

### Extension: rock, rattle and roll

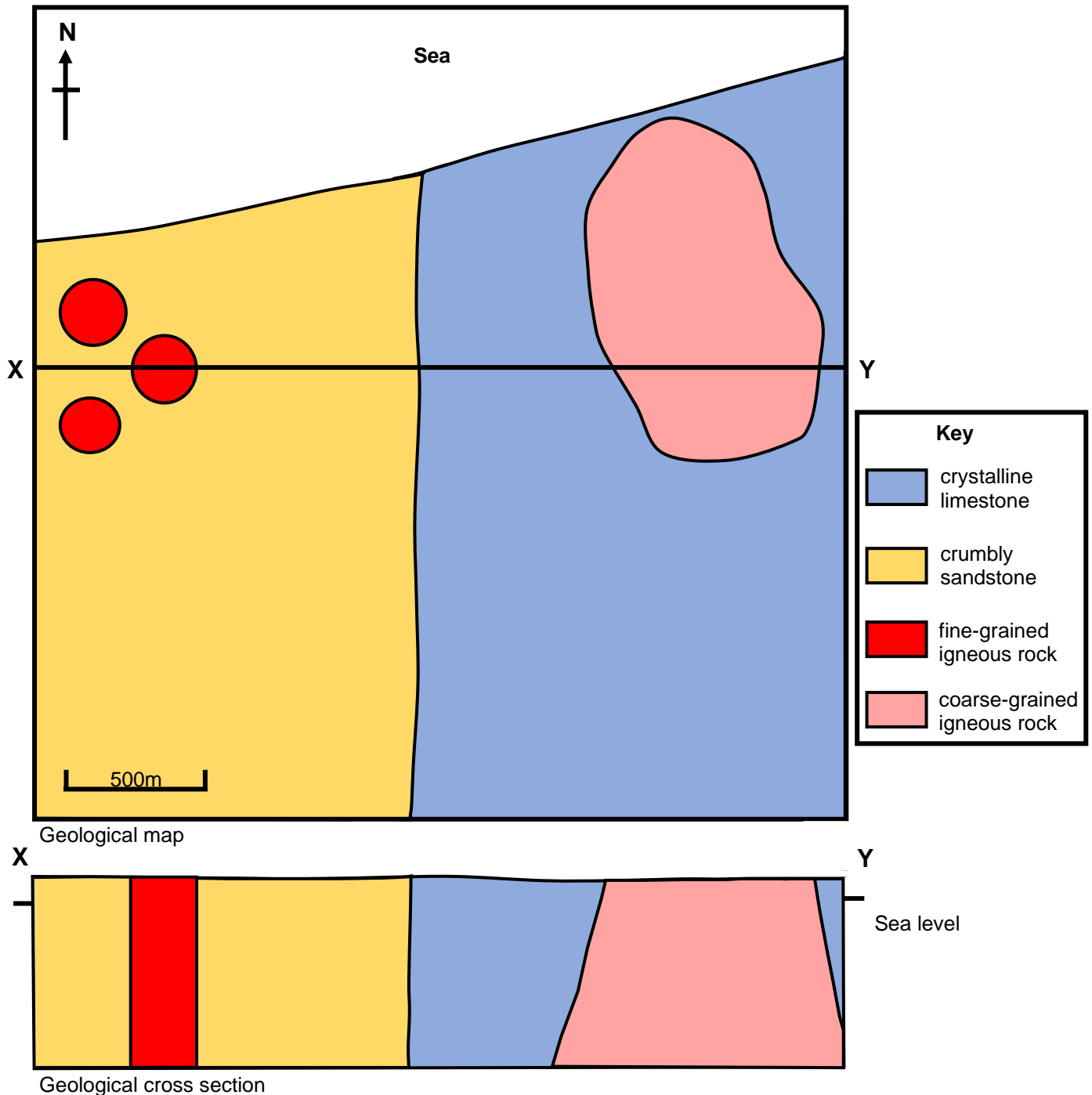
#### Investigating the resistance of rocks to erosion by shaking in a plastic container

Ask the pupils to complete the 'Rock, rattle and roll' activity using specimens of sandstone, limestone, granite and basalt.

