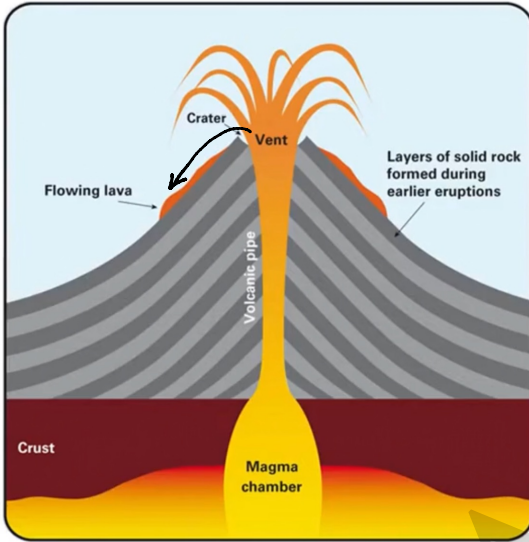


Petrology: Study of rocks



How are rocks formed?

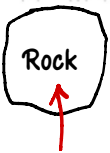
Igneous Rocks: formed when magma cools and solidifies

Types:

1. Intrusive: solidifies inside
2. Extrusive: solidifies outside

Igneous Rock
Examples

Basalt	Pumice	Obsidian	Rhyolite
Scoria	Dacite	Granite	Gabbro
Diabase	Diorite	Pegmatite	Peridotite



Exogenous agents act upon
eg: wind, water

Extrusive igneous
rock

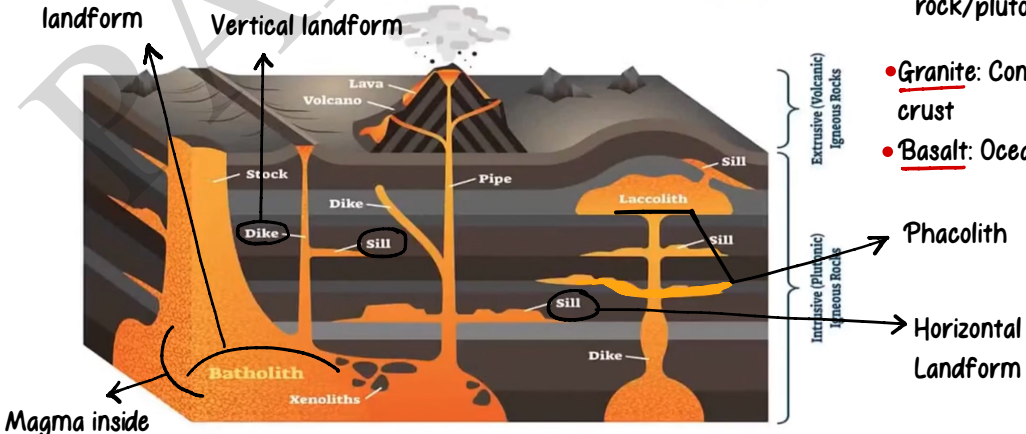
Intrusive igneous
rock/plutonic rocks

- Granite: Continental crust
- Basalt: Oceanic crust

PLUTONIC BODIES

Domed shaped
landform

Vertical landform



Phacolith
Horizontal
Landform

Sedimentary Rock: Sediments are broken, transported, and deposited

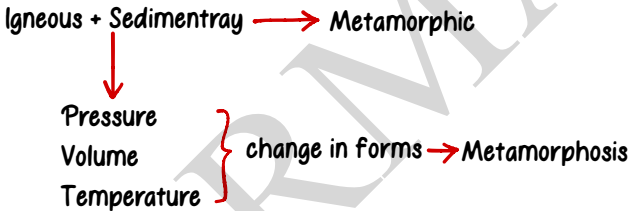
- They exist in layers/strata
- In sedimentary compaction takes place – Lithification
- Fossils are found in it

Types:

1. Formed mechanically, eg: Sandstone, limestone and shale
2. Formed organically, eg: chalk, limestone, coal
3. Formed chemically, eg: Limestone, halite

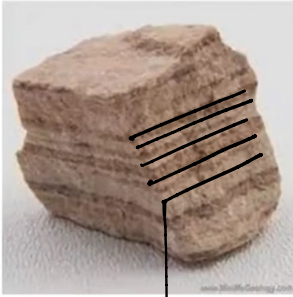


Metamorphic Rock: These rocks are formed by recrystallisation and reorganisation of materials within the original rocks

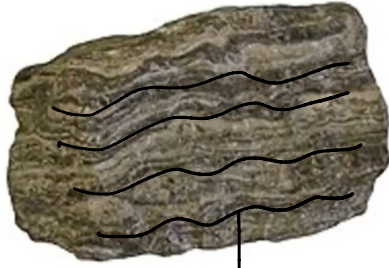


Types:

