

Weathering and erosion

Solution

D

Place a small chip of limestone in 2M acid or brick cleaner and watch it dissolve.

Break up of shale

D

Place a piece of shale in a beaker of water. The clay minerals will expand and the shale disintegrates. Check beforehand that you have the right type of shale. Triassic red mudstone works well.

Weathering of sandstone by solution of the cement

D

Place a chip of sandstone with a calcite cement into 2M acid. It will crumble into a pile of sand.

Speed of weathering or solution and surface area

D or I

Dissolve equal amounts of granulated and castor sugar in equal volumes of warm water. Which dissolves first and why?

Chemical weathering and core stones

D

Submerge an ice cube which is an actual a cube with sharp corners in water. Solution takes place fastest at the corners and edges so it turns into a rough sphere. Chemical weathering also acts fastest at the corners.

Weathering and surface area

A I F 15 min

Use the wooden blocks shown below to show students how surface area, and thus speed of weathering increases with the number of joints. They can calculate the total surface area for each group of cubes.



Expansion of ice

D or I

Fill a glass jar with a screw cap with water and place it in a polythene bag and then in a freezer. Leave over night. Note and explain the result. Students can do this at home, mothers permitting.

(I have never succeeded in cracking water saturated rocks in my freezer)

Frost shattering

D

Collect a pebble which has been frost shattered so students can see all the pieces fitting together.



Simple erosion

A I 1 min

Students rub a finger across crumbly sandstone. The sand grains come loose and fall away. That is erosion not weathering.

Erosion by raindrop

D

This demonstration is to show how raindrops erode soil and how they move the soil down slope. A small bottle top about 4cm diameter and 1cm deep is placed on A3 paper on a board on a tray. The bottle top is filled with soil. A small yoghurt carton with a pin prick in the bottom is suspended about 1 meter above the centre of the bottle top and a small amount of water put in it. Get down to floor level to watch the effects of water drops. Put a new sheet of A3 paper on the board and now raise one end of the board to see the effect of slope.

Effectiveness of stones in ice

D

A5 piece of plastic 1mm thick is painted with emulsion paint on one side. Try to scratch the paint with an ice cube. They try with sand grains between the ice and paint. Ice alone will not scratch the paint but ice with sand grains underneath will. Hold the plastic up to the light or place on an overhead projector to see the scratches easily.

Coastal Erosion

A P 2 min

Students compare old and new photographs of a stretch of coastline. Old postcards often show views taken 50 or more years ago. You can then take a new photograph from the same position.

Rate of coastal erosion

A I 5 min

Students measure the distance the coast at Holderness has retreated since Roman times using a diagram from Principles of Physical Geology by Arthur Holmes. They can then calculate the rate of loss of land.

Erosion of Dunwich

D

Dunwich on the Suffolk coast was once England's fifth largest town but the sea has destroyed all but a few houses. See Wikipedia and the map which is available from Dunwich museum.