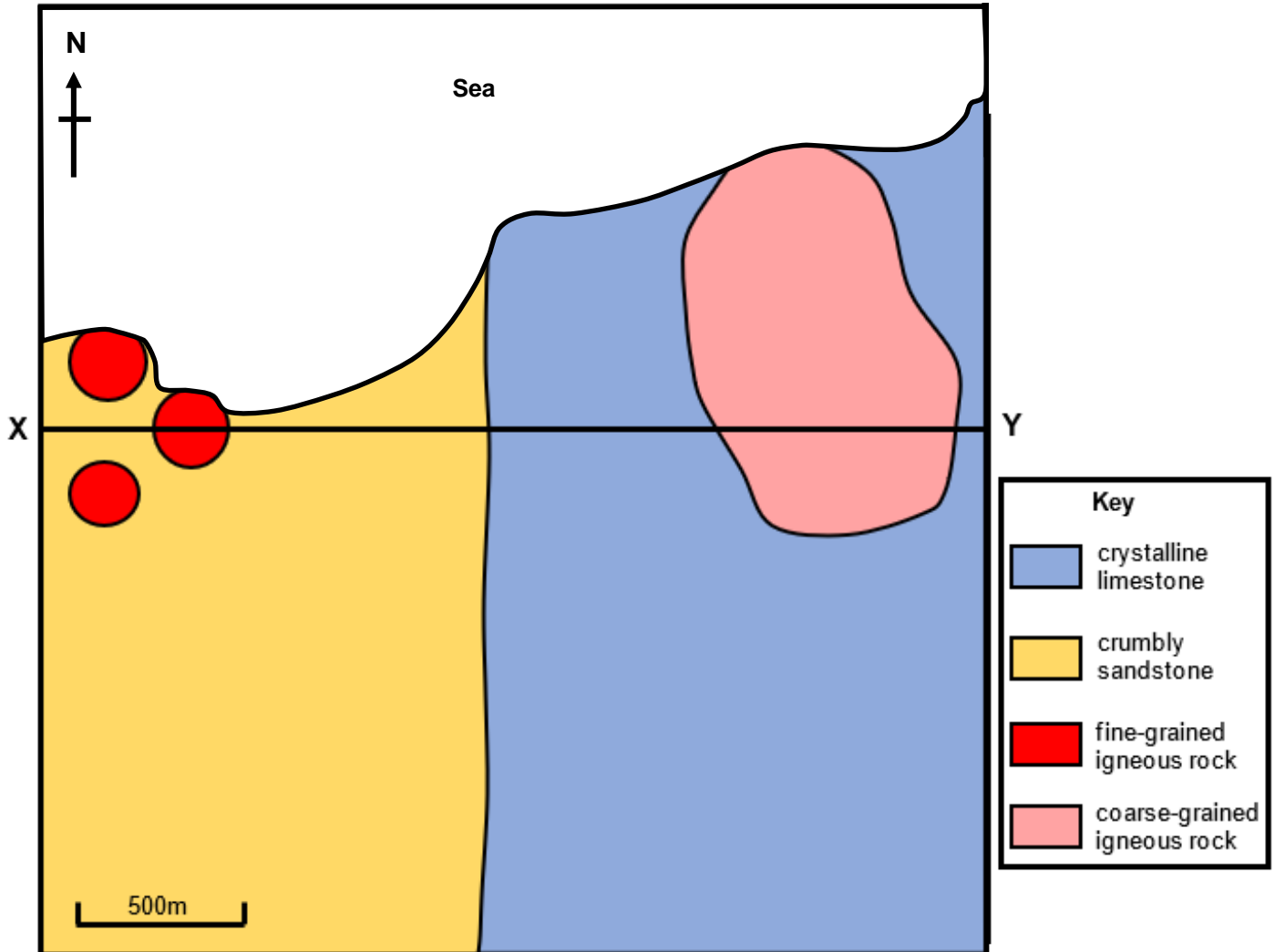
Then show them the geological map below, it shows an area of land with these four rock types forming the geology, and a straight coastline.

The X-Y cross section shows that the land is flat.