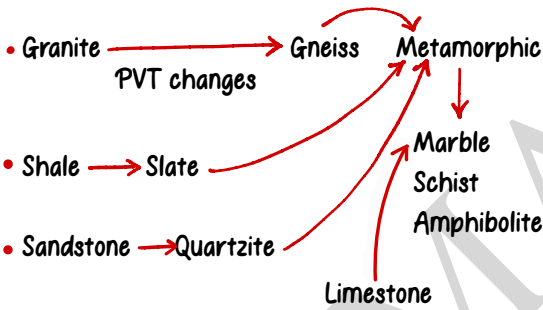
1. Thermal Metamorphism: metamorphic rocks formed due to a sudden temperature change
2. Dynamic Metamorphism: metamorphic rocks formed without any chemical change



Alternate dark and light bands called **banding**

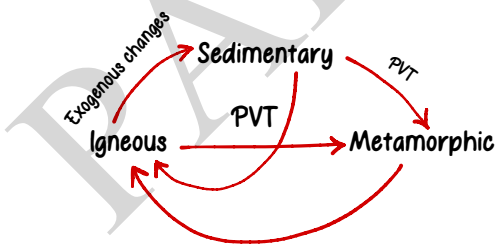


Lines formed called **Lineation**



Metamorphic Rock			
Examples			
			
Marble	Anthracite	Gneiss	Hornfels
			
Mariposite	Novaculite	Quartzite	Phyllite
			
Schist	Skarn	Slate	Soapstone

Rock Cycle



Volcano

Types:

1. Cinder
2. Composite: most viscous lava
3. Shield: low viscosity lava
4. Caldera: most explosive lava, collapses on itself

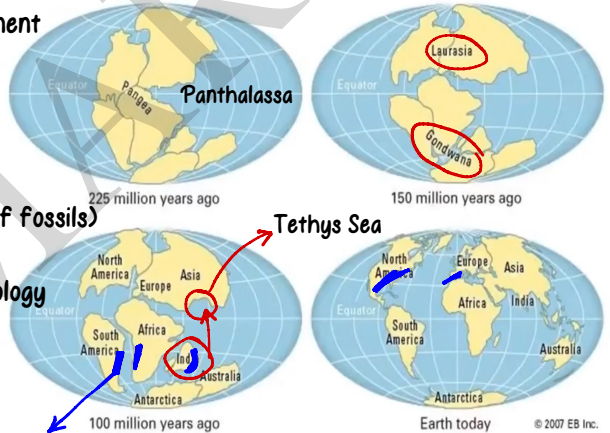
Continents and Oceans

- Alfred Wegener: **Gave Continental Drift Theory, 1912**

All of the modern-day continents had previously been clumped together in a supercontinent called **Pangaea** and the water body is called **Panthalassa**

→ Evidences:

- Jig Saw fit
- Fossils deposits: Palaeontology (study of fossils)
- Placer deposits



Study of rock: Petrology

Types of rocks

Soft

eg: Talc

Hard

eg: Diamond

Convection cells

Due to

Residual heat

Radioactive decay

Two main sources of heat within the Earth

Fossils deposits

- Continental drift due to (as assumed by Alfred Wegener)

1. Tidal force
2. Polar fleeing force

But it occurs due to development of **convection cells**



• Decreasing order of Continents and Oceans

Area wise

Asia
Africa
North America
South America
Antarctica
Europe
Australia

Population basis

Asia
Africa
Europe
North America
South America
Australia
Antarctica

Mariana Trench deepest point: Challenger deep

deepest ocean

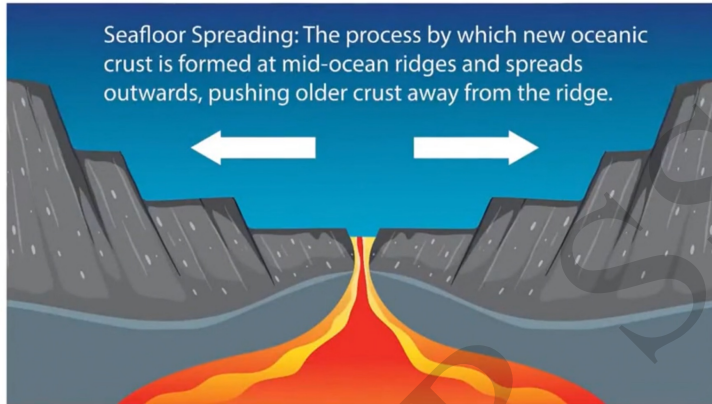
Oceans Order

P: Pacific Ocean
A: Atlantic Ocean (S-shape)
I: Indian Ocean
S: Southern (Atlantic)
A: Arctic

