This activity is an introduction to the rock cycle using chocolate. Chocolate has the ability to be ground into small particles (weathered), heated, cooled and compressed just like rocks. Unlike rocks this can all be done safely and at reasonable temperatures, using the chocolate to create sedimentary, metamorphic and igneous chocolate and at the end of it all can make a tasty treat.

On the Jurassic Coast we mainly have sedimentary rocks, but there are metamorphic rocks in Budleigh Salterton and igneous rocks are used in our sea defences.

To make Sedimentary Chocolate

**Step 1**
Scrape or grate some small sized shavings from your chocolate blocks.

**Step 2**
Gather these scrapings onto a piece of aluminium foil, fold the foil and then press hard on the chocolate shavings (standing on the foil package helps).

**Step 3**
The bunch of chocolate scrapings, stuck together in the foil, is now equivalent to sedimentary chocolate. All the cliffs along the Jurassic Coast are made from sedimentary rocks.

What you need:
- Small blocks of dark and white chocolate
- Aluminium foil and/or aluminium foil cake cups
- Container to hold hot water
- Simple scraping device e.g. plastic knife

With thanks to The Geological Society for this activity.
To make Metamorphic Chocolate

Step 1
Place a small pile of chocolate shavings and one or two small chunks from your original block into aluminium foil or a cake case.

Step 2
Float this on hot water.

Step 3
Watch as the heat from the water transfers to the foil and to the chocolate which should start to melt.

Step 4
Remove the foil case when the chocolate is soft to the touch (use the plastic knife or something to test this, not fingers).

Step 5
Let the chocolate cool and peel off foil.

The partially melted and cooled chocolate is now the equivalent of metamorphic chocolate. There are examples of metamorphic rock on the Jurassic Coast, but these rocks were formed in Brittany in France. Back in the Triassic period, Brittany was mountainous and rivers flowed north across the Triassic desert towards what is now Devon. The quartzite rocks were tumbled by the rivers into pebbles and eventually deposited as the Budleigh Salterton Pebble Beds. These pebbles are so rare that they are used as clues of longshore drift because strong currents move them eastwards along the coast.

To make Igneous Chocolate

Step 1
Place a small pile of sedimentary and metamorphic chocolate and some chunks from original block into aluminium foil or cake cup.

Step 2
Float this on very hot water.

Step 3
Watch as the heat transfers from the water to the foil and then the chocolate and it starts to melt.

Step 4
The chocolate should be allowed to melt until a smooth liquid forms.

Step 5
Carefully remove the molten chocolate and let it cool.

Your totally melted and cooled chocolate is now equivalent to igneous chocolate. Igneous rock is used along the Jurassic Coast for sea defences as it is so strong. During the recent sea defence work in West Bay 40,000 tons of granite was transported by barge from Scotland. Granite is one of the hardest substances in the world and, unlike other stone types, it won’t crumble or break over time. Granite is an igneous stone that is formed by volcanic activity. Magma flows from volcanic activity and slowly cools over millions of years. During the process, magma combines with various minerals including hornblende, feldspar, mica and quartz to create its “crystal appearance”.

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