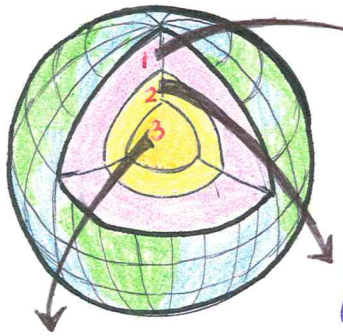
PLATE tectonics

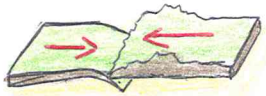
The theory that Earth's crust is broken into a number of constantly moving plates.



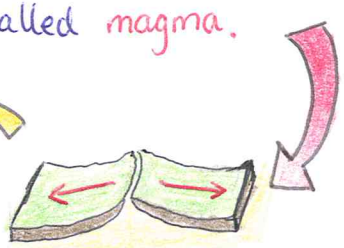
1) The crust is Earth's outer skin and consists of solid rock.

2) The mantle is a layer of hot, soft rock. The semi-molten rock is called magma.

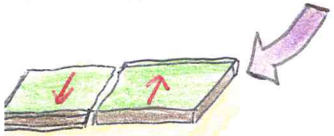
) The core is at he centre. Iron nd nickel.



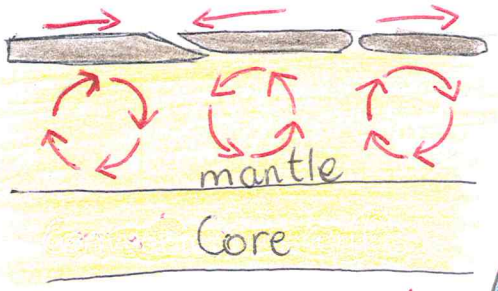
When two plates ollide, the heavier late is forced down. his is called a estructive boundary. g. The Nazca Plate nd the American Plate.



When two plates pull apart a new crust is formed. This is called a constructive boundary. Eg. the American Plate and the Eurasian.



When two plates lide past each ther, this is alled conservative oundary. Eg. San Andreas Fault.



Volcanic Activity

Continental Drift.

Convection Currents.

molten magma moves up from the core to the crust. It cools + sinks back down to the core, the cycle repeats.

Mid-ocean Ridge

is an underwater mountain range. It is formed where two plates

Geothermal Energy

Hot springs: (Blue Lagoon)
- Central heating
- Heat green houses for growing veg.

Hot water or steam from deep beneath the Earth's surface is converted into electricity.

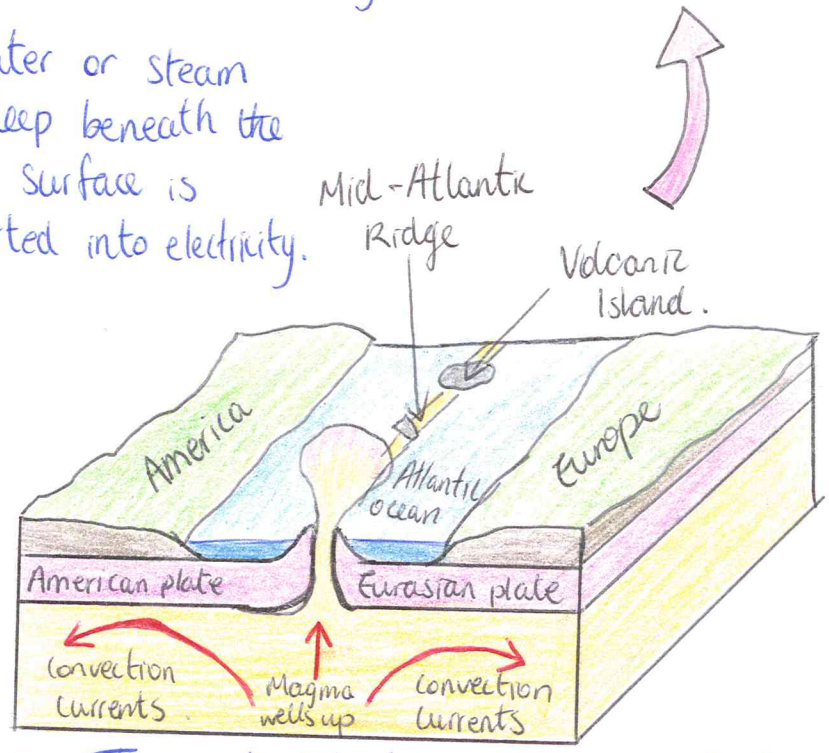
Iceland

Krafla - has been erupting regularly for over 30 years.

Hekla - is the most active volcano.

Surtsey - is the newest volcanic island. It appeared in 1963.

Iceland is only 20 million years old.



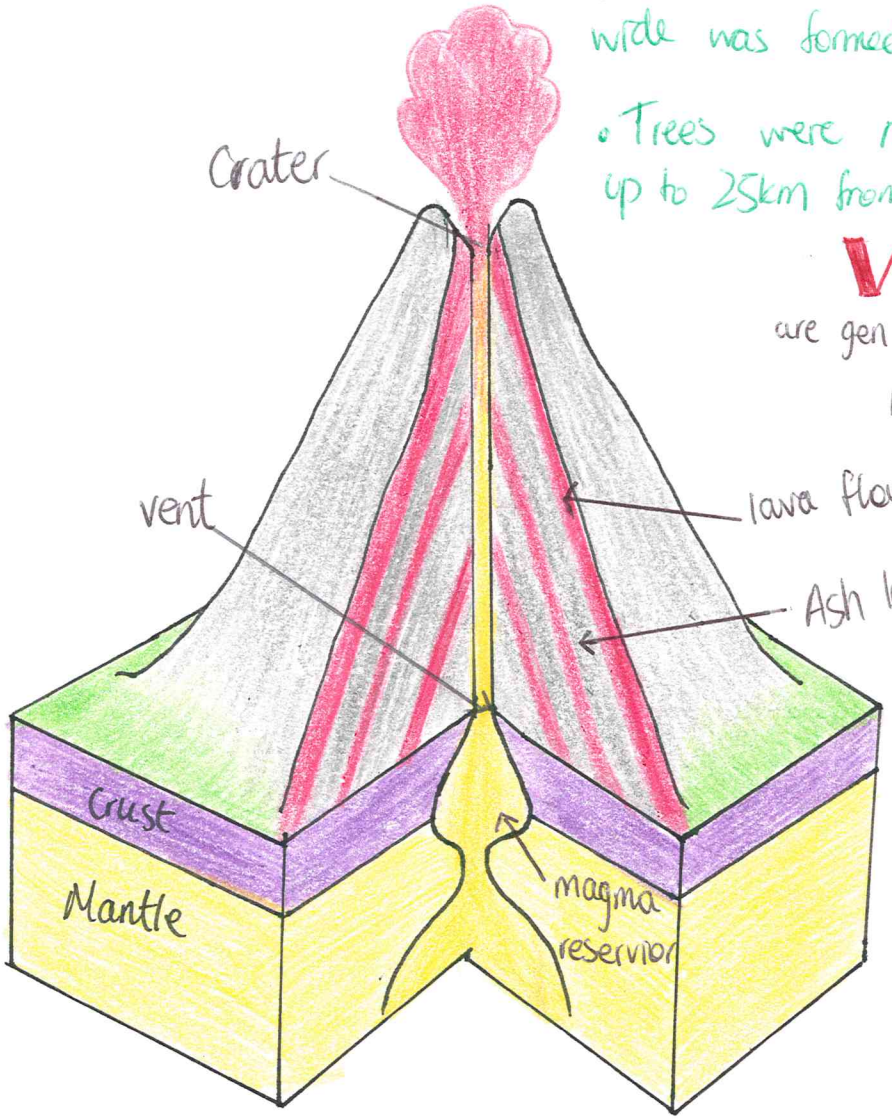
The mid-Atlantic ridge runs N-S on the floor of the Atlantic Ocean. It breaks the surface in places to form islands such as Iceland

Mt. St. Helens.

Location: Rocky Mountains USA.

Erupted: In 1980

- The force of the eruption reduced the height of the mountain by 400m. A new crater 3km wide was formed.
- Trees were mown down like grass up to 25km from the volcano.
- The melted glacial ice and snow was combined with ash to form mud flow that clogged shipping channels.
- The force of the blast and poisonous gas killed more than 60 people.



volcanoes

are generally found where tectonic plates are pulled apart or in collision.

* when magma reaches the surface it is known as lava.

* Some of the most active volcanoes are located along the Pacific Ring of Fire.

Life cycle of a volcano.

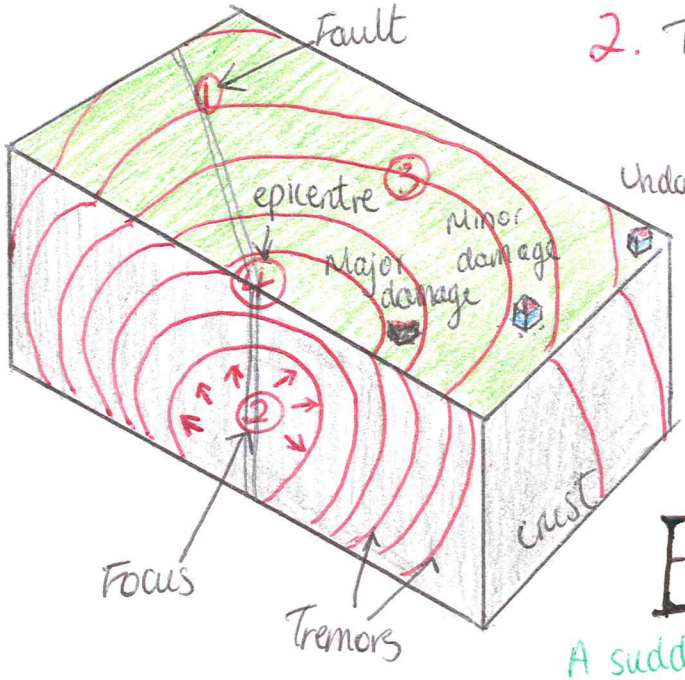
Active: The volcano is still erupting at regular intervals. eg Mt. St Helens. Mt. Etna.

Dormant: The volcano has been quiet for 100s of years, but may erupt again. Eg. Mt. St Helens, has not erupted for 120 yrs then becam

Extinct: The volcano has not erupted in recorded times. (Thousands of years). Slemish Mountai in Co. Antrim.

