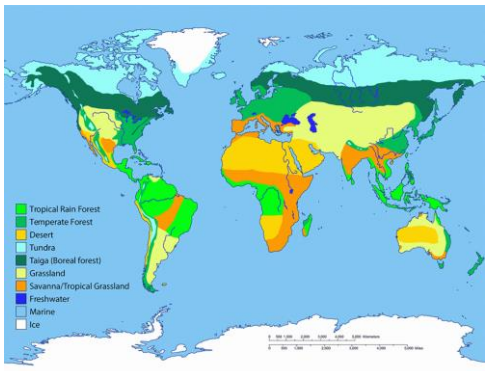
Year 7: Endangered Ecosystems

Maths in Geography

Bar graph to display data

Year	Number of cattle in Brazil (Million)
1980	22
1990	31
2000	38
2010	49
2020	52

Location of world biomes

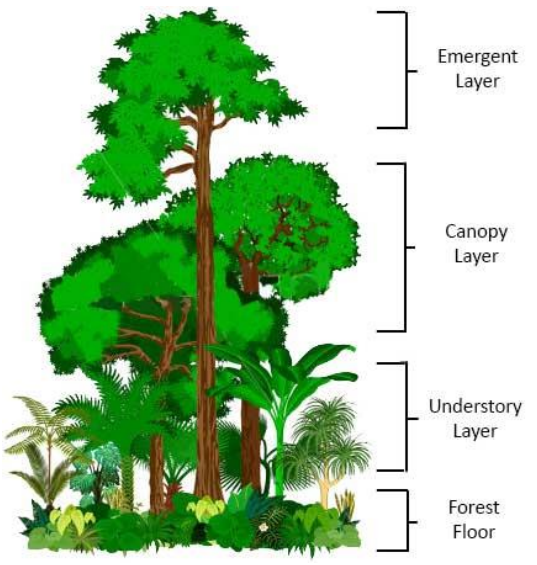


Characteristics of main biomes:

Grasslands: Within the tropics. Hot with a wet and dry season. Mainly grass and a few specially adapted trees.
Desert: 15-30° north and south of the equator. Very hot and dry. Limited plants.
Taiga: Found between 50° and 60° north of the equator. Coniferous evergreen trees.
Savanna: Found to the north and south of tropical rainforest biomes. A wet season and a dry season. Scrub, grasses and occasional trees.
Tropical rainforest: 23.5° north - 23.5° south of the equator. Hot and wet all year.
Rich in plants and animals. Poor soils.
Temperate forest: 60° north of the equator and on mountains. Long, cold winters. Short, mild summer. Limited rainfall. Coniferous trees.
Tundra: The ground stays frozen for most of the year and little precipitation & vegetation. Summers long days, winter long and dark.

Key term	Definition
Endangered	At risk from damage or total destruction.
Ecosystem	A community of animals, plants and microorganisms, together with the habitat where they live.
Biome	A large scale ecosystem.
Climate	Average weather conditions over longer periods and over large areas.
Biodiversity	The range of animals and plants in a given area.
Equator	The line around the centre of Earth, parallel to the Tropics of Cancer and Capricorn.
Deforestation	The process whereby natural forests are cleared through logging and burning.
Sustainable	The practice of using natural resources responsibly today, so they are available for future generations tomorrow.
Photosynthesis	A chemical reaction that takes place inside a plant's leaves, producing food for the plant to survive.
Adaptation	
Desertification	
Resource	
Climate Change	A change in global or regional climate patterns, due to rising temperatures in the earth's atmosphere
Ecotourism	Tourism directed towards exotic, often threatened, natural environments, intended to support conservation efforts.

