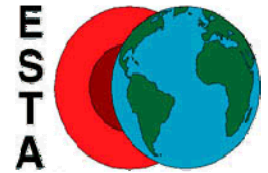# *Which rocks are most/least resistant to erosion?*

The aim of this experiment is to find out which types of rock are best at resisting mechanical breakdown caused by the impacts of other rock fragments. It is a fairly short, but very noisy experiment!

You will need:
Disposable samples of several different types of rock (e.g. granite, basalt, limestone, sandstone, mudstone). *Make sure you know which is which!*
A plastic container with a screw cap, a plastic tray, and a laboratory balance.

(i) Check that your rock samples will fit into the neck of your plastic container, then take each sample, weigh it, and record its mass in the table below.

(ii) Place your samples in the plastic bottle and screw the cap on firmly.
When told to do so, shake the container hard for 10 seconds.
Now have a look inside to see what has happened – have any of the samples started to break up? If so, which ones? Replace the screw cap.

(iii) Repeat the process just described again. Remember to wait until you are told to shake before you begin! If the samples are not yet showing much sign of breaking up, you may need to repeat the shaking for a third or fourth time.

(iv) Carefully empty the plastic container into the tray. Now pick out *the largest piece* of each rock type and weigh it again. Record your results in the table.

Rock Type					
Mass before shaking					
Mass after shaking					

Which rock was the most resistant to erosion? ……………………………………………

Why? …………………………………………………………………………………………………..

Which rock was the least resistant to erosion? ……………………………………………

Why? …………………………………………………………………………………………………...

Do you think that, on the whole, igneous rocks or sedimentary rocks are more

resistant to erosion?   ...…………………………………………………………………………..

1. *Background:*
See web pages on Erosion and Transport of sediment.

2. *Preparation for experiments:*
The experiments will most usefully follow some discussion and/or web research on erosion processes.

The main difficulty with a class carrying out this experiment is the noise factor; this is best overcome by organising the class so that they all carry out their 10 seconds of shaking at once – the teacher can give start and stop signals (perhaps a referee's whistle would help?!). It may be a good idea to warn classes next door!

If desired, students could be asked to weigh samples after *each* shaking, and graph their results.

3. *Apparatus & Materials:*
Apparatus and materials required are straightforward (see "What you will need"). The most suitable containers are robust plastic wide-neck bottle such as the containers used for supplying lab chemicals in quantities of 1kg or so. These need to be collected over a few weeks/months in advance!

4. *Follow-up:*
The resistance of different rocks to erosion is the main controlling factor in shaping landscapes and coastlines. If you are fortunate enough to live in an area where this can be discussed in a local context, so much the better; if not, then a useful resource for discussion would be a picture of a place such as Lulworth Cove in Dorset (see "Erosion" pages) or Hadrian's Wall in Northumbria (see "Rocks around Britain" pages).

Another approach is to use a simple geological map as a resource upon which to base a discussion or written exercise aimed at bringing out the relationship between rock resistance and scenery. The example below may give an idea…