EARTHQUAKES

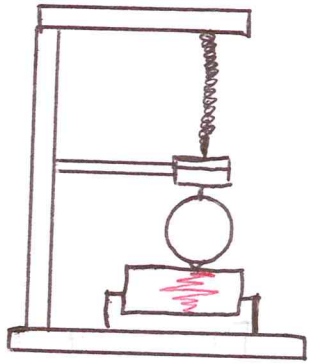
Earthquakes occur at boundaries where plates collide.



1. The plates move along the fault line.
2. The focus is in the Earth's crust where the earthquake begins.
3. Tremors spread out from the focus.
4. The epicentre is directly above the focus. Tremors are strongest here.

An earthquake is measured + detected by a seismometer or seismograph.

The Richter Scale is used to describe the strength or force of an earthquake.



Smaller tremors called aftershocks, may occur hours or days following an earthquake.

A sudden movement or trembling of the Earths crust.

South East Asia 2004.

A major tsunami occured in South East Asia in 2004, when the Indian Plate pushed under the Eurasian plate. A wave up to 30 meters in height hit the coast with speeds of up to 500km per hour.

200,000 people were killed and 1 million made homeless.

- People's livelihoods were destroyed. Costal communities lost their boats + equipment. The local tourist industry was wiped out.

Food aid had to be provided for 2 million people.

When an earthquake occurs under the sea, a giant wave, called a tsunami can result.

Sichuan Earthquake (2008)

In May 2008 an earthquake hit the Sichuan province of China. It measured 7.9 on the Richter Scale. More than 50 aftershocks follow. The Indian plate collided with the Eurasion plate.

- More than 70,000 people were killed.
- over 500,000 homes were destroyed making 5 million people homeless.
- Landslides blocked valleys, disrupting communicati

Periods of folding.

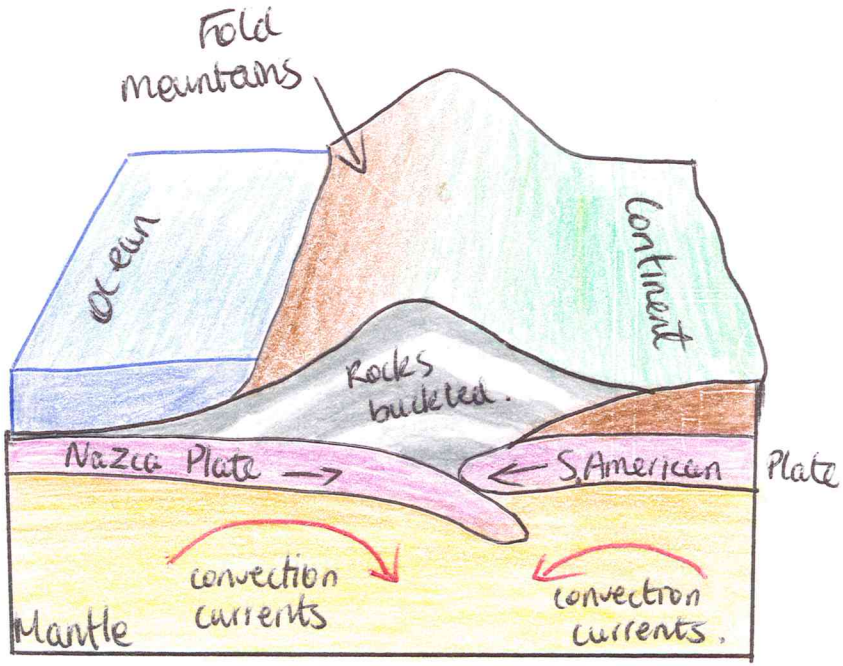
The world's young fold mountains formed only about 30 - 35 million years ago. Examples: Andes in South America and the Rockies in America, the Himalayas in Asia and the Alps in Europe. All mountains formed during this period of time are called Alpine Fold Mountains.

Fold mountains of Munster

The most recent fold mountains in Ireland were formed in Munster about 250 million years ago when the Eurasian Plate and African Plate collided. They include Magillicuddy's Reeks, the Galtees, the Comeraghs and the Knockmealdowns. Mountains formed during this period of folding are known as Armorican Fold Mountains.

fold mountains

when two plates collide, rocks tend to buckle and crumple.



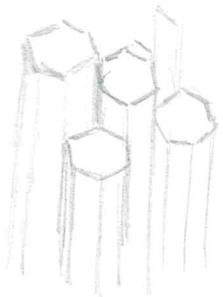
- The Nazca plate and the South American Plate collides.
- The Nazca plate is pushed down into the mantle
- The rocks that lie on the plates are compressed + forced upwards.
- The layers of rocks buckle + crack into a series of upfolds + downfolds.

ROCKS

Igneous Rocks – are formed from volcanic activity. When magma cools down.

Granite – when molten magma forced its way into the crust. It cooled very slowly, allowing large crystals to form. They are black, grey or pink. Used in building industries + for monuments. found in the Mourne + Wicklow mountains.

Basalt – when lava spread out across the earths surface. It cooled very quickly + solified because exposed to air. They are dark grey – black. It is found in the Antrim – Derry plateau. Giants Causeway.



Sedimentary Rocks – are formed from the remains of other plant/animal life.

Limestone – formed on the beds of shallow seas from skeletons of tiny sea creatures, fish + shells. These are compressed + cemented over millions of years. They are white – grey in colour. + is permeable. Limestone is found in the Burren (Co. Clare). It is used to make monuments. It is the raw material for cement + farmers use ground limestone to improve soil fertility.

Sandstone – formed when large amounts of sand were worn away and transported by winds + rivers. Layers of sand build up over millions of years. They are brown – red in colour. The mountains of Munster, and the Galtees.

Metamorphic Rocks – are formed when igneous or sedimentary rocks are under great heat / pressure.

Marble – when molten magma forces its way into a body of limestone It is white in colour but can be red, green or black, It is used fore fireplaces, gravestones + ornaments. It is found at Rathlin Island, Connemara + Cork.

Quartzite – when sandstone came into contact with magma deep in the earths crust. It is grey – white in colour. It can be found in Croagh Patrick, and the Great Sugarloaf.

Source - The point where a river begins.

Course - The route a river takes as it flows to the sea.

Tributary - A small river or stream that joins up with a larger one.

Confluence - The point at which a tributary joins the river.

Mouth - The point where the river enters the sea.

Estuary - The part of the river mouth that is tidal

River basin - The area of land that is drained by a river and its tributaries

Watershed - The high ground that seperates one river basin from another.

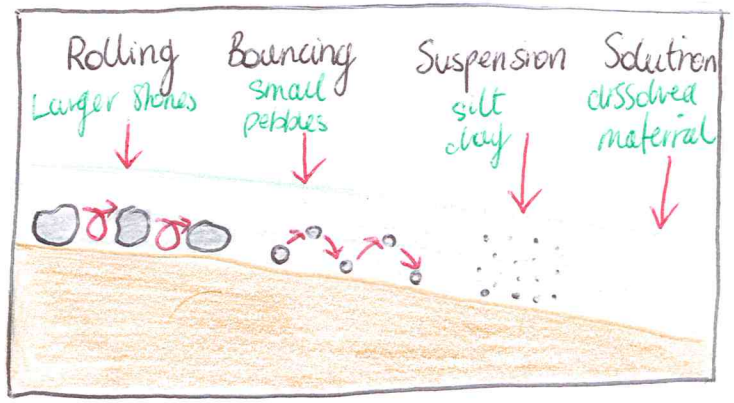
The work of rivers.

Erosion

* The force of the moving water breaks off material from the banks (hydraulic action)
* The material carried along by the river hits its banks, wearing them away (abrasion)
* The material is smoothed as the particles bounce off each other (attrition)
* Acids in the water dissolve rocks such as lime stone (solution)

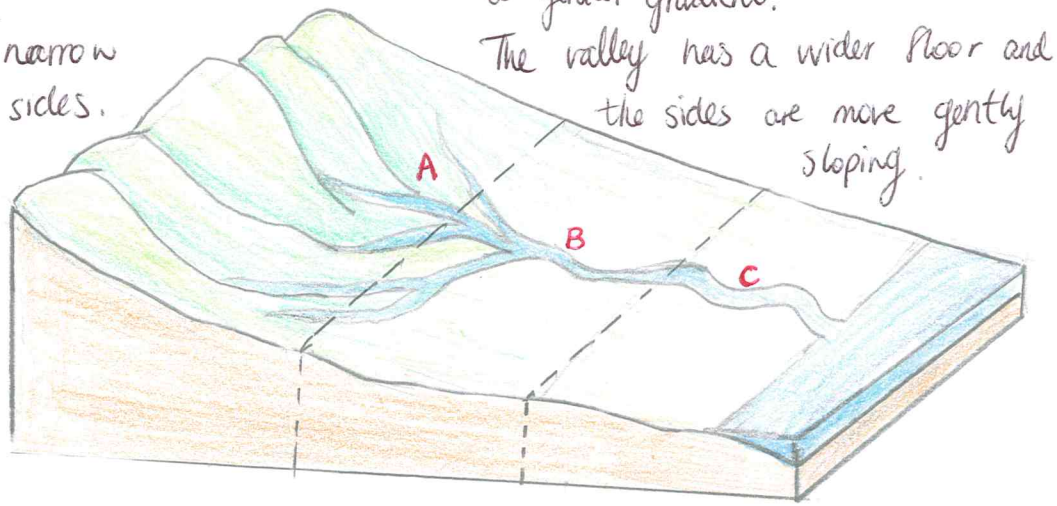
rivers

Transportation



A - Youthful stage - The river has a deep gradient.
The valley has a narrow floor and steep sides.

B - Mature stage - The river has a gentler gradient.
The valley has a wider floor and the sides are more gently sloping.



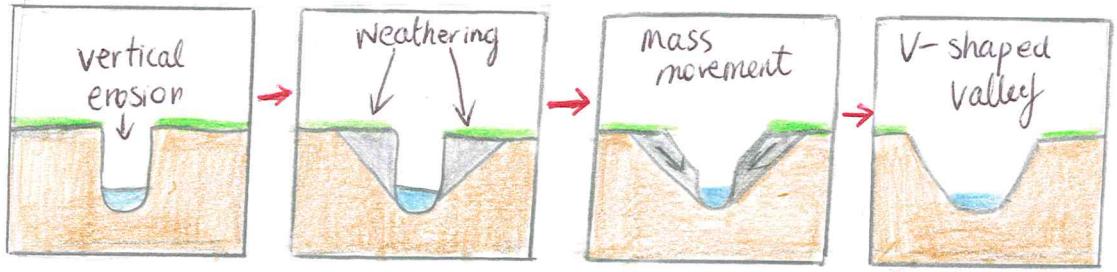
Deposition

The river deposits its load when:
* it loses energy / speed.
* The rivers volume increases
* when it flows into a lake or sea.

