evolved as a result of their low energy diet.	South/Central America Canopy	Length: approx. 70cm Weight: approx. 6kg
Reticulated Python		The reticulated python is the world's longest snake and in the top 3 heaviest. They stalk the understory, looking both below and above for prey, such as small mammals and birds.	Asia Understory Layer	Length: approx. 4m Weight: approx. 50kg
Bullet Ant		These ants are known for their exceptionally painful sting. They live in colonies of a few hundred, and spend their days foraging in the undergrowth for nectar.	South/Central America Understory Layer	Length: approx. 20mm Weight: approx. 3mg
Tapir		Tapirs are large herbivores that are similar in shape to a pig, with a short nose trunk. Their diet consists of fruit, berries and leaves.	South/Central America/Asia Forest Floor	Length: approx. 2m Weight: approx. 200kg
Gorilla		Gorillas are herbivores that dwell in the forests of central Africa. They mostly eat the leaves, stems, and shoots of the forest. The DNA of gorillas is around 97% identical to humans.	Africa Forest Floor	Length: approx. 1.6m Weight: approx. 160kg
Jaguar		The jaguar is the largest carnivorous animal in South America. The jaguar enjoys swimming and is at the top of its food chain. They regularly eat deer, tapirs and small caiman.	South/Central America Forest Floor	Length: approx. 1.5m Weight: approx. 80kg
Bengal Tiger		The Bengal Tiger is one of the biggest tiger subspecies (tigers are the biggest cats in the world). It is a top carnivore, eating mainly chital, sambur and domestic livestock. There are approximately 2,500 left in the wild.	Asia Forest Floor	Length: approx. 2.7m Weight: approx. 300kg

Amazon Rainforest Timeline

Before 1500– Deforestation is a feature of Amazonian life long before Europeans arrive around 1500. Indigenous peoples maintained extensive areas of agriculture, and cleared areas for living.

1880– The invention of the rubber tyre starts the 'Amazon Rubber Boom.'

1900 – Rapid clearing in begins in Brazil. Whole state of Parana cleared in 30 years.

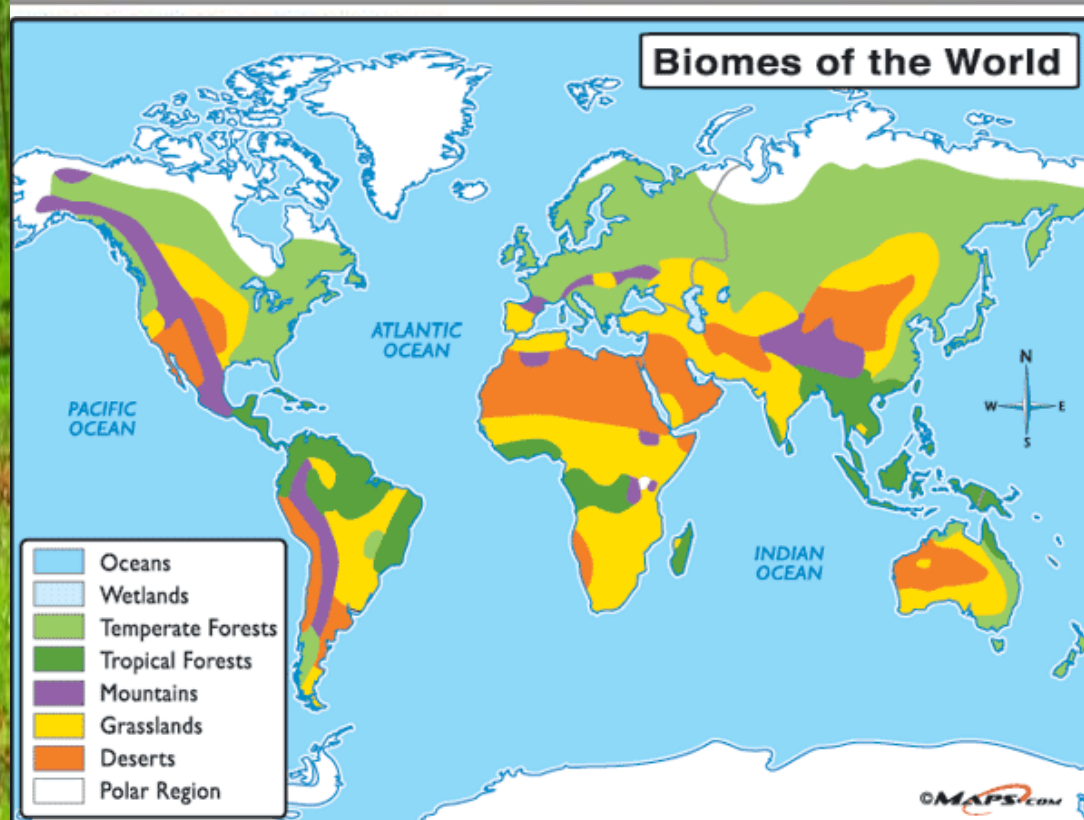
1970 – Huge clearing for the Transamazon Highway.