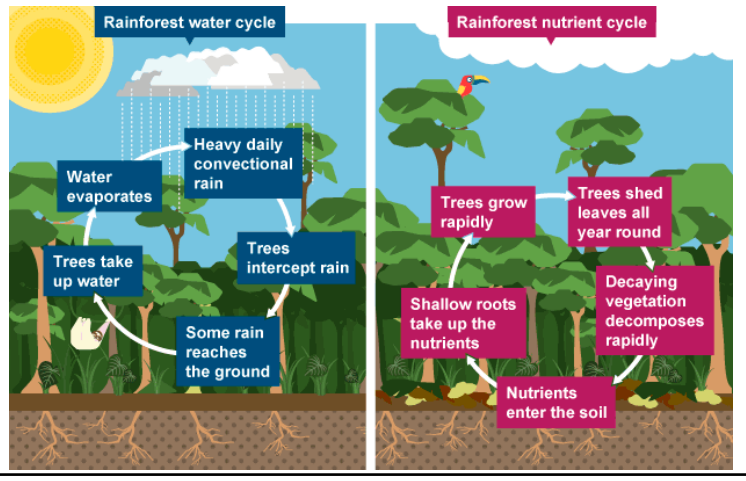
Rainforest layers



Causes of deforestation

- **Cattle farming – 80% land clearance increase population = increase demand for cows** → beef, medicines, cosmetics
- **Palm oil- oil in nearly very product available** → P&G products- big problem in Indonesia/Malaysia – future for Brazil?
- **Gold mining- extracting raw material from soil with high pressure hoses and chemicals** → Amazon Basin rich in mineral- ops – better pay challenges- working conditions, water sources polluted, open cast pits

Rainforest cycles effect the quality of soil because of their speed. High amount of plants/animals = decompition happens quickly- nutrients sit on top soil. Convectional rainfall formed from evaporation from canopy level trees.

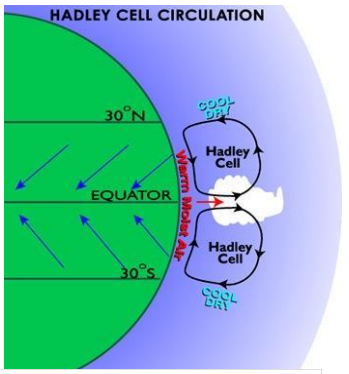


Plant adaptations	Animal adaptations
• **Drip tip leaves –** Rain runoff quick avoid fungus & bacteria avoid rot. • **Epiphytes –** on branches of tress, nutrients from air, water , dead material & easier access to sunlight. • **Pitcher Plant-** Nectar to attract insects/small rodents, fall into pitcher, digested for nutrients. • **(ANIMAL) Spider Monkey-** Large to scare others, powerful tail for climbing, swing from branches to avoid predators.	• **Sloth –** Slow, green algae camouflage- predator avoidance, strong arms to climb • **Poisonous Dart frog –** Bright colours to warn against toxins in skin chemical defence, lay eggs on leaves and piggy back tadpoles to water. • **Toucan-** large beak to collect fruits eggs etc. adjusts blood flow to beak to control heat, backwards toes to hold branches

Hot Deserts

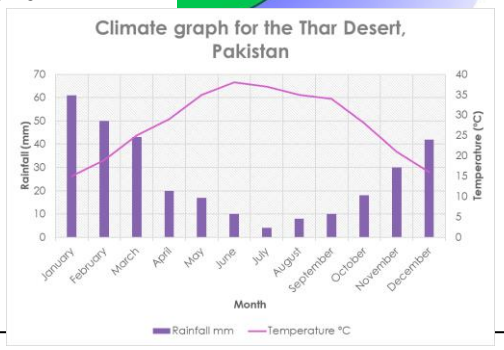
Location-why?

Air around the Tropics of Capricorn and Cancer is dry- zone of high air pressure where the air sinks. Air at the equator rises and cools - condensation then forms rain. The air then moves north and south until it gets to about 30° north and south of the equator- sinks. This air is dry and no condensation can form, so there is no rain.



Climate (graph)

Low precipitation – changeable Throughout year. Temperatures As high as 38 degrees in June.



