

YEAR 3: SPRING 2 – WATER, WATER EVERYWHERE

GEOGRAPHY: PHYSICAL – COASTAL EROSION & HUMAN – COASTAL MANAGEMENT

UNDERSTAND, DESCRIBE AND EXPLAIN: COASTAL EROSION AND PREVENTION

Physical Geography: Understanding the physical (natural) impact on coasts over time	<i>Erosion</i>	<i>Beach</i>	<i>Bay</i>	<i>Headland</i>	<i>Coast</i>	<i>Coastal Features</i>	<i>Crack</i>	<i>Cave</i>	<i>Arch</i>	<i>Stack</i>	<i>Stump</i>
	<i>Sediment</i>	<i>Stones</i>	<i>Sand</i>	<i>Organic Matter</i>	<i>Deposit/ Deposition</i>	<i>Erode/Erosion</i>	<i>Abrade/ Abrasion</i>		<i>Attrite/ Attrition</i>		
	<i>Coastal management</i>		<i>Groynes</i>		<i>Gabions</i>		<i>Beach nourishment</i>		<i>Sea walls</i>		<i>Erosion prevention</i>

Re-visit and revise learning from Autumn 1:

Key concepts: Locational knowledge of the world, the UK and Poole, tourism and land-use.

Key vocabulary: Locality, region, county, town, city, coastline, beach, land-use, tourism, economy, coastal, settlement.

Learning links:
Geography:
Y5: Rivers Erosion/Abrasion/ Attrition/Deposition
Learning links:
Science:
Y3: Rocks Erosion/Abrasion/ Attrition/Hardness/ Sedimentary

Erosion, abrasion and attrition:

Coastlines are made up of different types of rock and material (*sediment*) and this varies in *hardness*.

- Coastal *erosion* happens when *waves continuously batter (erode)* the *cliffs* against the sediment and rock.
- Coastal *abrasion* occurs when rocks are picked up by the waves and smashed in to the *cliffs*; aiding *erosion*.
- *Attrition* occurs when small rocks are smashed against each other; breaking in to smaller pieces.



An example of an arch and bay at Durdle door, Dorset

THINKING POINT:

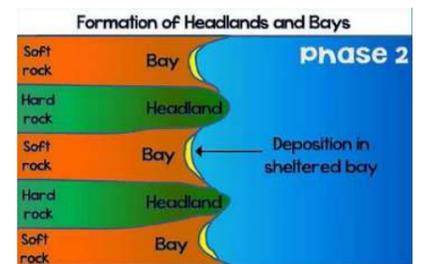
What is the difference between erosion, abrasion and attrition?



Coastal features:

The *hardness* of the sediment and rock determines *how quickly* erosion takes place.

- Where rock and sediment is *softer*, this *erodes* more *quickly* forming a *bay*.
- Where rock and sediment is *harder*, *erosion* takes *longer* and this forms a *headland* (sticks out).

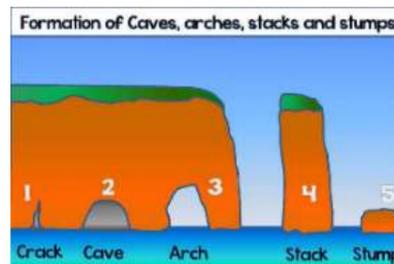


The bits of rock and sediment (*stones/sand/organic matter*), which have been knocked away from the coastline, pile up (*deposit*) and form *beaches*. If the water is relatively calm, the smaller *bits of rock, sediment and sand* will *settle/deposit* and *form a beach (deposition)*.

If the water is very rough (*strong waves and currents*), the smaller *deposits* of rock, sediment and sand will *not be able to settle*.

Erosion and abrasion can also create other *coastal features* such as:

- *Cracks*
- *Caves*
- *Arches*
- *Stacks*
- *Stumps*



An example of stacks at Old Harry Rocks, Dorset

The *constant erosion* and *abrasion* of a *cliff or headland*, over long periods of time, form *cracks* in the weakest part of the rock.

Over long periods of time of constant *erosion* and *abrasion*, these *cracks* grow wider and deeper; forming a *cave*.

The *cave* will continue to widen and deepen until it becomes an *arch*.

Further *erosion, abrasion* and *weathering* will force the *arch* to *collapse* creating a *stack*.

This will continue and these stacks will eventually form *stumps* before being completely *eroded* in to millions of small deposits – large rocks, small rocks, stones, pebbles and sand.

THINKING POINT:

Name the eight coastal features caused by erosion, abrasion and attrition.



Explain how a crack in the headland, through constant erosion, will eventually become a stump.

Coastal Management and Erosion Prevention:

If left *unmaintained*, our *coastlines* would be very different: *Erosion* would occur at a much faster pace.