Early 2000s– Amazon loses 4.3 million hectares per year.

Present Day – 289,000 sq. miles of Amazon lost. 100 years predicted no rainforest left.

Climate Change

Key Word	Definition
Afforestation	When trees are planted to absorb more carbon dioxide from the atmosphere
Carbon Footprint	The amount of carbon dioxide released into the atmosphere as a result of a person's activities
Climate	The average weather conditions for a place
Climate Change Summit	A gathering of the world's nations to discuss the future of climate change
Global Warming	Recent warming of the earth's atmosphere (over the last 50 years) attributed to increased amounts of greenhouse gases in the atmosphere
Greenhouse Effect	The trapping of the Sun's heat in the Earth's atmosphere by greenhouse gases
Greenhouse Gases	Gases such as carbon dioxide and methane that are able to trap the Sun's heat
Ice Age	A period of colder temperatures in the Earth's history, the last one ending 12,000 years ago
Sea Level Rise	When sea levels rise due to increased ice melting and oceans expanding from higher temperatures
Temperature	The measurement of warmth or coldness
Weather	The day to day changes in atmospheric conditions

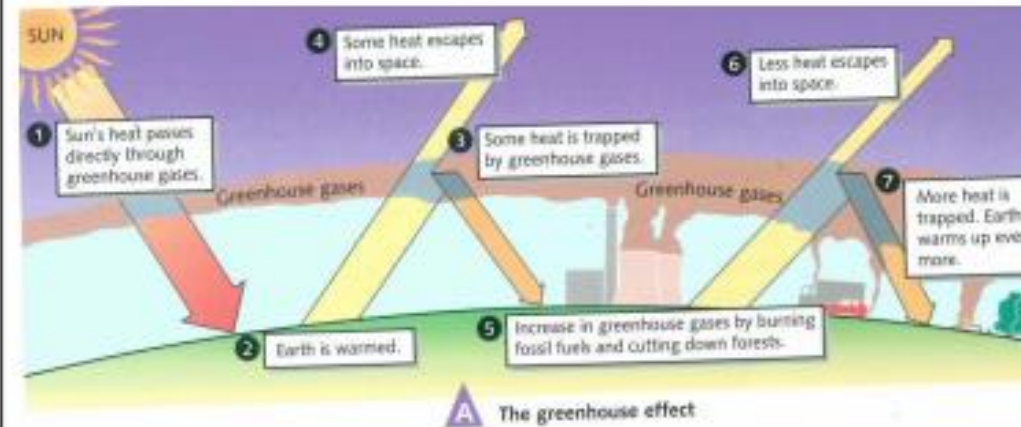


The Greenhouse Effect

The diagram below shows how greenhouse gases trap the Sun's heat in our atmosphere. This is a natural process which has always occurred, and keeps our global temperatures at levels which we can live at. However, increased greenhouse gases in our atmosphere (from e.g. industry, transport) have caused more of the Sun's heat to be trapped, increasing global average temperatures.

Greenhouse gases include:

Greenhouse gases include: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and water vapour (H₂O).



We can add to the **greenhouse effect** by the following activities:

- Using transport such a car, bus, train or aeroplane
- Using electricity which has been generated by non-renewable sources e.g. gas, coal, oil
- Buying products which encourage deforestation (trees take in carbon dioxide)
- Buying products which have been transported long distances around the world
- Buying products which have been manufactured in polluting factories

The Effects of Climate Change

Climate change will affect different places in different ways, to differing degrees. Some effects of climate change include:

- Rising sea levels (leading to some areas being uninhabitable)
- Crop yields decreasing (or increasing in some places!)
- Unusual **weather** events
- A increase in pests and diseases
- Reduction in water supply
- Shrinking glaciers
- Reduction in species of plants and animals
- More severe weather events
- Some communities having to relocate (environmental refugees)

Managing Climate Change

Climate change can be managed on different scales.

Internationally

Governments can meet together at climate change summits e.g. Paris 2015 to discuss how they can work together to cut carbon emissions and support others to deal with the effects of climate change.

Nationally

Individual governments can put laws in place to reduce carbon emissions in areas such as waste management, transport and energy production.

Individually

You can also reduce your carbon footprint by making small choices yourself such as the way you travel and what products you buy.

Check your carbon footprint at: <https://footprint.wwf.org.uk>

Our Key Question: How are our actions impacting our forests both locally and world-wide? Our Big Concepts: RESPONSIBILITY CONSEQUENCES DUTY