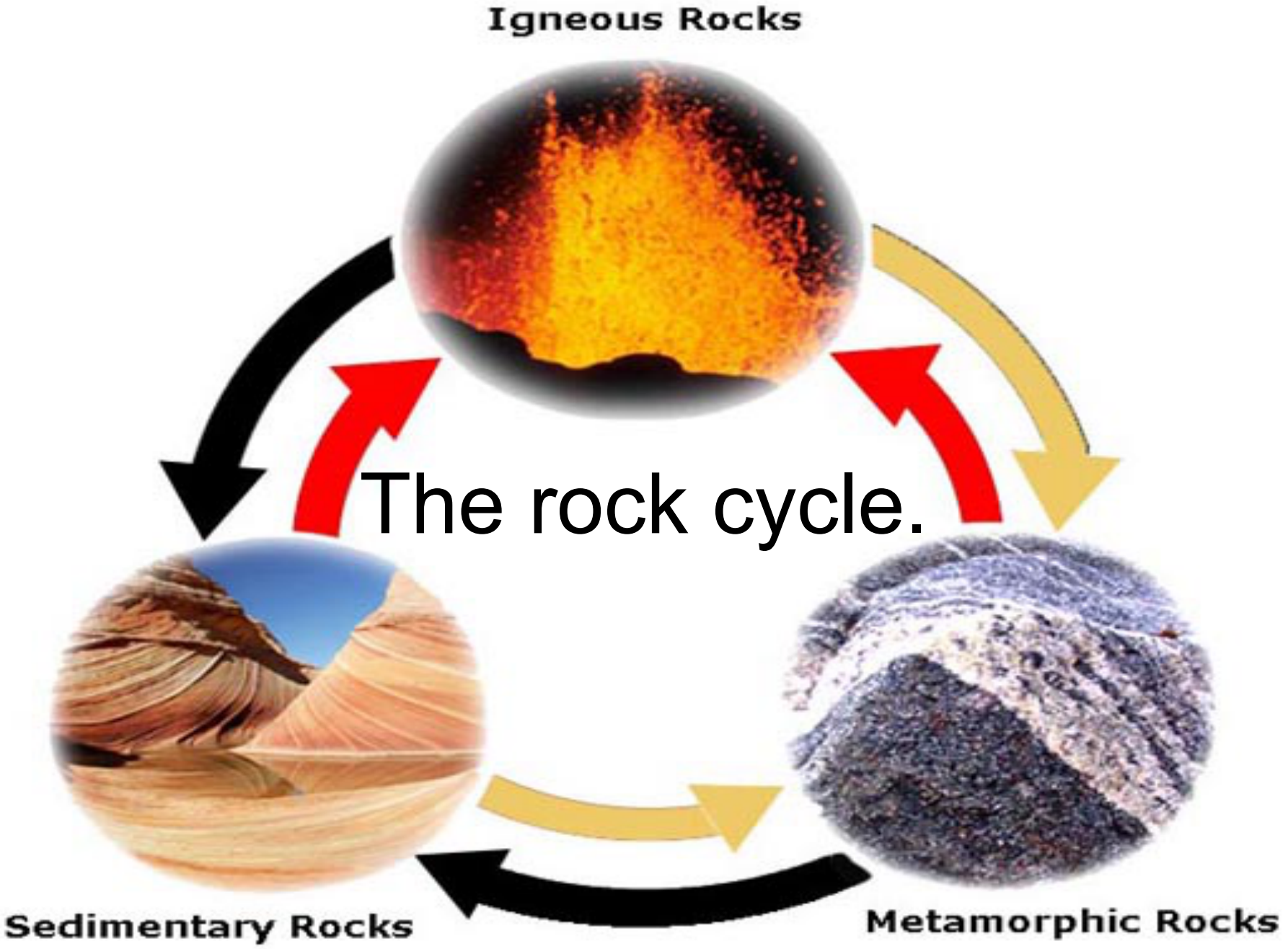

Igneous Rocks
The rock cycle.
Sedimentary Rocks
Metamorphic Rocks

There are three different types of rock.