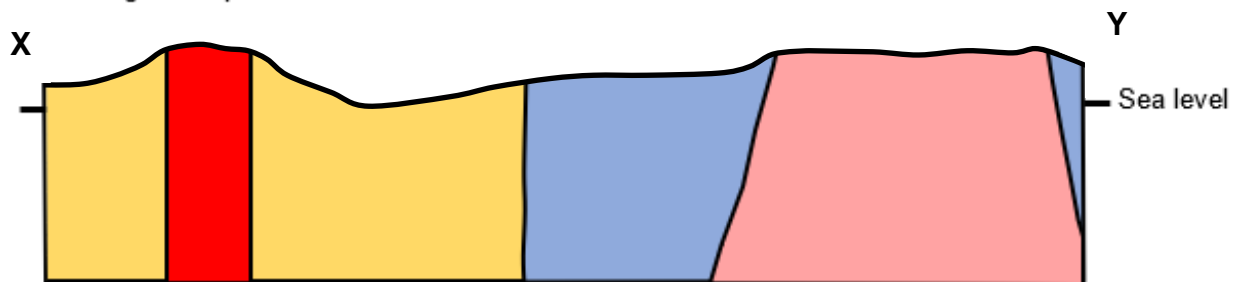
Ask them to apply their understanding of the resistance of rocks to predict the shape of the coastline and land surface in 10,000 years' time.



The area 10,000 years later.



Geological map



Geological cross section

Following this map-based activity:

Ask whether their country has headlands and bays – if so which of these is made of the most resistant (toughest) rocks?

A. Most will say headlands.

Ask whether their country has hills /mountains/ uplands and valleys/ lowlands – if so which of these is made of the toughest rocks?

A. Most will say hills/mountains/uplands.

Ask, if they are walking uphill, are they more likely to be walking from tough (resistant) rocks to weak (less-resistant) rocks or from weak rocks to tough rocks?

A. Most will say walking uphill from weak rocks to tough rocks.

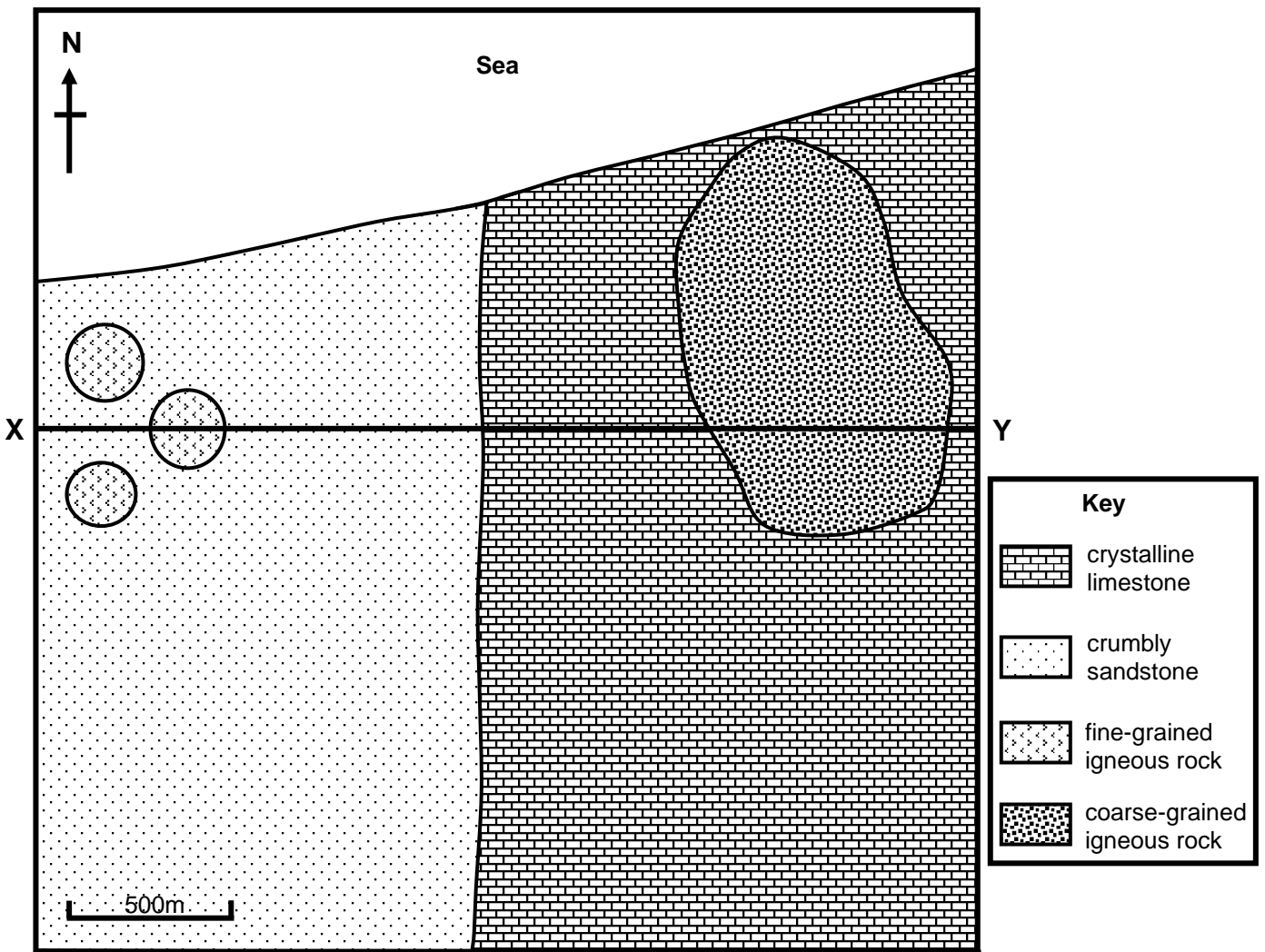
If they went to the coast and played on the sand, would they be playing on tough rocks or weak rocks? If they played in the rock pools are these tougher or weaker rock areas?