To *prevent* the loss of our *coastlines* and maintain the usability of our coasts (*settlement, trade and tourism*), humans have designed ways of *preventing* or slowing coastal erosion (*Coastal management*).

- *Groynes* are wooden or stone structures built to *stop sand and stones* being *carried/moved* by the sea and *deposited in different areas*. This is to *maintain the shape* of the coastline.
- *Gabions* are *metal cages filled with large stones* to act as a *barrier* between the sea and the cliff to *slow down erosion* and *abrasion*.
- *Sea walls* are concrete structures built to act as a *barrier* between the sea and the cliff to *slow down erosion* and *abrasion*.
- *Beach nourishment* is when humans replenish/add more sand to the beaches to maintain the shape of the coastline.



THINKING POINT:

Name four types of erosion prevention.



Why is erosion prevention and coastal management important?

EXIT QUESTIONS:

EXS:

1. Can you describe how the coasts of Poole and Dorset are changing and explain why this happening?

GDS:

1. Why is it important for humans to intervene with the process of erosion and manage the coastlines?

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GEOGRAPHY: PHYSICAL – THE WATER CYCLE

UNDERSTAND, DESCRIBE AND EXPLAIN: THE WATER CYCLE

Physical Geography:	The Water Cycle	Atmosphere	Evaporation	Water Vapour	Condensation	Precipitation	Rain/Sleet/Snow/Hail	Collection
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Understanding the water cycle

Learning links:
Geography:
Y5: Water Cycle All areas of learning
Y5: Rivers Throughflow/ Surface run-off

Learning links:
Science:
Y4: States of Matter Evaporation/ Condensation/Solid/ Liquid/Gas
Y5: Properties of materials Evaporation/ Condensation/ Temperature/Solid/ Liquid/Gas

The Water Cycle:

Earth has been **recycling** water for over **4 billion years!**

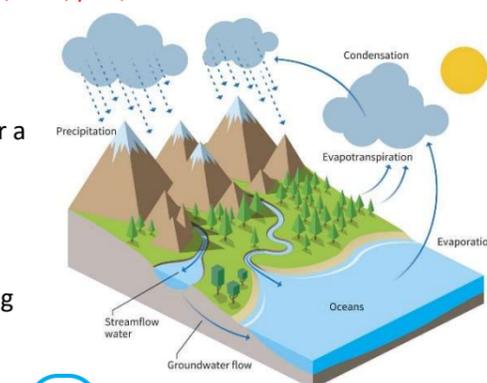
The world's water moves between **lakes, rivers, oceans**, the **atmosphere** and the **land** in an **ongoing cycle** called the **water cycle**. As it goes through this **continuous system**, it can be a **liquid** (water), a **gas** (vapour) or a **solid** (ice). There are **4 stages** of the **water cycle** which **continuously repeats**:

Evaporation:

Energy from the **Sun heats up** the surface of the **Earth**, causing the **temperature** of the **water** in our rivers, lakes and oceans to **rise**. When this happens, some of the water **evaporates** into the **air/atmosphere**, turning into a **gas** called **vapour**.

THINKING POINT:

Summarise the process of evaporation in as few words as possible.



Condensation:

As **water vapour rises up** high into the sky, it **cools** and turns back into a **liquid**, forming **clouds**. This process is called **condensation**. **Air currents** high up in the air **move** these **clouds** around the globe.

Depending on the **temperature** and how **quickly** the **vapour condenses** or sometimes **freezes**, the vapour can turn to **rain, sleet, hail or snow**.

THINKING POINT:

What is the word used to describe when the water vapour cools back in to liquid and forms clouds?



Precipitation:

When **too much** water has **condensed**, the **water droplets** in the clouds become too **big and heavy** for the air to hold them. They **fall back down** to **Earth** as rain, snow, hail or sleet, a process known as **precipitation**.

THINKING POINT:

Name the four different forms of precipitation. What do you think determines which is formed in the clouds?



Collection:

The fallen **precipitation** is then **collected** in bodies of water – such as **rivers, lakes and oceans** – from where it will eventually **evaporate** back into the air, **beginning the cycle all over again**. How it is **collected**, depends on **where it lands**:

- Some will **fall directly** into **lakes, rivers or the sea**.
- If the water falls on **plants**, it may **evaporate** from leaves back into the air, or **trickle down into the ground to be absorbed by the plant**.
- In **cold climates**, the **precipitation** may build up on land as **snow, ice or glaciers**.
- Water that **reaches land directly** may flow **across the ground** and **collect in the oceans, rivers or lakes**.

THINKING POINT:

Why is this process called the water cycle?



EXIT QUESTIONS:

EXS:

1. Using the given diagrams and key vocabulary, describe and explain the four stages of the water cycle.

GDS:

1. Why is the water cycle called a 'cycle' and why is this so important to life on earth?