- **Sedimentary rocks**

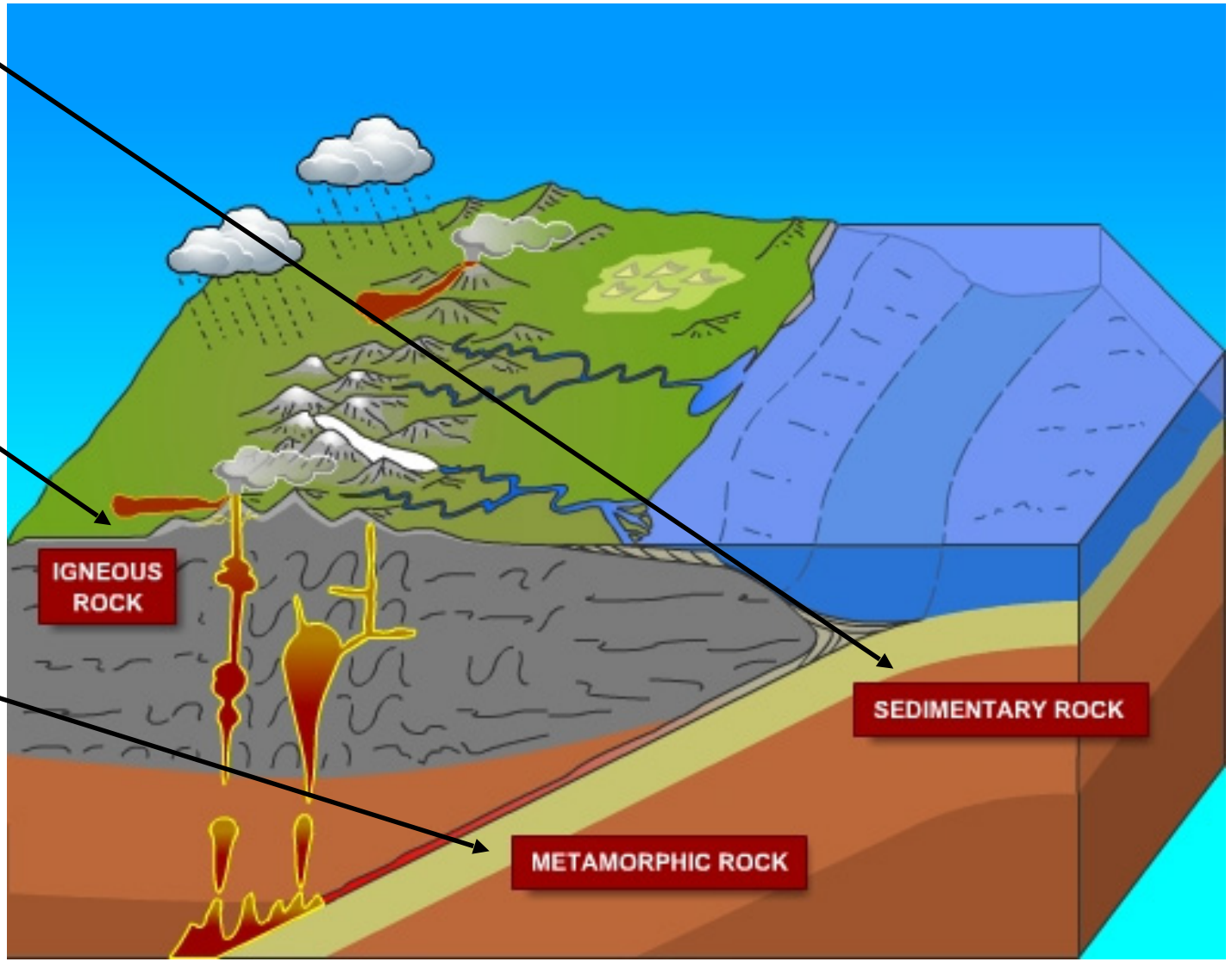
Formed when particles are deposited and compressed.

- **Igneous rock**

Formed by lava from volcanoes.