Oceans - GPGP

Oceans as a resource – fishing, tourism, 70% of Oxygen on earth, renewable energy**.**

Oceans misuse- Pollution, biodiversity reduced, animals harmed, raw sewage

Key facts:

1. The GPGP is the twice the size of Texas
2. It weighs more than 87,000 Tonnes
3. The garbage patch is located in the Eastern Pacific Ocean.
4. It is one of 6 garbage concentrations around the world.
5. Gyres are rotating ocean currents which are formed by wind patterns and rotation of the earth. True
6. Most plastic floats once it encounters the sea because it is less dense than water.
7. Lighters, pens, toothbrushes, bottles, fishing nets, plastic bags, cell phones etc.
8. Fishing nets can entangle marine life/coral reefs, marine life can eat microplastics.
9. Moving its way up the food chain- until humans eat these fish etc.

Causes- Rubbish not managed well (80% from America and Asia land, 20% shipping vessels) Gyres- rotating ocean currents.

Impacts- Marine life eating plastics/become entangled, blocking sunlight for algae, microplastics in food chain, commercial fisheries, Hawaii 10 ft trash, swimmers/tourists.

Solutions to ocean plastic- Use, production, recycling, other materials (biodegradable) ocean clean ups

	Tundra	Taiga
Location	Arctic tundra located far north in northern hemisphere.	Found between 50° and 60° north of the equator.
Climate	Summers long days short period (average 12 degrees), winter (-34° C) very long and dark.	Average precipitation 12-30 inches a year. Temperatures range from 10 degrees and -3 degrees.
Landscape	The ground stays frozen for most of the year (permafrost) and little precipitation & vegetation- barren.	Short growing season 3 months. Evergreen pine needle trees- not large biodiversity of plants.
Plants & Animals	Arctic fox, Polar bear, reindeer & low lying grasses, shrubs, herbs, and lichens.	Otter, Lynx, grozzly bear. Coniferous evergreen trees.

Desertification

Causes: Climate change, population growth, overgrazing, deforestation

Risk of desertification- world map- Southern- Spain, Portugal Italy, Bulgaria, Greece, Romania

Main cause in Europe- Climate change (Temperatures are projected to increase 2°C and precipitation is projected to decrease by 50 % or more in southern Europe), strong relationship between CO2 and temperatures both increasing.

Impacts of desertification- Droughts, Low crop production- food insecurity, Farming businesses loose money, Crop pest attacks, Trees dying, Loss of biodiversity, Flooding, Migration of farmers, Sandstorms.

Reducing impacts – Planting more trees, stop overgrazing, less chemical fertilisers, sustainable farming, water management (earth dams).

Coral reefs

A coral reef is a line of coral **polyps** found in warm shallow seas, they are tiny carnivorous (meat eating) animals**.** Each polyp builds a case of limestone around itself, using calcium from the water.

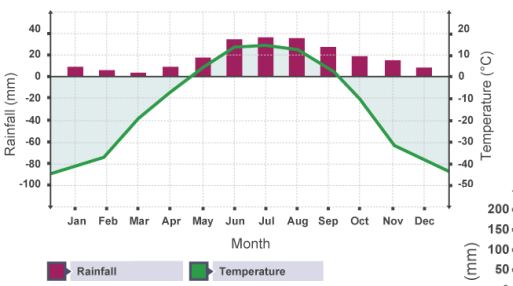
Location: Coral reefs are located in tropical oceans near the equator, between the Tropics- Pacific ocean, Caribbean sea, Red sea, Indian ocean.

Importance: Economic importance (Yearly earnings globally $29, 8 billion), **Habitat** (1 million plant and animal species live there- 25% of ocean species, biodiversity hotspot, young fish), **Food** ("Well managed" reef can provide between 5 and 15 tons of food per square kilometre), **Tourism** (Over 100 countries benefit from coral reef related tourism), **Coastal protection** (absorb wave energy, slow down coastal erosion, reduce damage of tsunamis and hurricanes)

Needs- Tropical sea conditions (between the two tropics) Warm waters (over 18° centigrade all year round) Clear water (no sediment) No pollution Sunlight Water less than 60 metres deep

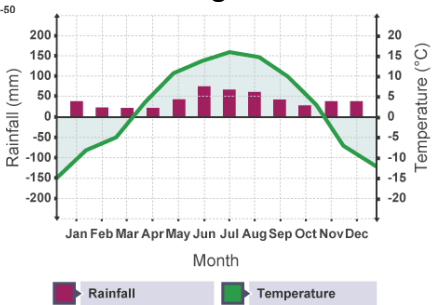
Threats to coral reefs- Recreation, Climate change, Overfishing (fishing practices- E.G. Fish bombing in Borneo), Pollution.