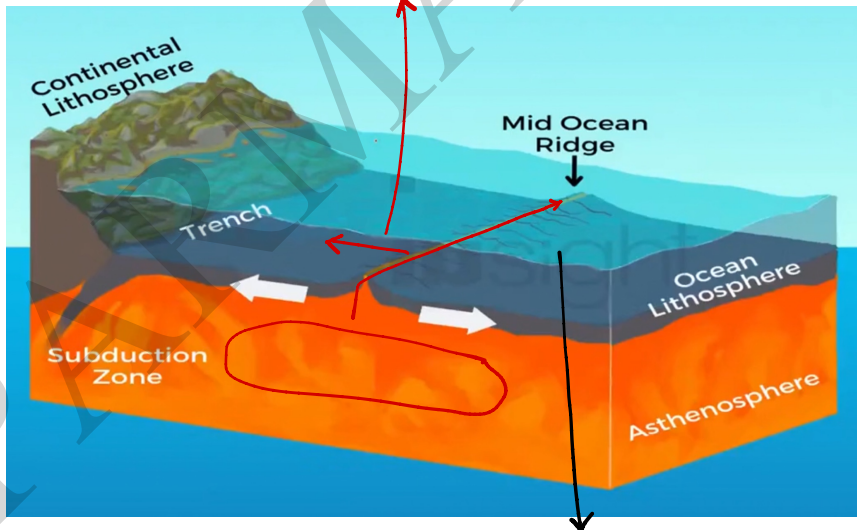
Busiest ocean

Sargasso Sea (brown algae Sargassum is seen here) - borderless sea

The Process of Seafloor Spreading



The age of oceanic rocks increases as you move away from the mid-ocean ridge



Oceans has more relief features than continents (more diversity)

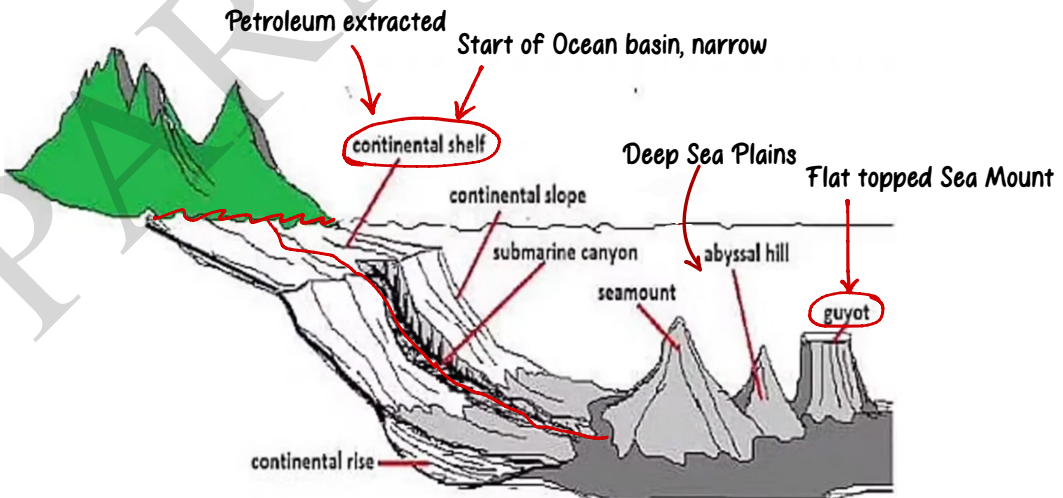
- Harry H. Hess gave seafloor spreading theory, 1962



created due to divergent plate boundary

Mid-Atlantic Ridge

Longest and largest landform on Earth





- **Minor relief feature: Atoll, sea mount, guyot**

Corals: they are sea organisms, known as **Rainforest of Sea**

- **Exists in symbiotic relationship with Zooxanthellae algae**

Makes food for corals

Secretes CaCO_3 that provides protection to Zooxanthellae algae

- Corals exists in colony
- Favourable conditions:
 1. Saline water (cannot survive in fresh water)
 2. Sunlight
 3. Clear water
 4. Temperature: Moderate temperature $30-35^\circ\text{C}$
- **Barrier Reef: Great Barrier Reef in Australia (largest)**

- Coral bleaching: when water is too warm, corals will expel the algae (Zooxanthellae) living in their tissues causing the corals to turn completely white

↓
due to climate change

→ Relief Feature of Oceans

Major

Minor

Shelf → Slope → Rise → Abyssal plain

· Seamount

· Guyot: flat-topped sea mount

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