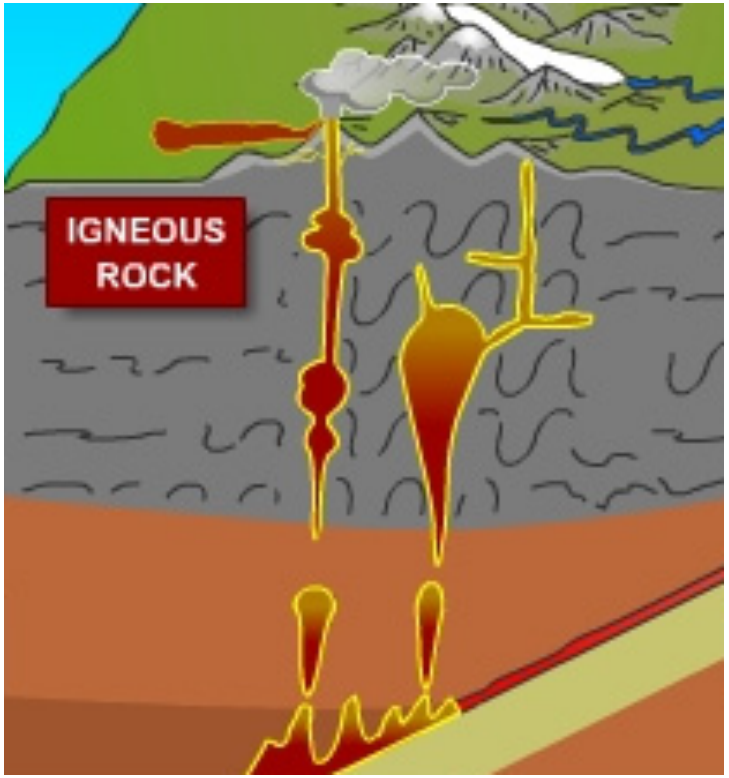
- **Metamorphic rock**

Formed when sedimentary rock is change by heat and pressure.



Igneous rock.

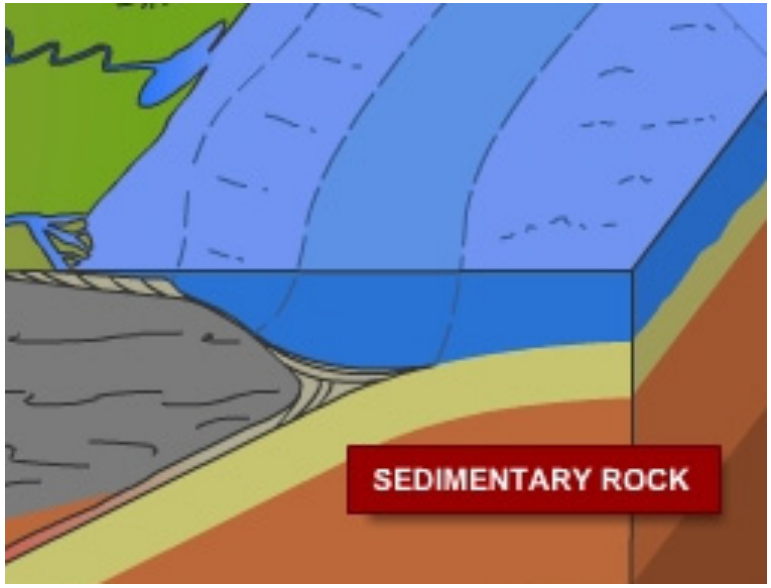
- Igneous rock is formed by magma (molten rock) being cooled and becoming solid.
- They may form either below the surface as intrusive rocks or on the surface as extrusive rocks.
- This magma can be made up of melted pre-existing rocks in either the Earth's mantle or crust.
- They are mostly made up of interlocking crystals and usually very hard to break.