C - Old Stage The river has an almost flat gradient.
The valley has a wide, flat floor and gentle sides.

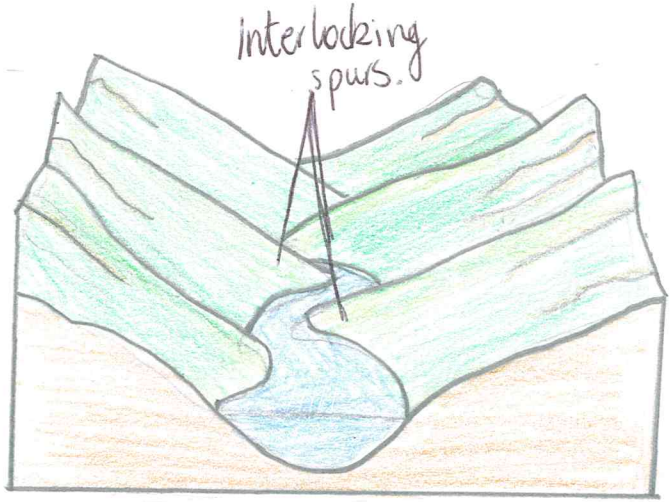
The youthful river

Interlocking spurs } erosion
Water fall.



V-shaped valley – Examples: seen in the youthful stage of the rivers May, Lee, Liffey and Slaney.

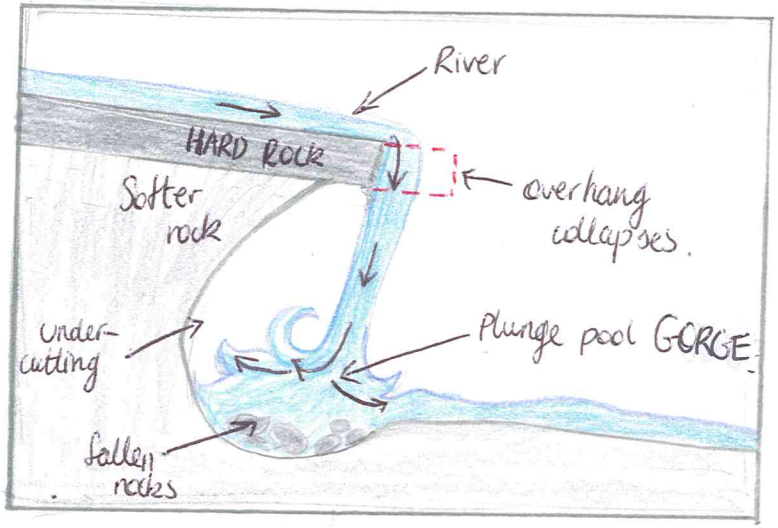
Processes – Hydraulic action, abrasion, weathering.



Interlocking spurs – Examples – youthful stage of The May, Lee, Liffey and Slaney.

Processes – Hydraulic action. When a river meets hard rock, it is unable to erode through them. Instead it winds around them forming a zig-zag pattern.

Waterfall (erosion essay)

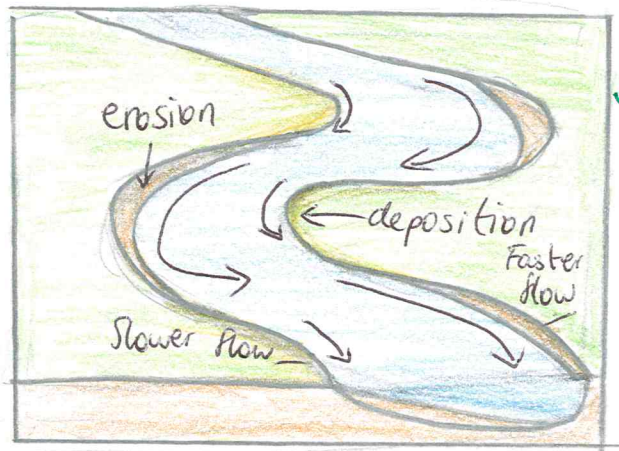


Water fall – Example: Aasleigh Falls (Mayo), Torc Waterfall (killarney) Glencar Falls (Sligo).

The waterfall is a landform of erosion. It is formed in the youthful stage of the river. The river erodes downwards, this is called vertical erosion.

A water fall is formed when a band of hard rock is lying on top of a softer rock. Soft rock such as lime stone erodes faster than hard rock such as granite. Material being carried by the river wears away the soft rock, this is called abrasion. Over time this leaves a vertical drop. The river falls over this drop as a water fall. At the base of the river, its load move around wearing away the underlying rock, forming a plunge pool. This type of erosion is called hydraulic action and is caused by water. The plunge pool gets bigger + the hard rock develops into an overhang. An undercutting develops. Eventually the plunge pools is too big and the overhang collapes into the river. This process is repeated over time and the river retreat

The Mature river



Meanders
Floodplain
erosion + deposition

Meanders- Are found on the old + mature stage of a river.

Processes- erosion and deposition.

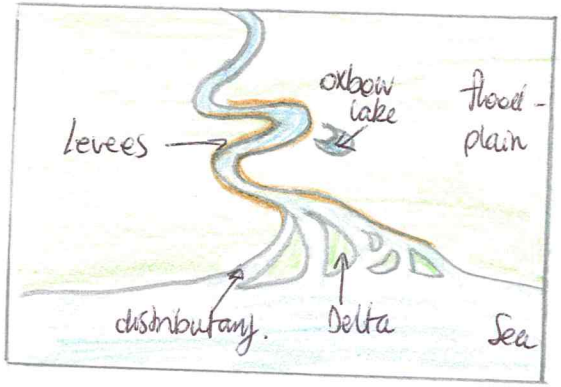
Examples- Shannon, Moy + Avoca.

Flood plain- the level area of land on either side of a mature or old river. It has a covering of very fine clay called alluvium. Examples- Shannon Liffey, Boyne, Suir.

The OLD river.

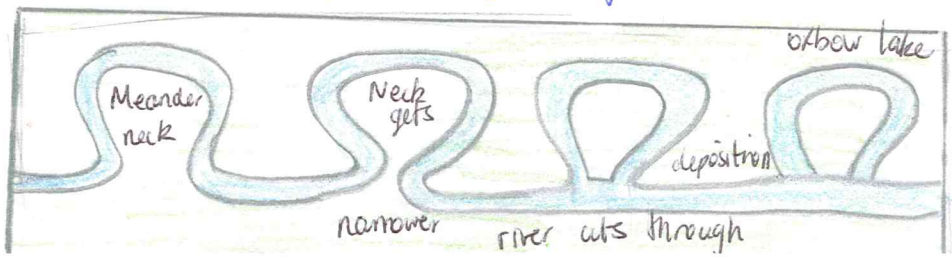
Oxbow lake - erosion + deposition
Delta - erosion
Levees - deposition.

Delta- a delta is a triangular or fan-shaped area of land found where a river flows into the sea.

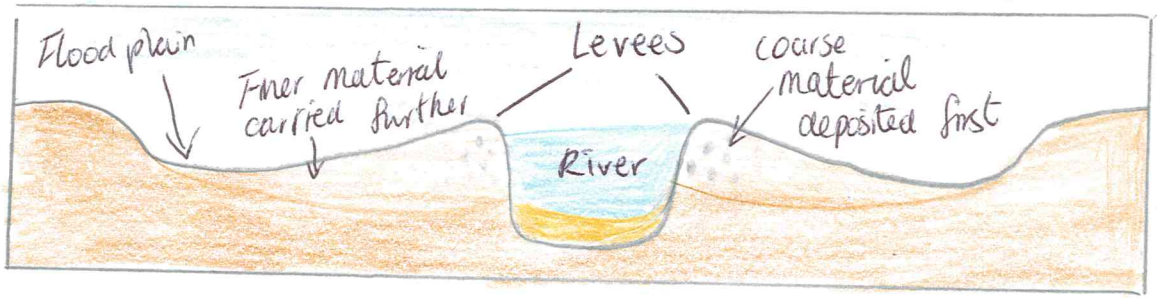


Oxbow lake- is a horseshoe-shaped lake that was one part of a river but has has been cut off from the meander.

Examples- Mississippi, Liffey, Moy



Levees (deposition essay)



Levees are raised banks of alluvium that are found along the banks of some rivers in their old stage.

When a river floods and begins to spread out over the floodplain, it quickly loses its energy and begins to deposit its load. Most of the heavier load gets deposited near the banks. The finer material are carried further. After many periods of flooding, these deposits build up to form levees.

Examples: The old stage of the river Mississippi, Moy and Liffey

Constructive waves- strong swash, weak backwash
Destructive waves- weak swash, strong backwash.

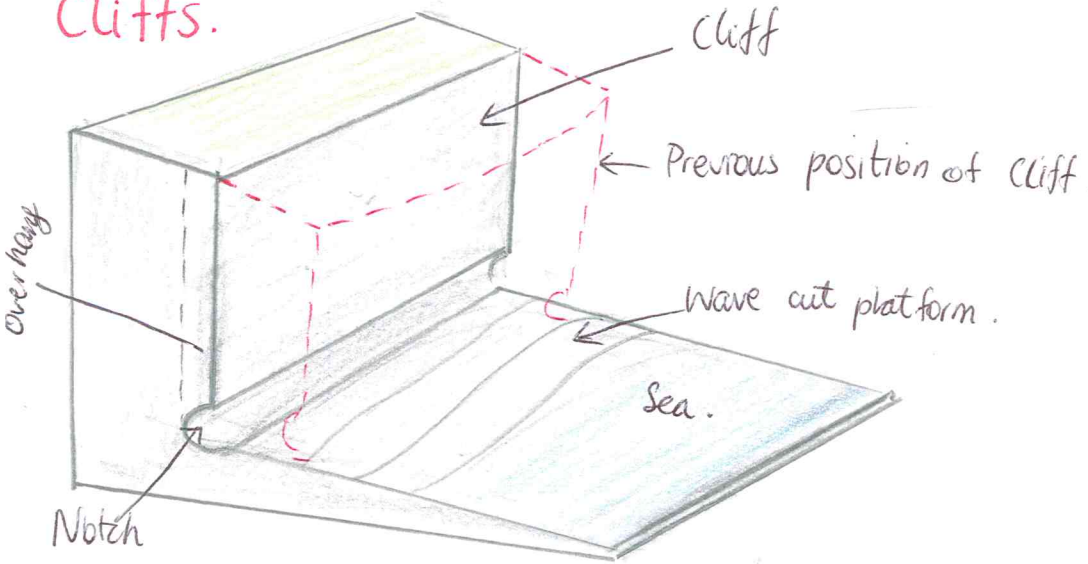
How waves erode.
- Hydraulic Action
- Abrasion
- Compressed Air
- Attrition

The Sea

Coastal Erosion.

