Coastal Erosion – GE00565

These notes are designed to provide some helpful information for teaching coastal erosion and incorporating our coast creator kit within your lesson.

Coastal Erosion definition:

Coastal erosion describes the process whereby the sea wears away the land due to tidal currents. It also includes the removal of beach sediments by way of wave action. This process contributes to dramatic changes in the appearance of our coastlines, creating varied rock formations depending on house hard or soft the rocks being subjected to the erosion are. This also contributes to a sandblasting effect, which sees loose sand and sharp grains effectively smoothing and polishing the surface appearance of rocks on the beach.

Using our coast creator, you can simulate some of the effects in your classroom. Simple fill half of your sturdy tray with the sand provided, then place your selection of rocks along the edge of the sand, and fill the other half of the tray with water.

You can experiment with the effects of different rocks formations and how the movement of water effects different collections of rocks. A straight line will see some of the rocks carried off the sand and away in to the water, simulating the removal of beach sediment right in front of your eyes.

A more interesting effect can occur by arranging your rocks in different ways, to see how you can defend the cost line against the water. Coastal defences are varied, a few examples include;

- Soft engineering methods – this includes a more sustainable and long-term approach to coastal defence to protect the shoreline. A beach acts as a coastal defence as it reduces wave impact and prevents inland flooding. Beaches needs to be properly managed to ensure they are wide and high enough to prevent from being overtopped during high sea levels. This can be done through beach replenishment where beach-grade sediments are used to 'top-up' the beach, increasing its level of protections shown in the diagram below. Our coast creator is the perfect tool to experiment with the different impacts of properly managed and prepared beaches.
- Hard engineering methods can be more costly, have a shorter life time and be more intrusive than soft engineering. They provide a temporary fix, but often cause a problem elsewhere, rather than provide a true solution. An example is Groynes which are a barrier, made of wood, stone or concrete, which extend from the beach and form a wall. The purpose of the wall is to stop beach sediments from moving down the beach. Although they are effective at the site, Groynes have the side effect of causing the same problem further down the beach, thus somewhat defeating their purpose.