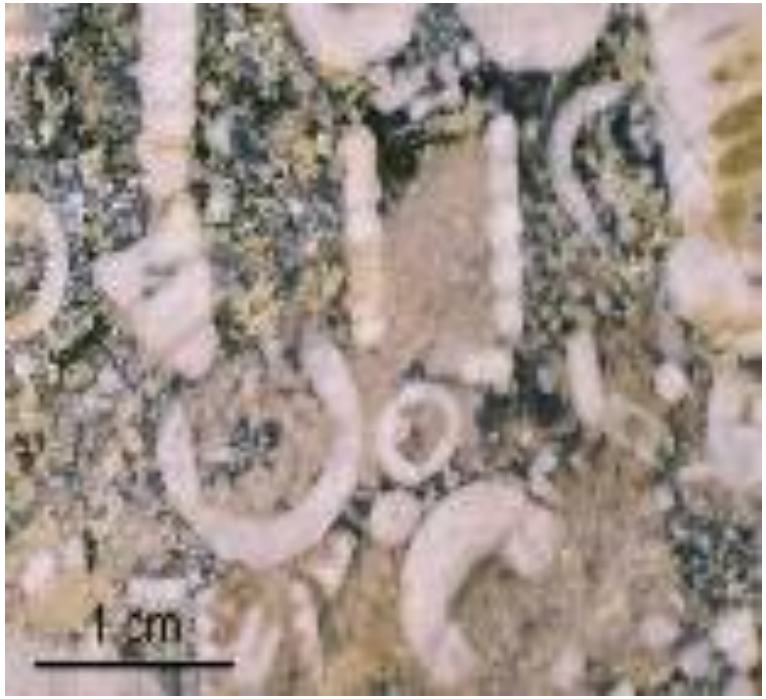


Basalt

Sedimentary rocks

- Sedimentary rocks are formed from sediment grains deposited by water, wind or ice.
- The sediment grains are formed by other rocks eroding.
- The sediment grains are transported by wind, rivers and streams to the sea.
- They are always formed in layers, called “beds” or “strata”, and quite often contain fossils.

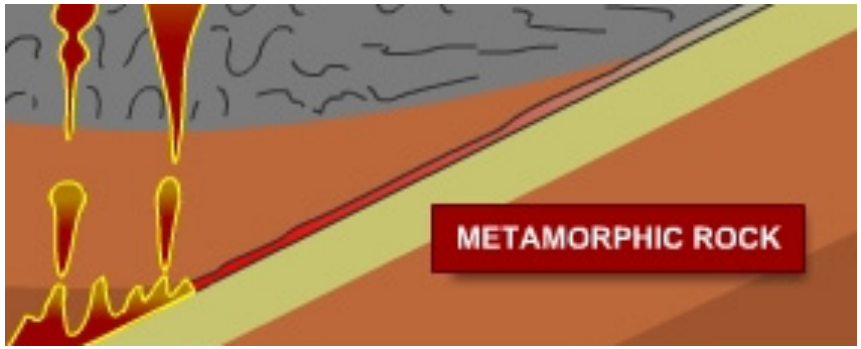




Limestone with fossilised shells.