- Cliffs - Cliffs of Moher, Co Clare
- Bays and Headlands - Dublin Bay / Galway Bay
- Sea cave
- Sea arch
- Sea stack - stump. Hook head Co Wexford
- Blow hole - The 2 pistols, McSweeney's Gun Co Donegal

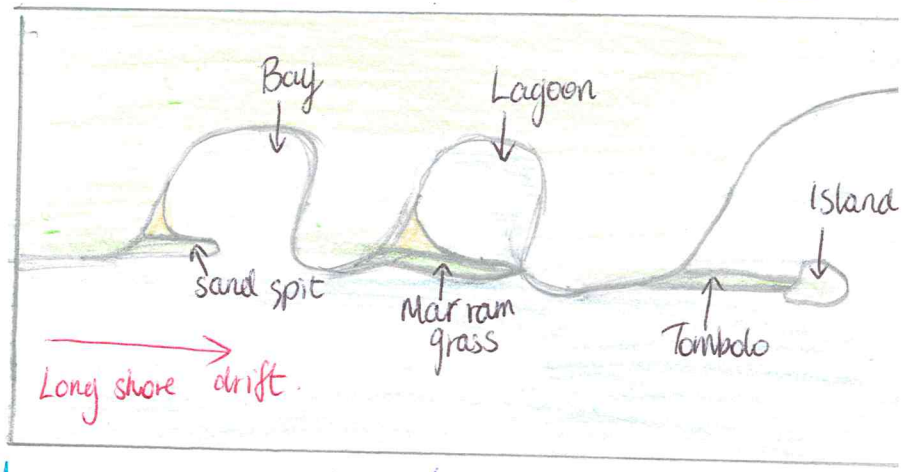
Cliffs.



Cliffs- Processes- hydraulic action
- Weathering weakens the top of the cliff. The sea attacks (hydraulic) the base the base of the cliff forming a wave-cut notch. The notch increases in size causing the overhang to collapse. The backwash carries the rubble towards the sea forming a wave-cut platform.

The process repeats & the cliff continues to retreat.

Coastal Deposition



- Beach
- Sand dunes
- Sand spit.
- Lagoon
- Tombolo

Tramore Co. Wexford

Our Lady's Island Co. Wexford

Howth, once an island, now connected by tombolo.

Sand spits- a stretch of sand or shingle extending out from mainland. Long shore drift carry materials such as sand + rock. When the waves deposit their load they pile up after a long time forming a sand spit. Marram grass may appear on the spit + it hold the particles together. If a sand spit connects with another main land it forms a lagoon. If it connects with an island it becomes a tombolo.

PRIMARY ECONOMIC ACTIVTIES

Taking natural resources from the land or sea.

1. Farming - Arable and pastoral, mixed.
2. Fishing - fish.
3. Forestry - wood
4. Mining - coal, gas, oil
5. Quarrying - coal, limestone

Natural Resources

Renewable - non-finite resources, eg. fishing if exploited sustainably.

Non-renewable - finite eg. oil.

Peat Bogs

Raised bogs - midland upto 12m.

Blanket bogs - western, lowland 3-4m.

- Ditcher drains.
- Grader levels
- Miller scrapes loose layer
- Harrow - rakes into small piles

Ridges - makes ridges transported by light railways.

Fishing

- over-fishing
  - EU membership. Allows all EU member states to freely access fish stocks. More foreign trawlers than Irish trawlers.
  - Modern technology Sonar, radar, Invisible nets, Winches can lift tonnes of fish. Cold rooms.
  - Demand for fish healthier alternative to meat.
- Stop over fishing.
  - Conservation Box. 100,000 km^2, restricted off the coast of Ireland, Important breeding ground.

Mining - Discovery of oil in Saudi-Arabia

Drilling - used to extract oils or gas from an underground reservoir. At sea, a pipeline on seabed brings fuel ashore.

Opencast mining - used when a resource is close to the surface. Cheap but ugly + noisy.

Shaft mining - when a resource lies in seems, reached by constructed pipes. Used in Navan mines for zinc and lead.

Discovery of oil changed.. Life style: Nomadic leaders moved from the deserts to oil industry. Cities grew as they adopted large SUVs + large houses.

Inward migration: Demand for workers brought many people to the country raising population.

Politics - Absolute monarchy + women have very little standing in law. Prisoners are treated with no regard of human rights. It is illegal for a man + woman to be standing together in public if unmarried. Woman are banned from athletics and very few work outside the house.

Billy's mixed farm.

Inputs: Labour - Billy's wife is the farm's accountant. Billy's children helps out. feeding the animals during the holidays

Animals - cattle sheep.

Arable - Seeds tractors, combine harvester, feed for animal, Capital.

Processes: Billy sows his seeds, spreads fertilisers, lambs and calves are born.

Outputs: profit from selling livestock to market. Crops. Slurry from winter sheds is used as fertiliser.

Spring: calves are born. he sows his seeds.

Summer: Billy harvests his crops. This is breeding season for cattle and sheep.

Autumn/Winter: Billy houses his cattle indoors + takes some of the livestock to market where he sells them.

Industry -

Heavy industry - regires heavy raw materials, must be located near the source of material + transport links.

Platin cement - located in Drogheda because there was access to port in Dublin. Near a work force. Limestone was present there.

Processes: 1) Lime stone is quarried along with shale and bauxite + iron ore. The rock is fed into the primary crusher that reduces the size of the rock to a tennis ball. The secondary crusher reduces to golf ball.

2) The raw meal is fed into kiln. The temperatures reach 1700°c. This causes the raw meal to form into "clinker".

3) Clinker is put through a miller, reducing it to fine powder with added gypsum to delay setting time.

4) The cement is packed + distributed by road, sea + rail.

Light / Foot loose - should be located near transport links, educated workforces.

Intel - located in Lexilip in Kildare. Largest plant outside the US.

Reasons for location:

Government policy: Ireland has a very low corporate tax rate (12½%)

Earthquake - free zone - production of microchips regires stable ground.

Markets - Ireland is part of the EU meaning that Intel can sell for free in the EU market.

Educated workforce - 70% of Intels workers have 3rd level education in science, Engineering, technology or maths.

Processes: Intel manufactu microchips on silicon wafers that pass through more than 300 processing steps. Millions of transistors are created on the surface of each. They are quality tested, packaged and distributed.

Secondary Economic Activities...

taking a raw material and converting it to a processed or semi-processed good.

Women in Industry

Until the 1970. most Irish women didn't work outside the home. however today many women do choose to have carreers. This is due to inflation, the cost of living rose + girls had free secondary schooling.

Gender equality laws have given men + women equal rights, however 3x more women have part time jobs than men + learn less than men in manufacturing industry.

Industry Inertia.

British Iron and steel industry

Industry inertia is when a factory remains in one location though the original pull factor has gone.

The British steel + iron industry was established in the 1700's near forests where coal was being produced, after coal industries began to fail off. + coal was imported from Germany. so they moved to coasts.

Newly Industrialised Regions. (NIC)

China, India, Brazil.

Industrialised regions (MED, MDC) USA, Germany, Japan

Industry emergent regions (LED)(LDC)

kenya, Ghana, Libria, Haiti.

Tourism

Provides many jobs for people. 4 categories.

Cities – Dublin is Irelands most visited city. Dublin airport has best flight connections. Visited for Croke park, the book of kells @ Trinity + the National Museum.

Areas of Natural Beauty – Ice age carved valleys in Ireland @ the Lakes of Killarney in CO. Kerry. The giants causeway Co. Antrim.

Sport / Recreational: lakes for angling / fishing, waterways, Shannon for cruising Croke park for sporting fixtures.

Beaches – Cliffs of Moher. 750,000 visitors a year. Skelling Micheal very dramatic

The International Financial Services Centre.

Benefits of Tourism.

growing industry to build hotels, resorts + restaurants. Money for the economy. Provides jobs. 1 in 8 spanish workers. Fishermen + farmers gain wealth as more food is needed.

Negitives of Tourism

Less space for farming. Pollution, sea, air, traffic congestion, noise pollution.
- Drug usage
- Party music loud music disturbs locals. Culture is forgotten in resorts.

Destruction of natural beauty in building + apartments. Tourists buying property driving up house prices. Locals forced to move inland. Shops struggle when no - locals to buy products

TERTIARY ECONOMIC ACTIVITIES

provide services for people.

Custom House Quay near central Dublin was redeveloped in 1987 into a modern hub of banking + other services. the IFSC contains more than 400 banks, insurance companies and other services.

Spanish Tourism

Warm climate more then 3000 hours of sunshine annually. Ireland 1000. Workers are english speaking. Many family resorts on the canaries (Lanzorote, Grand Canaria, Tenerife) Balerics (Menorca, Ibiza, Mallorca) It is well developed for tourism. Part of the EU so no visa needed for Europians or currency exchange.

Influences on mass movement.

Gradient: mass movement is fastest when the slope is steep.

Water content: Water makes the regolith (loose material) heavier and acts like a lubricant.

Human activity: People often make cuttings into the sides of hills. The steeper slope may cause material to collapse.

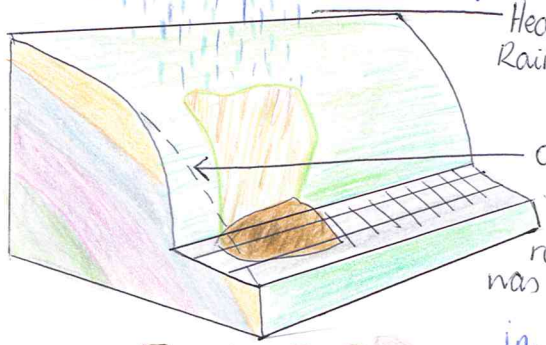
Vegetation: The roots of trees and plants bind regolith together. Slows down mass movement.

Speed	Type of mass movement
Slow	Soil creep
Fast	Landslides, bogbursts, mudflows

Land slides

A landslide is the very rapid movement of earth and rock (regolith) down a steep slope.

Slopes can become unstable when they are undercut by quarrying, road building or by coastal erosion. In 2003, a landslide in Co. Mayo ripped up roads, destroyed farmland and damaged bridges and houses.