Threats to Tundra- melting of permafrost due to increasing global temperatures → Building stability, hospitals, schools, roads etc., 'drunken trees', loss of lakes, ponds for reindeer herders. Melting ice → polar bears habitat destroyed, methane releases from ice – rotting plants.



• Tundra

• Taiga



Tourism in Antarctica

Reasons to visit → Wildlife, History, Adventure, Unique landscapes, Activities
How many visitors graph → Peaked 45,000 07-08 – now up to 30,000 2012-13
Stakeholders → Countries who own parts of Antarctica, Polar cruises, International Association Antarctica Tour Operators, Greenpeace

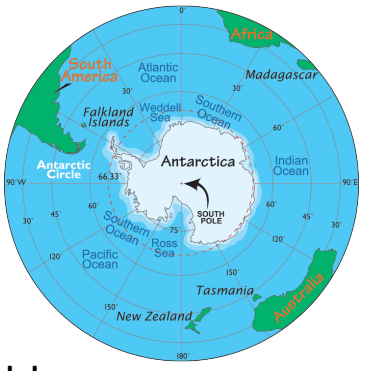
Positives (advantages) of tourism →
Increased appreciation- conservation
Help scientists collect data on wildlife
No evidence that tourism has disturbed breeding patterns
Code and conduct in place to protect wildlife

Negatives (disadvantages) of tourism →
Services change the natural environment
Vehicles on ice change shape/damage
Large cruise ships struck iceberg – oil spills/discharge of sewage into sea
Animals stress through crowds- abandon eggs

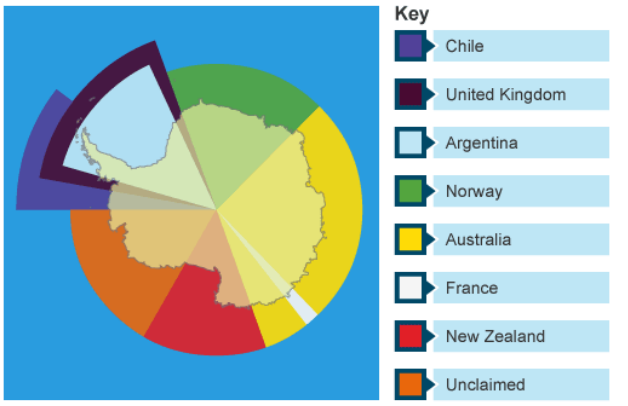
How to create sustainable tourism in Antarctica → Limiting tourist numbers, limiting ship sizes, code of conduct for vistors, time with no vistors to certain areas, ocean clean ups.

Ecotourism- tourism directed towards exotic, often threatened, natural environments, intended to support conservation efforts and observe wildlife.
Specifically, ecotourism possesses the following characteristics:
Conscientious, low-impact visitor behaviour
Sensitivity towards, and appreciation of, local cultures and biodiversity
Support for local conservation efforts
Sustainable benefits to local communities
Local participation in decision-making
Educational components for both the traveller and local communities

Location



Stakeholders



Protecting our Endangered Ecosystems- "Dear Future Generations, Sorry"

4 methods to save our planet –

1. AN ENERGY REVOLUTION- phasing out fossil fuels and replacing with renewables
2. A FOOD REVOLUTION- Efficient food production and reducing our consumption of meat
3. MANAGE THE OCEAN- Global network of no fish zones and treaty of use of international waters
4. REWILD THE WORLD- Encouraging nature wherever we can