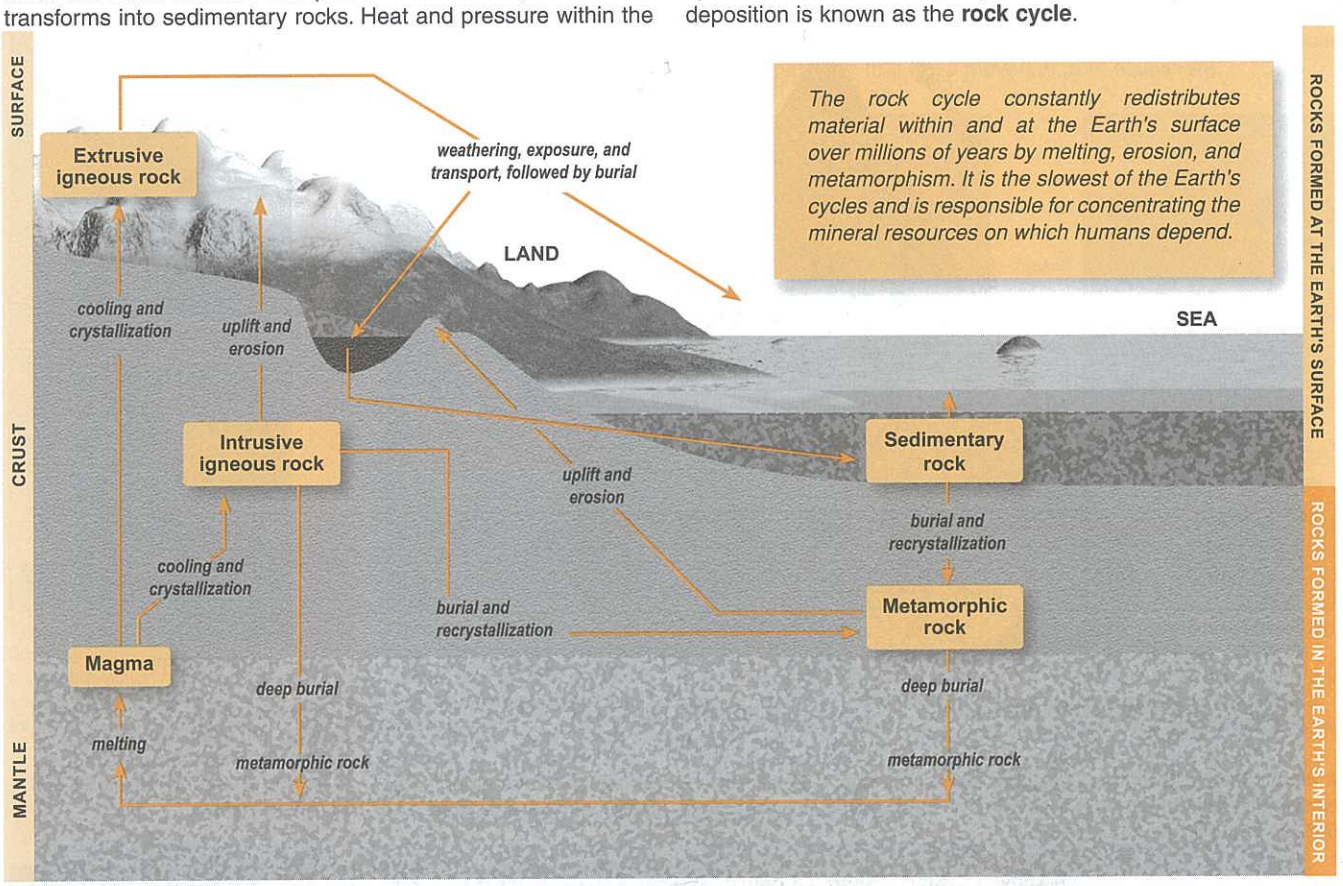
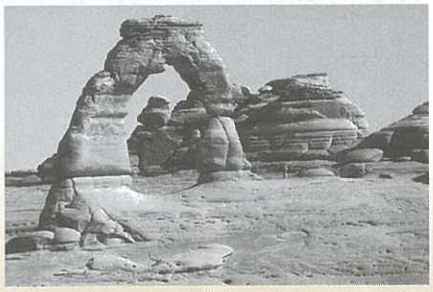
The Rock Cycle

The Earth's many rock types are grouped together according to the way they formed as **igneous**, **metamorphic**, and **sedimentary rocks** (as well as meteorites). These rocks form in a continuous cycle. Volcanism creates rocks at the Earth's surface. Erosion of these and other surface rocks produces sediments, which burial transforms into sedimentary rocks. Heat and pressure within the Earth can then transform pre-existing rocks to form metamorphic rocks such as slate and schist. When rocks are exposed at the surface, they are then subjected to the physical, chemical, and biological processes collectively known as **weathering**. This cycle of rock formation, exposure, weathering, erosion, and deposition is known as the **rock cycle**.



The rock cycle constantly redistributes material within and at the Earth's surface over millions of years by melting, erosion, and metamorphism. It is the slowest of the Earth's cycles and is responsible for concentrating the mineral resources on which humans depend.

These formations, known as hoodoos, are composed of soft sedimentary rock topped by a piece of harder, less easily-eroded rock that protects the column from the elements. Hoodoo shapes are affected by the erosional patterns of alternating hard and softer rock layers, while different minerals produce color.



Water and ice are powerful agents of erosion. Water lifts and transports rock fragments, and the freezing and thawing splits rocks apart. The flow of seawater millions of years ago, together with ice wedging and collapse along joints in the rock have resulted in the formation of this spectacular arch in Utah, USA.

Salt weathering of rock produces a distinctive honeycombing effect. Seawater penetrates the rock and then evaporates to leave behind salt crystals, which expand to produce holes in the rock surface. Softer parts of the rock are eroded at a greater rate than harder parts.

1. Using appropriate examples, distinguish between **igneous**, **sedimentary**, and **metamorphic** rocks:

2. Distinguish between **weathering** and **erosion** and describe the role of these processes in the rock cycle:

3. The Earth's mineral resources are produced by recycling processes, but are essentially non-renewable. Explain:

Related activities: *The Earth's Crust*
Weblinks: *Interactive Rock Cycle*