A. Beaches form on weaker rocks, rock pools on tougher rocks.

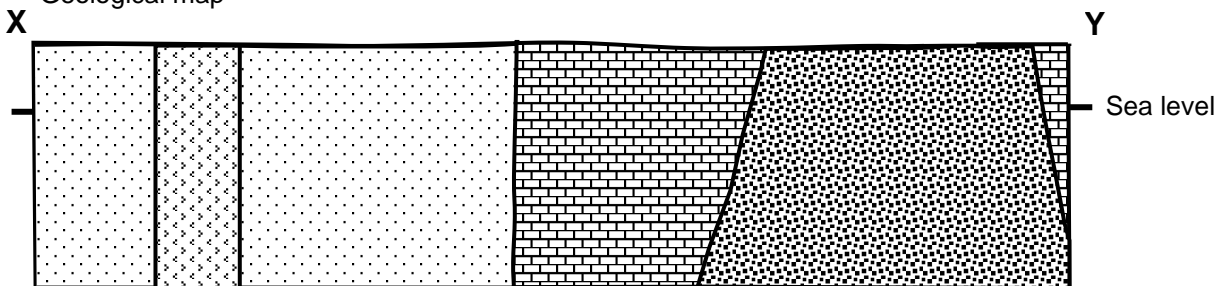
Conclude by saying that from this simple activity we have explained all the ups and downs and all the coastal ins and outs of the Earth. But note that these things are true for maybe 80% of the time; where they are not true, then more geological reasoning is needed to give the correct explanation. (see the, 'When are soft rocks tough, and hard rocks weak' Earthlearningidea activity).

Note: the terms 'weak' and 'tough' rocks are used in this activity instead of 'hard' and 'soft' rocks, since there is a hardness scale (Mohs'), but this applies to only minerals and not to rocks. Also some geologists describe all sedimentary rocks as 'soft rocks' (when many of them are actually fairly tough) and all igneous and metamorphic rocks as 'hard rocks' (when some are fairly weak).

What will the area look like in 10,000 years' time?  
(Black and white version for those with no colour printers)