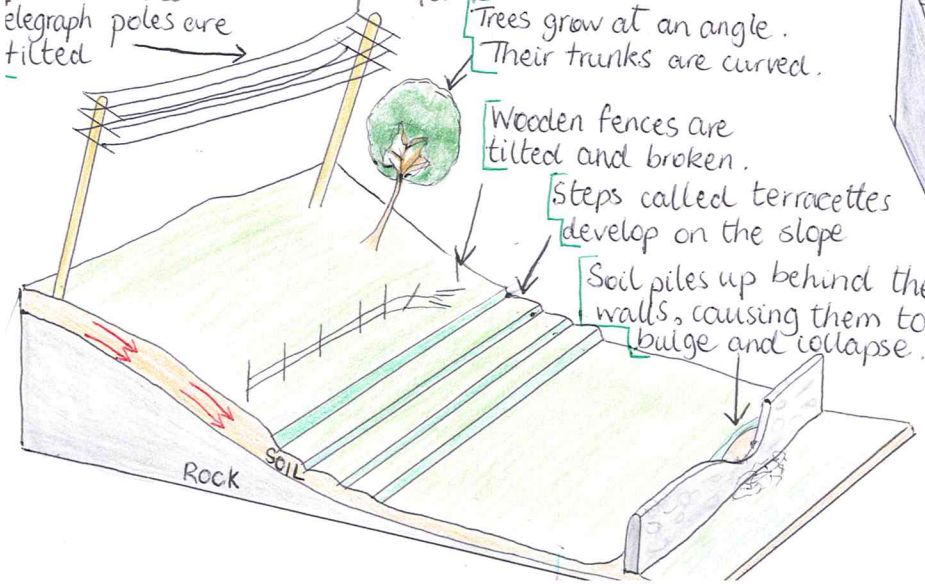


MASS Movement

Refers to the movement downslope of any loose material under the influence of gravity.

Soil creep

Soil creep is the downslope movement of soil under the influence of gravity. It occurs at speeds of less than 1cm per year.



Mudflows.

Mudflows are moving rivers of rock, soil and water. They are the fastest form of mass movement. Mudflows are triggered by heavy rainfall when the soil becomes saturated and turns into a river of mud. They can also occur after a volcanic eruption and snow-covered mountain.

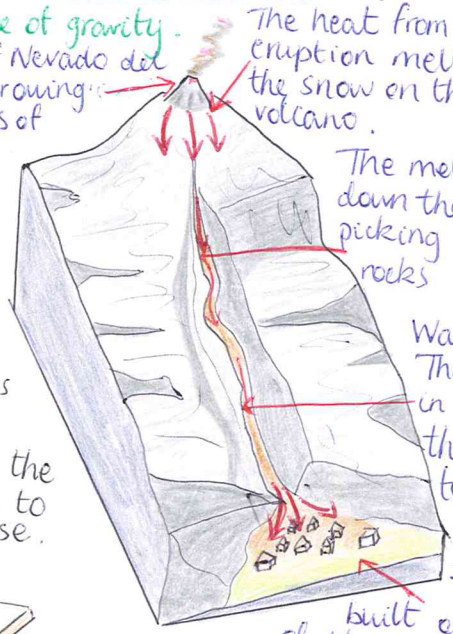
Bogburst.

A bogburst is a form of mudflow. It occurs in upland areas when peat becomes saturated with water after heavy rainfall.

Case Study: The volcano of Nevado del Ruiz

The volcano of Nevado del Ruiz, a snow capped mountain high in the Colombian Andes, erupted in 1984.

Lahar: a mudflow that contains volcanic ash and rock.



Impact of the mudflow: More than 21,000 people were killed. The death toll was so high because it occured when people were asleep. More than 5,000 homes were destroyed, 6,000 people were made homeless. The cost of the disaster was $1bn, about 20% of Colombia's GNP.

Weathering

The breakdown and decay of rocks that are exposed to the weather.

→ Mechanical
→ Chemical

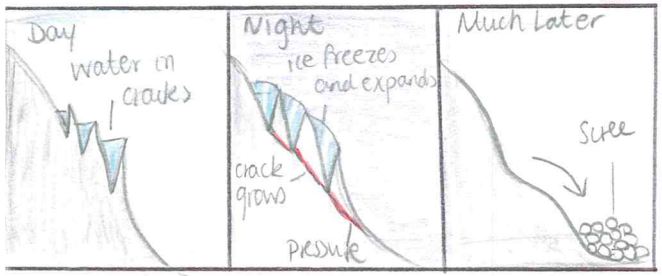
Weathering takes place on site and the result waste material is not moved.

MECHANICAL Weathering

↓

FREEZE-THAW

Occurs by frost action where there is percipitation and temperature rises and falls below freezing point. eg. Croagh Patrick



During the day water seeps into joints (cracks) in the rock.

By night the temperature drops below 0° + the water freezes and expands. (cracks) appear

Over time the rock splits and pieces break off. They roll down to the bottom of the mountain and collect in a pile.

Chemical Weathering.

↓

CARBONATION

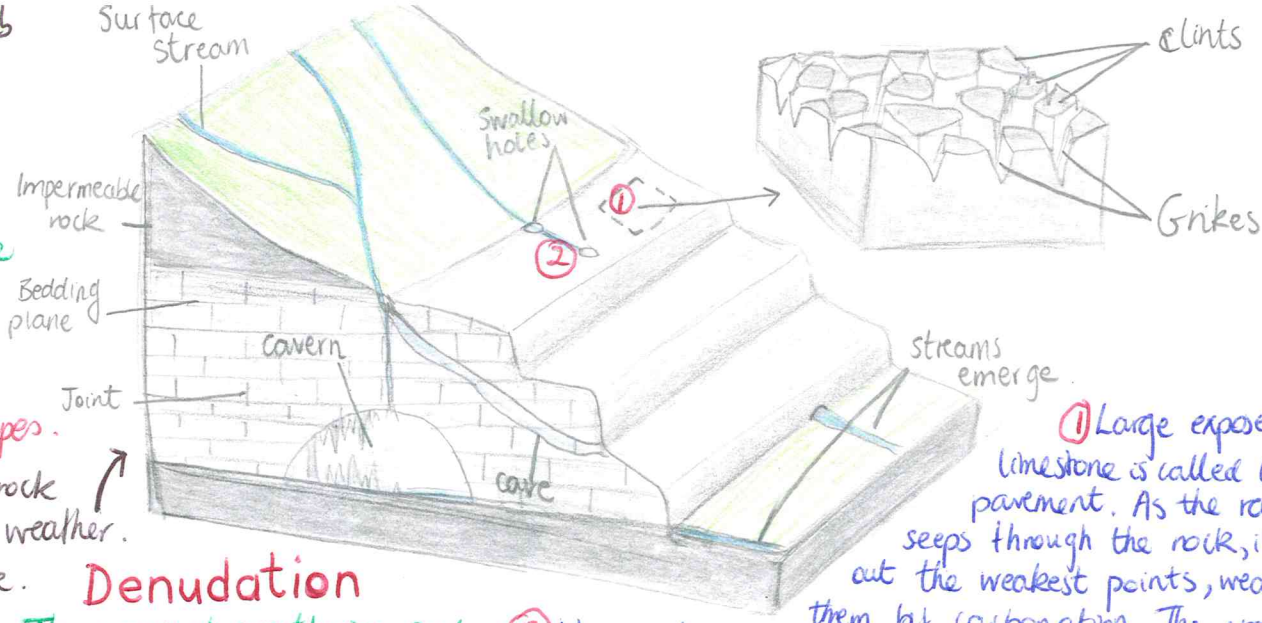
When weak carbonic acid reacts with calcium carbonate.

↘ **Karst landscapes.**

Where limestone rock is exposed to the weather.

eg. Burren Co. Clare.

Limestone is permeable

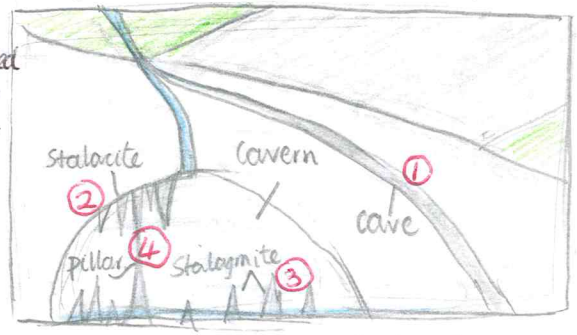


Denudation

The process of weathering and erosion constantly wear away the rocks on the Earth's surface.

Weathering + Erosion = Denudation.

1. Some times the river flows underground and carves out long tunnels called caves. When the cave is enlarged to a chamber it is called a cavern.



2. water containing dissolved calcium carbonate (calcite) seeps through the roof (grikes) of a cavern + leaves behind calcite. Over time the calcite builds up to form stalactite.

3. water that drops from the cave roof and that hit the ground evaporate and leaves behind calcite, these slowly build up over time. stalagmite.

4. Pillars are formed when a stalagmite and a stalactite joint.

1. Large exposed limestone is called limestone pavement. As the rain seeps through the rock, it picks out the weakest points, weathering them by carbonation. The cracks are called clints and the blocks are called grikes.

2. When water widens joints and bedding planes, opening them up. Soon the river disappears from the surface and flows underground. The passage which the river dissappeared through is called a swallow hole. Eg. Poulnagollum in the Burren.

CASE STUDY - THE BURREN - CO. CLARE

Flora - many different native Irish plants, rare ferns and orchids.

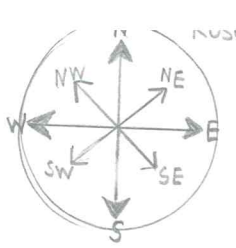
Fauna - rare green moth (found nowhere else in Ireland or UK) pine martens and wild goats.

Landscape - Aillwee cave, cliffs of moher, karst landforms.

History - dolmen, ring forts, churches, carved crosses.

BENEFITS OF TOURISM - Jobs - Reduces Emigration
Spin offs industry. Locals benefit from improved facilities.

DISADVANTAGES OF TOURISM - Damage to flora.
Noise and pollution. Roads widening ruins environment.
Increased risk to historical monuments.

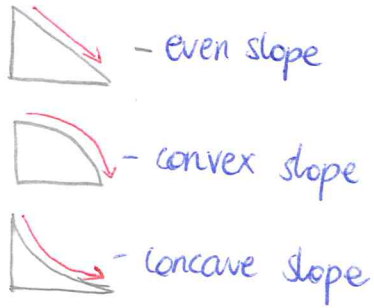


Relief.

Relief is the shape of the land.

- Colour shading
- Spot heights
- Contours

Slope and Gradient.



Calculating gradient.

The difference in height between 2 point

The distance between the points.

Measuring scale.

