

# Hastings Cave and Thermal Springs



## Activity Sheet - Karst Landscapes

**Curriculum Strands:** SI, BK – Matter, Earth and Space

**Stages:** 7–15

The caves in the Hastings area are called 'solution' caves, that is they are formed when acidified water percolates down through the rock and dissolves some of it, creating underground passages and caverns. In this activity, students build a model karst area and observe effects of 'rain' on the topography, forming an understanding of how caves, underground springs and sink holes are formed.

### Equipment

You will need:

- sugar cubes
- small cups of water
- royal icing (see below)
- eye droppers
- food colour

### Method

(2 x 45-minute periods)

Before the first lesson, make the royal icing. In a large bowl, using an electric mixer, beat the whites of three large eggs and half a teaspoon of cream of tartar until frothy. With mixer on low speed, gradually beat in 500g of confectioner's sugar until blended. Increase speed to high and beat for five to seven minutes until stiff glossy peaks form when beaters are lifted. Keep icing tightly covered and refrigerated until ready to use.

### Period 1

Each group of four students should have a box of sugar cubes and some icing. Direct them to build a 'mountain' (it can just be a large cube) by cementing the sugar together with the icing and covering the outside with icing. Set the structures aside until the next day to dry.

### Period 2

Give each group a cup of water with food colour added (blue looks best) and eye droppers.

The students slowly drip water on the mountain and observe what happens.

They will soon have sink holes and 'springs'. The sugar will erode, leaving the icing.

Before it is all eroded, have students gently break the mountain in two and they will see caves in it. Eating the experiment is not recommended!

Discuss with students what they have observed.

### Question

How does this model relate to the formation of caves in the dolomite rock at Hastings?

Adapted from lesson plans by Judy Ware, Earle Maxwell and LJ Damron, Gravette School District.