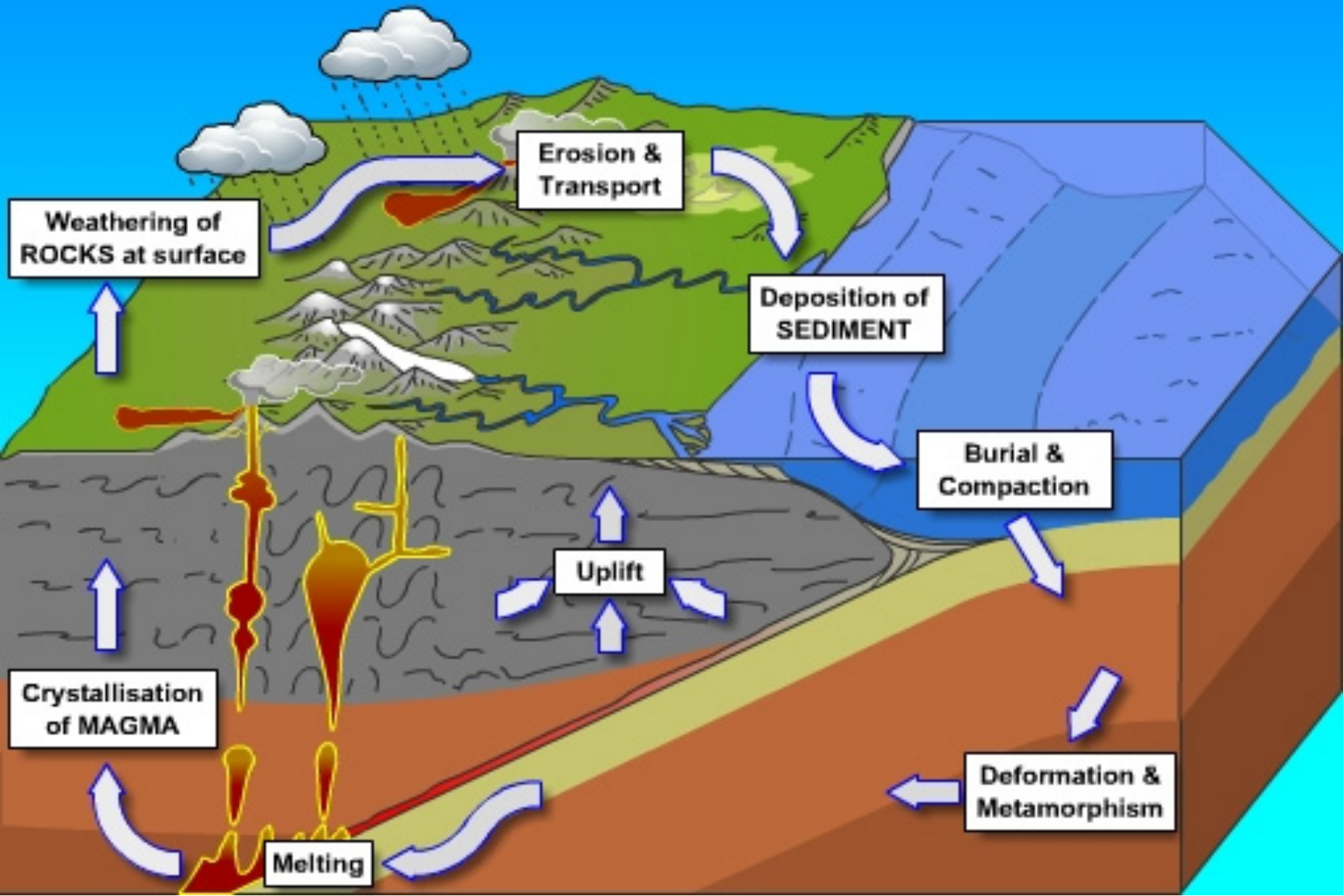
Metamorphic rocks

- Metamorphic rocks were once igneous or sedimentary rocks, but have been changed (metamorphosed).
- They are changed by the intense heat and/or pressure within the Earth's crust.
- They are crystalline and often have a "squashed" (foliated or banded) texture.



Marble – used to be limestone.

Rock cycle processes



Weathering.

- Physical weathering, Freeze-thaw occurs when water continually seeps into cracks, freezes and expands, eventually breaking the rock apart.

- Chemical weathering is caused by rain water reacting with the mineral grains in rocks to form new minerals (clays) and soluble salts. These reactions occur particularly when the water is slightly acidic.

- Biological weathering, Trees put down roots through joints or cracks in the rock in order to find moisture. As the tree grows, the roots gradually prize the rock apart.

Erosion and transport.

- Wind erosion and transport is a serious environmental problem in the driest parts of the world, removing soil from farmland and covering whole towns with sand and dust.