Representative Fraction – 1:50 000

(Ordnance Survey of Ireland, Discovery Series)

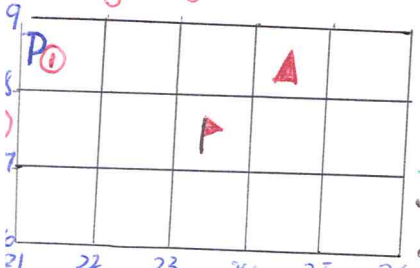
Linear Scale:

Statement of Scale: 2cm = to 1km

Drawing a sketch map.

1 Measure the side + bottom of map (24cm x 18cm)
2 Copy the measurements on to sketch.
3 Mark every 2nd line with marker on map.
4 Copy onto book in PENCIL.

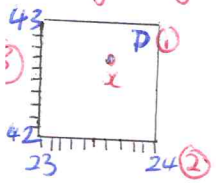
Four-figure grid reference



The Golf Course is at: P23 57

The Youth Hostle is at: P24 58

Six-figure grid reference



X is at P 237 427

Checklist fore Aerial Photographs.

- Title
- Key

Drainage

Drainage refers to the ways that water flows in the landscape

Well drained landscape

- Lots of settlement
- Lots of roads
- Little surface water.
- Few rivers.

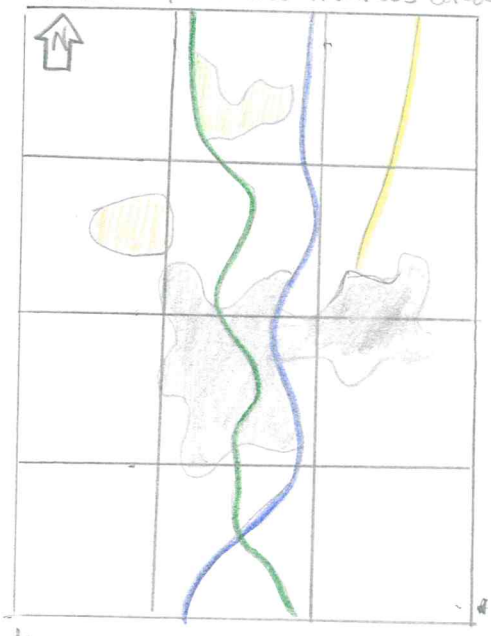
Badly drained landscape

- Very little settlement
- Very few roads
- Place names may give info.
- Coniferous forests planted on lowlands.

Rules for sketching

1. Title of the map.
2. Enclose Map
3. North Arrow
4. Key in a box
5. Scale (1:50000) (1:100 000)
6. Draw coastline
   - Lots of surface water. (streams or small lakes)

Sketch map of the Thurles area



* not to scale.

key

Third class road =

Built up area =

N62 =

River Suir =

Woodland =

Race course =

Aerial Photographs.

Two types of aerial photographs.

- Vertical
- Oblique

Left Background	Centre Background	Right Background
Left middleground	Centre middleground	Right middleground
Left foreground	Centre foreground	Right foreground

Land use

Pastoral farming: Green fields where grass is growing + animals are grazing.

Arable farming: Ploughed fields, fields where crops are ripening or have been harvested.

Market gardening, Woodland, Mining / quarrying.

Identifying the season

Summer

- Deciduous trees have full foliage cover.
- Short shadows.
- Cattle grazing in fields.
- Ripening crops → bright colours

Winter

- Deciduous trees lost foliage cover.
- Long shadows.
- Cattle moved indoors.
- fields freshly ploughed

Factors that affect climate

Latitude: distance from equator
The further you are from the equator the colder you get. This is because of the distance the suns rays have to travel when you are at the North/South Poles, compared to the equator. The amount of space the sun covers when it hits the earth influences climate.

Prevailing winds: Ireland's main prevailing wind is south-westerly (North Atlantic Drift) Northerly winds: Cold - comes from high latitudes. Brings snow in winter.
South-westerly winds: Cool in summer - sea takes longer to heat than land. Mild in winter. Rain bearing - absorb moisture when passing over the ocean.
Southerly winds: warm - comes from lower latitudes. Rainfall - cool as they move higher latitudes.
Easterly winds: Warm in Summer, cold in winter, Land absorbs heat quickly = looses heat quickly. Dry

Distance from the sea: The sea heats more slowly than land during summer and vice versa. Coastal areas have a smaller temperature range than inland areas. The further away from the sea the larger temperature range described as continental.

Factors that influence local climate

Aspect - the direction a slope faces in relation to the sun's rays. South facing slopes in the Northern hemisphere are warmer because of the sun rays and warm southerly winds.

Altitude: height above sea level. The higher the colder. Air becomes thinner and is less able to absorb + hold heat. Upland areas are more exposed to wind decreasing the temperature. Upland areas also receive more precipitation.

Natural Regions + World Climates

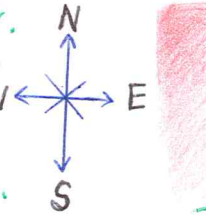
A natural region is an area that has its own unique characteristics.
- Climate
- Natural vegetation
- Wildlife
- Human activities.

World Climates:
- Hot Climates
- Temperate Climates
- Cold Climates.

Hot Climates
- equatorial
- [Hot desert]
- Savanna

Temperate Climates
[Cool temperate oceanic climate]
Warm temperate oceanic
Mediterranean

Cold Climates
Tundra
[Boreal]



The average weather conditions in an area over a long period of time.

Desertification: turning land into desert.
eg. The Sahel, a region at the southern edge the Sahara Desert.

Causes of Desertification: Climate change: Rainfall is unreliable. they may come late or not at all. Higher temperature, global warming. Increased droughts. Human factors: High birth rate - increased demand for food. Large herds leads to overgrazing of the land. Change from grazing to growing crops. Without fertilisers, soil loses nutrients. Trees + shrubs are cut down for cooking.

Results of desertification
Hundreds of thousands have died as a result of famine Eg Sudan + Ethiopia. Millions of people were forced to migrate in search of food. many live in refugee camps.
Many people moved into urban areas → growth of slums. Land unable to support agriculture. The Tuareg people hard to move.

Hot Climates

Hot desert climate. 15°-30° N+S of equator

Temperature - [Daytime - 30°C to 50°C
Hot desert are located in the tropics. Sun is always high in the sky. Cloudless skies - long hours of sunshine.
[Night-time - low as 5°C. Absence of clouds + vegetation - rapid loss of heat at night. Night is known as "winter of the desert"

Rainfall: - annual total less than 100mm. Long periods of drought broken by sudden downpours. The hot deserts are in the path of trade winds, they blow over land towards the equator. Dry winds. Some deserts are in the path of winds that blow over cold currents. They lose their moisture over the ocean.

Vegetation: Very little vegetation due to shortage of water. Cactus have thick waxy skin to reduce the loss of water. Date palms have long tap roots to reach deep into the ground. Joshua trees have juicy flesh to store water.

Animals in hot desert

Desert fox stay underground at day + come out at night. Jack rabbit has long ears to lose heat. Rattlesnake eat small animals to get moisture.
Camels - store fat in their humps. have long eye lashes + nostrils that open + close during sandstorms. wide hooves - walk on sand. thick lips to eat prickly plants.

Solutions to desertification:
Plant trees as shelter belts.
Plant grasses that are resistant to drought. Dig deeper wells to find water for irrigation. Introduce new breeds of animals to produce more milk, but with smaller herds.

Weather

Synoptic charts.

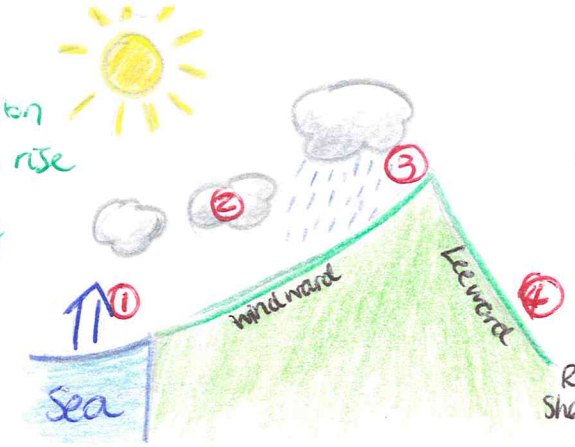
Atmospheric pressure is measured in units called millibars (mb) / hecto pascals. Lines that show air pressure are called isobars.

A front is a boundary line between 2 air masses.

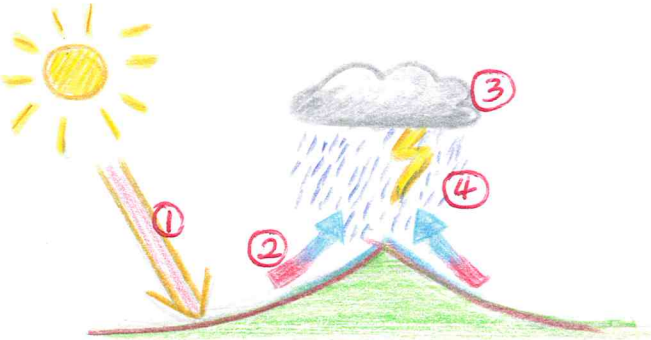
Air mass is a large body of air in which temperature, pressure + humidity are uniform.

Types of Rain

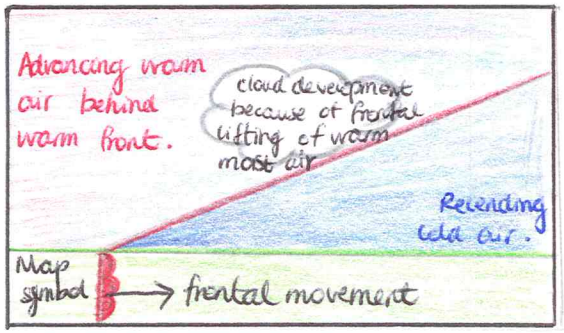
Relief rain: 1) Evaporation causes water vapour to rise 2) Clouds form and they cool and condense. 3) As the clouds rise over the mountain it continues to condense + rain falls on windward. 4) Leeward experiences less rain causing a rain shadow.



Convectional rain: 1) The sun heats the earth's surface 2) Air over the hot land is warmed. It expands + rises rapidly 3) As it rises it is cooled 4) Water vapour condenses to form cumulus clouds + heavy thundery showers.