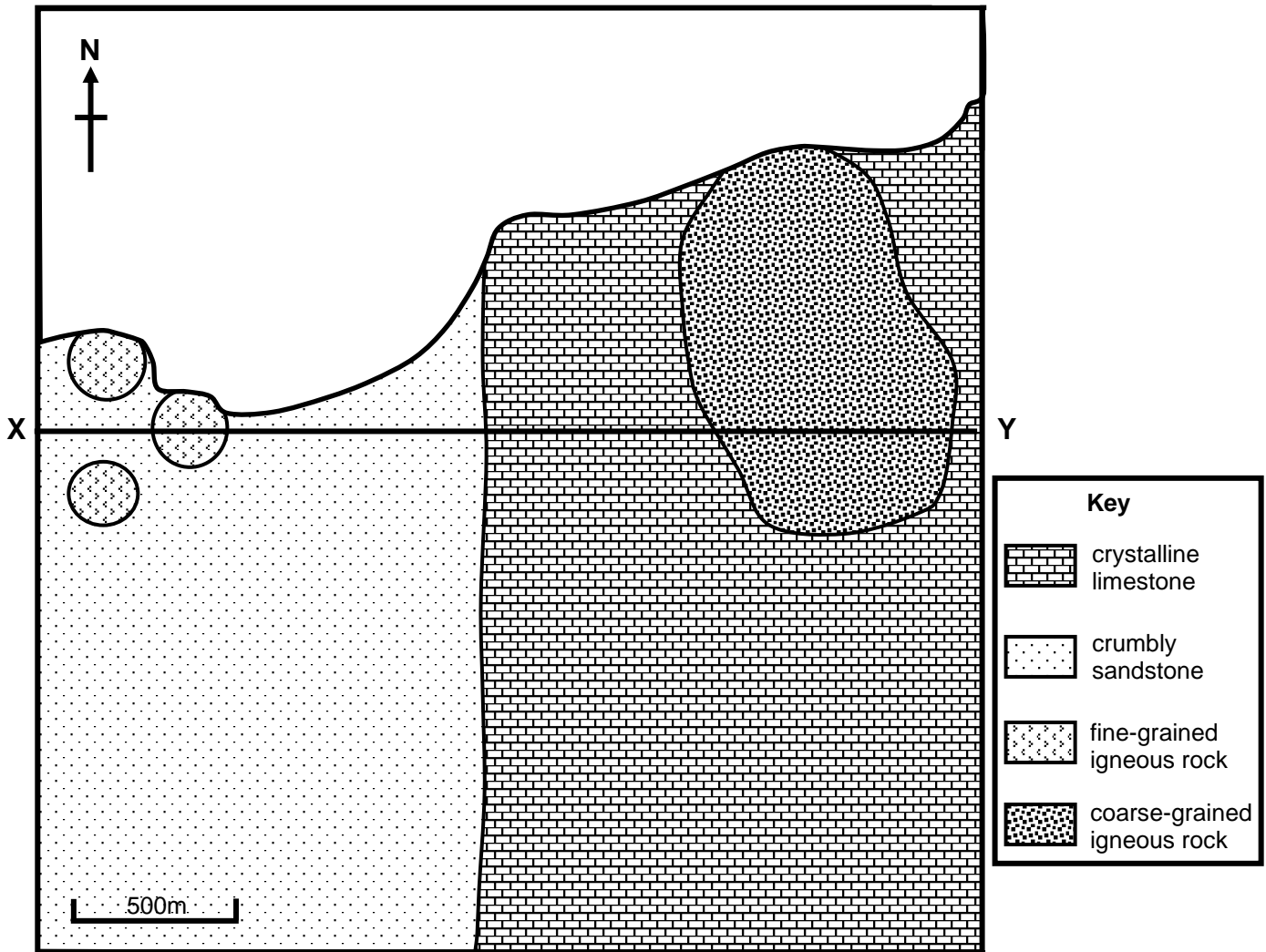


Geological map

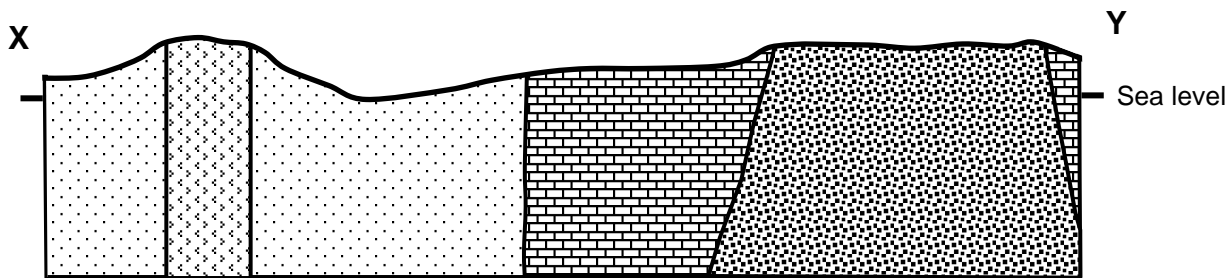


Geological cross section

The area 10,000 years later.



Geological map



Geological cross section

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