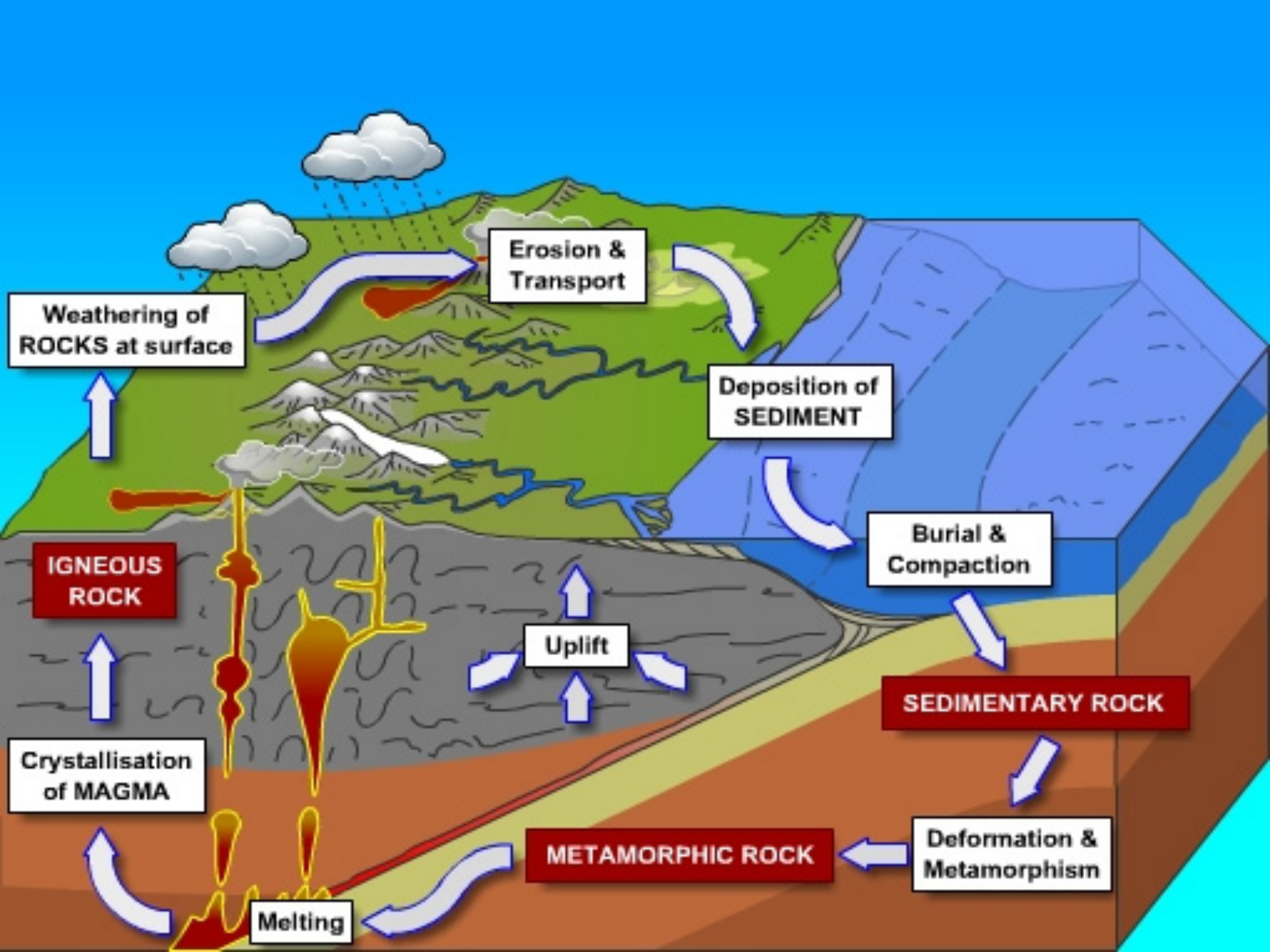
- Around the world, moving water picks up and transports millions of tonnes of sediment every day, along rivers, coasts, and even in the deep oceans.

Deposition, burial and compaction.

- Deposition is the laying down of sediment carried by wind, water, or ice. Sediment can be transported as pebbles, sand & mud, or as salts dissolved in water. Salts may later be deposited by organic activity (e.g. as sea-shells) or by evaporation.
- As layers are piled one upon another, the sediments beneath are buried, sometimes by hundreds of metres of sediment above. The weight of these layers compacts (squashes down) the sediment grains.

Layers of sediment in the Grand Canyon


Now put all that we've
learned together.


Erosion &
Transport
Weathering of
ROCKS at surface
Deposition of
SEDIMENT
Burial &
Compaction
IGNEOUS
ROCK
Uplift
SEDIMENTARY ROCK
Crystallisation
of MAGMA
Deformation &
Metamorphism
METAMORPHIC ROCK
Melting

Your task is now to build a model of the rock cycle.

On Thursday each group will give a presentation, the best presentation and model will get a prize. To be the best you need to:

- Have lots of information on your model and in your presentation.
- Include all of the types of rock and show how they were formed.
- Have a volcano that erupts.
- Work well as a group
- Respect the other groups while they are giving their presentations.
- Make your model today there will be no time on Thursday.