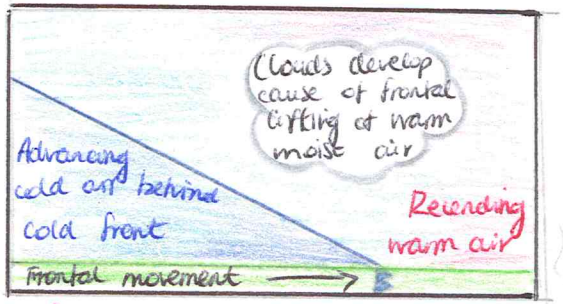


Warm fronts



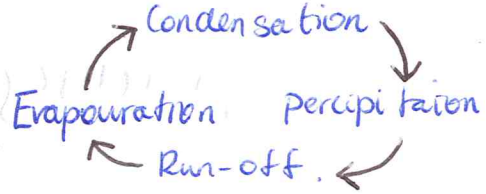
Warm fronts – occur where a warm air mass moves in towards and rises above a cold air mass. When the 2 air masses meet clouds will develop. They are displayed as a red line with semi-circles on it. Area of low (depression) dense.

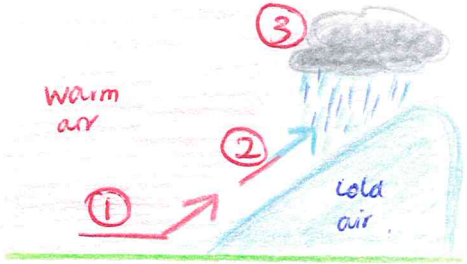
Cold fronts.



Cold fronts – occurs where a cold front advances on a warm air mass. Clouds will develop because of frontal lifting of warm moist air. Area of high pressure (Anti-cyclones). Displayed as blue triangles. More dense.

Cyclonical (frontal) rain: 1) Warm air is light so it rises over heavier cooler air. 2) Warm air cools and forms clouds 3) Stratus clouds form + rain is seen.





Up to 6500 feet

6500 – 18000

up to 1800

Measuring the WEATHER

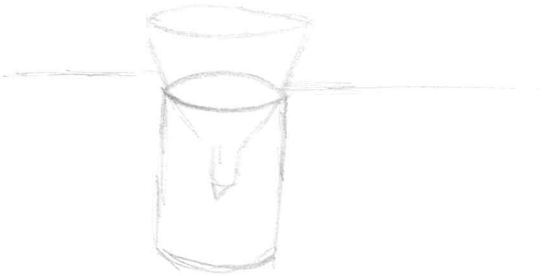
At the Meteorological Station.

Dublin, Cork, Shannon.

Rainfall.

Rain is measured with a rain gauge in millimeters (mm).

Weather maps – Isohyets.



Temperature.

Temperature is measured using a thermometer, the liquid in the glass (mercury / spirit) rises up the capillary tube. °C or °F

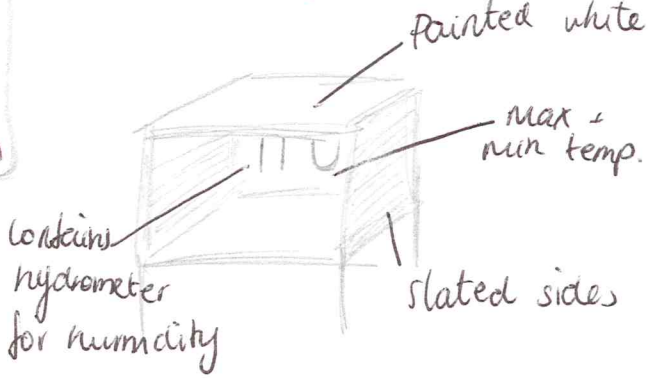
Weather maps – Isotherms.

mean temperature (average)

Temperature range (5° – 17°C)

Stevenson screen

measures the temperature and humidity



Air pressure

Air pressure is measured with a barometer. Weather map – Isobars.

Sunlight

Sunshine is measured using a campbell stokes. Weather map – Isohels.

Wind

Wind speed – anemometer (km/h)

Wind intensity – The Beaufort Scale

Wind direction – wind vane.

Weather map – Isotachs.

Wind is moving air

Air has its own weight known as atmospheric pressure.

Winds blow from high pressure to low pressure.

Warm air : Low pressure systems.

↳ Lows
↳ depressions
↳ cyclones.

Anti-clockwise

Strong winds that blow towards the centre. Lots of clouds are caused by the rising warm air. Lots of precipitation from the clouds form.

Usually oval shaped and pressure is lowest in the centre.

Cold air : High pressure systems.

↳ Highs
↳ anti-cyclones.

clock wise

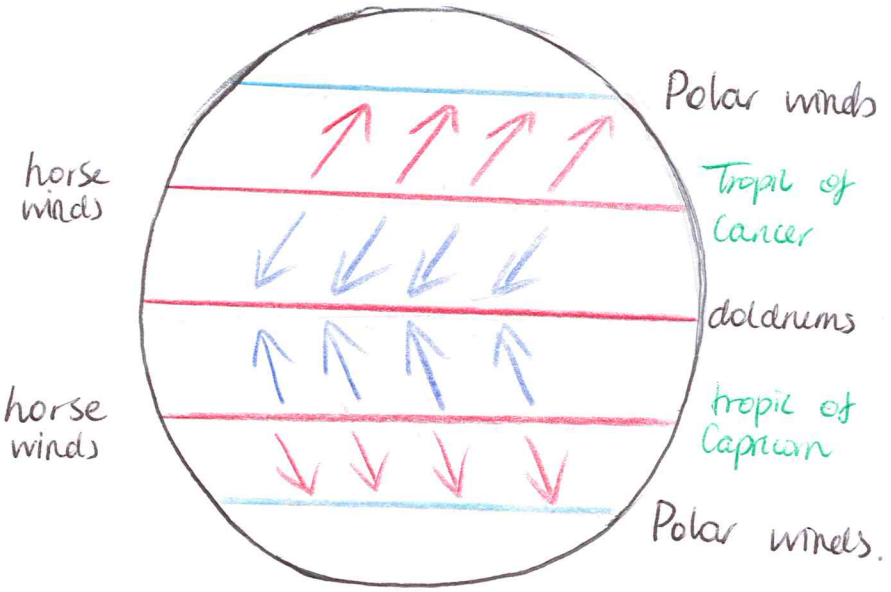
Light winds blow away from centre. No clouds are there are no ascending air. Dry weather.

roughly oval — pressure highest in centre.

Coriolis effect/force.

The earth spins on its axis from W → E. It causes the winds in the northern hemisphere to go from W → E = left → right and vice versa in the south.

Wind + Ocean Currents



Ocean Currents - are the great rivers that flow slowly across the surface of our oceans.

N - Hemisphere ↻ S - Hemisphere ↺

Ocean currents are caused by the uneven heating of the earth.

Warm ocean currents - North Atlantic Drift, North Equatorial current. warm ocean increase the temperature of a region because the winds which blow over them are warm. They carry precipitation and result to humid areas. Ice free harbours in the winter

Cold ocean currents - The Labrador, the Canary. Cold ocean currents decrease the temperature of a region. Which leads to colder climate and freezing winters. Less clouds, low precipitation. Ice filled harbours.

Settlement

A place where people live. Varies in size.

Ancient Settlement

A place that is no longer occupied. Includes historical sites and antiquities. Shown and named in red on OS maps.

Worship / Religion
- Stone circle
- Holy well
- Church
- Ballaun stone

Everyday life
- Midden
- Togher
- Fulacht Fia

Burial sites
- standing stones
- Ogham stones
- Megalithic tomb

Defence
- Crannog
- Lios
- Castle
- Round tower
- Motte + bailey

Urban settlement

- Urban settlement is influenced by relief, drainage and communications
- Urban functions include residential, transport, retail, religious, education, recreational and tourist.
- Past urban functions include defense and market.
- Local authorities have introduced measures to manage traffic flow.
- Proper planning is important when locating factories, schools and residential areas.

RICEPOTS
- Residential, Recreational
- Industrial
- Commercial office, shops
- Educational, Ecclesiastical
- Port
- Open space
- Transport, tourism
- Services.

Factors that attract

Altitude – most people live below 200m. Above 200 weather can be

Aspect – South facing slopes get more sunshine ∴ attract more settlement

Shelter – at the foot of a hill or a mountain are sheltered.

Rural settlement

Slope – attracts to flat or gentle sloping ground. easier to build better soil for farming

Drainage – well drained areas, flood not suitable for agriculture.

- Nucleated / clustered
- Linear settlement
- dispersed settlement.

Tourist Attractions

Recreational – golf courses / Race courses / sport
Rivers · lakes – cruising / fishing / canoeing.
Coast – boating / fishing / swimming / sunbathing.
forest – Natural trails / picnic sites /
Historic – Castles / towers / stone forts / dolmens etc.
Accomindation – caravans / camping /
Shopping – shops / shopping centres

Temperate Climate

Cool temperate oceanic climate

Warm temperate oceanic/Mediterranean

Warm temperate oceanic climate.

30°-40° north + south of equator.

3 countries - Spain, France, Italy, Greece.

Temperature Summer - average 30° - close to equator. Sun high in the sky, cloudless sky long hours of sunshine. Dry with some drought High pressure belts. Influenced by trade winds that blow over dry land. Winter - Mild 4°C - 6°C. Prevailing wind is south-westerly, comes from lower latitudes ∴ warm.

Precipitation - winter moist. 400mm - 700mm

Prevailing winds bring moist air from Atlantic.

Depressions form over Mediterranean Sea.

Vegetation - Natural Vegetation is evergreen woodland. Cork, Oak, Cypress, Cedar, Olive.

- They absorb and store moisture during winter.
- Thick bark + waxy leaves prevent moisture loss.
- Widely spaced to avoid competition for moisture.

Few vegetation took over. low lying heathers + herbs Thyme, lavender + rosemary.

The changing Mediterranean landscape.

Human activity has changed the landscape. Woodland had been cleared for agriculture.

- Sheep + Goats.
- Overgrazing damaged vegetation, soil exposed to erosion by sudden downpours of rain.
- Fruit + veg farming throughout the year.
- Irrigation schemes to overcome drought in summer.
- Main crops citrus (oranges, lemons, grapefruit) tomatoes + vines.
- other crops include wheat, maize + sunflowers
- Tourism is the most important industry in many coastal Mediterranean areas. Costal del Sol, Riviera, Majorca. Brought jobs + wealth, worries of pollution, water shortages and badly planned developments.

Equatorial climate equator	• One season climate (32°C) • Rainfall every afternoon • Annual over 2000mm. • Rain forest (jungle) • Hardwoods (mahogany, teak, cherry). • Exotic birds (parrots) Snakes, butterflies, monkeys.
Savanna climate 0°-15° N+S	• Two season climate (25°C-35°C) • Annual - over 800mm • Summers wet, winters dry • Scattered trees • Grassland (green brown). • Herds of cattle • Lions, cheetahs, giraffes.
Cool temperate oceanic 50°-60° N+S	• Summer 15°C - 17°C, Winter 4°C - 6°C. Annual 11°C. • Annual total 800mm - 2000mm • Weather is cloudy + changeable • Deciduous forest • Oak, ash, elm, willow. • Removed for farming, transport, settlement
Tundra climate 60-75 + N	• Summer short - 5°C, Winter - long - 35°C. • less than 250 mm/annum. • mainly snow. • Very little vegetation due to cold • heathers, mosses + lichens. • Animal + birdlife can survive in summer. • Most migrate south for winter.

People in the boreal

- Very few people - harsh climate
- Miners, foresters, native people.
- More than 50,000 Sami people living in Lapland (across Norway, Sweden, Finland, Russia) Sami Europe's last tribe.
- Past - herders based on migration of reindeer herds. Today urban dwellers, forest industry.
- Many years Taiga untouched by humans. Today forests of Russia Canada, risk of logging companies, mining, + oil exploration companies.

Cold Climate

Boreal Climate

Tundra Climate.

Boreal Climate.

55°N of the equator, a belt that runs across America + Eurasia.

Countries - Norway, Finland, Parts of Russia.

Temperature - Summer - Short - coastal areas 10°C inland areas 15°C. N Hemisphere tilted towards the sun. Long hours sunshine → absorb heat. Winters - cold -25°C. N Hemisphere tilted away from sun. Sun low in the sky.

Precipitation - less than 400mm/annum. Max precipitation in summer. Polar winds r too cold to hold moisture. Many boreal areas are far from sea ∴ dry winds.

Vegetation - Evergreen forest - Taiga. (coniferous. Climate too harsh for agriculture → trees survived. Taiga accounts for 20% (over) world's forested area.

Wildlife in the boreal

Range of wildlife - mink, bear, wolf, eagle.

- Grizzly bears hibernate for the winter.
- Fur acts like an insulating layer keeping warm in winter + cool in summer.
- Some animals eg reindeer have hooves that act like snow shoes.
- Birds migrate to the south during winter

Population distribution – the spread of people around the world

Population density – the number of people per kilometer square

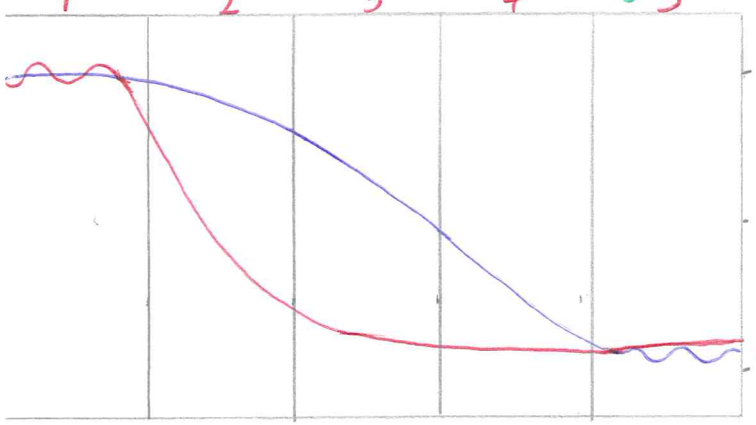
Population growth – Birth rate no. of birth's per one thousand
Death rate no. of deaths per one thousand.

There is a massive link between population growth + development.

migrant – one who moves from one place to another
migration – long term movement
Immigrant – one who migrates into a country.
Emigrant – one who migrates out of a country.
Refugee – one who gets special permission to live in a country because of persecution.
Asylum seeker – an immigrant who applies for permission to be accepted as a refugee. • Natural disasters.

Demographic Transition Model

model that explains the population cycle.



– death rate
– birth rate

Stage 1 – Eg. Sudan. Very poor Birth rate is high + so is death rate due to famine, diseases. Pop fluctuate.

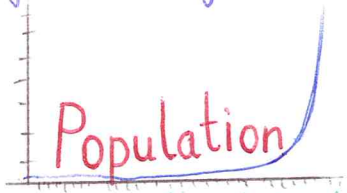
Stage 2 – economy develops. Birth rate high. Better food, water, medical supplies. Death rate decrease. Pop. grows. Eg Mali

Stage 3 – Economy improves People begin to plan their families. Birth rate falls. Pop. slows down. Birth control Ed. of women. eg. Brazil

Stage 4 – Economically developed. long lives. few children. Birth + Death rate low. Pop. fluctuate

Migration –

Internal migration – within a country
International migration around the world
Individual migration one person
Organised migration – job opportunities



demography – the study of people, where they live, why, how long for and different types of life around the world.

Push Factors –

• Too many people for the farmland.
• Severe pollution.
• overcrowding.
• War, famine, persecution
• unemployment • cold wet climate.

Barriers to migration – immigration laws
• fear of the unknown • cost of travel
• family + friends left behind.

Pull Factors

• Warm sunny climate • promise of freedom
• good housing • Better services • good job opportunities • lively social life.

Factors that influence population.

1 Food supplies – After 40 years pop will go from 4.1 billion to 8. 1 hector of land to support family. crop rotation, fertilisers, green houses.

2 Food tech – refridgeration, pasturisation tractors, machines, fertilisers, improves output on farms. Irrigation Scheme River Nile Egypt.

3 Medicine – clean water, sanitation, childhood vaccinations Health service, linked to developed economy.

4 War – decreases population. Migration refugees. decrease in birth rate (Baby boom after). eg Syria Sudan Ethiopia. Bombing effects production of food. eg WWII.

5 Status of women – girls iletration pop grows. Germany average 1.4 child. aging pop.

6 Education – eg Brazil.
when women are educated they can contol their family size. Standard of living rises.
Birth control

Developing countries

Malaria

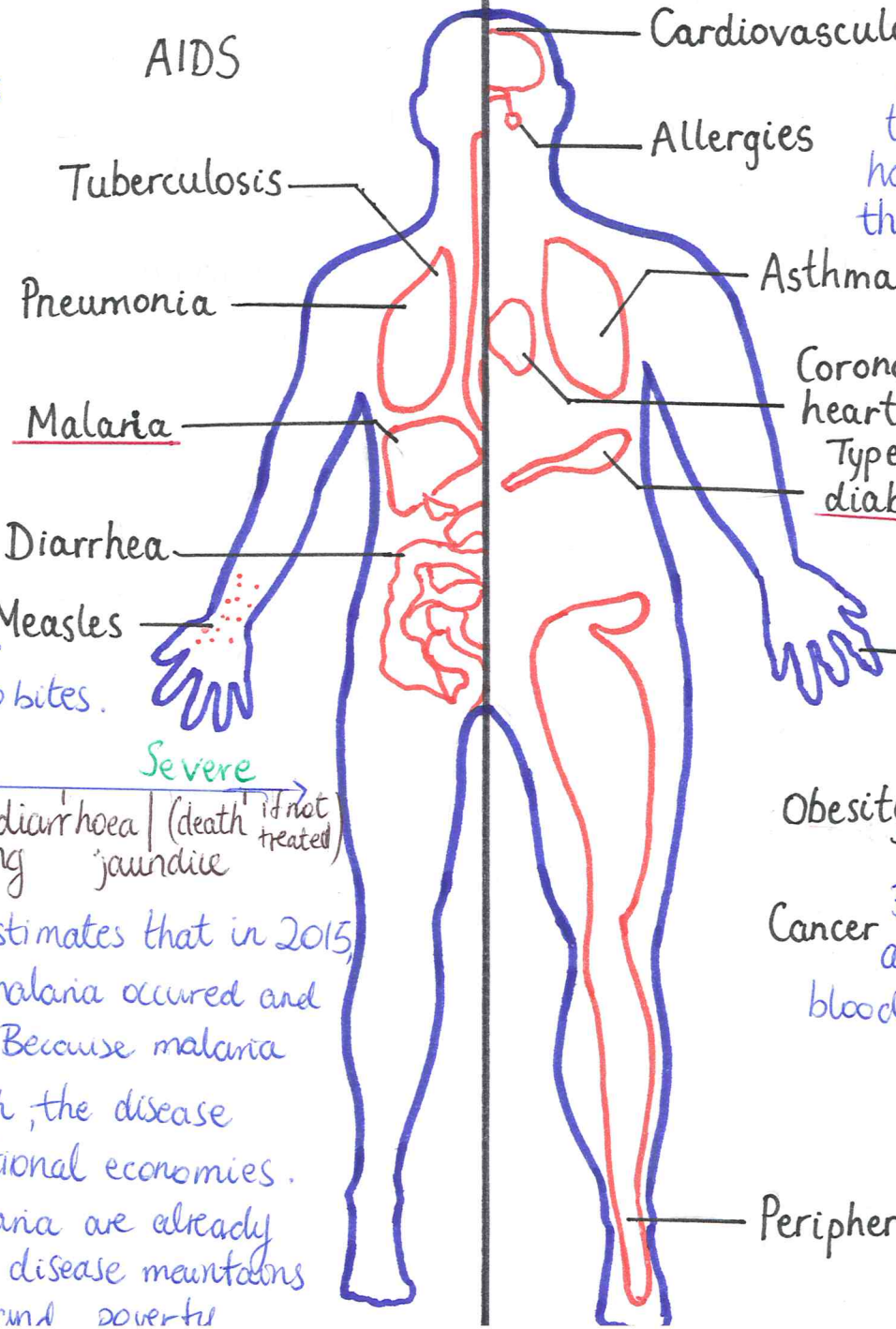
Malaria is a parasite that enters the blood. This parasite is a protozoan called plasmodium. 40% of the worlds population lives in malaria zones. Malaria zones are: Africa, India, Middle East Southeast Asia, Central and South America, Eastern Europe and the South Pacific Humans get infected by mosquito bites.

Symptoms.

Mild → Severe

fever | nausea | shaking | diarrhoea | (death if not treated)
sweating | fatigue | vomiting | jaundice

The World Health Organisation estimates that in 2015, 212 million clinical cases of malaria occured and 429,000 people died of Malaria. Because malaria causes so much illness and death, the disease is a great drain on many national economies. Since many countries with malaria are already among the poorer nations, the disease maintains a vicious circle of disease and poverty



Developed countries

Type II Diabetes.

Diabetes is a life, long disease that effects the way your body handles glucose. Most people with the condition have type 2. There are about 27 million people in the US with it.

Causes

Your pancreas makes a hormone called insulin. It's what lets your cells turn glucose from food into energy. People with type 2 diabetes make insulin, but their cells don't use it as well as they should. At first, The pancreas makes more insulin to try to get glucose into the cells. But eventually it can't keep up, and the sugar builds up in your blood instead.