



## 2.28 The work of the sea

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THEME 2- TOPIC 28

# Learning objectives :

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1. Changing coastlines
2. Coastal erosion can occur rapidly
3. Task 1,2

Key terms:

Destructive waves- эрэг эвдлэгч, хүчтэй давалгаа

Constructive waves- зөөлөн, бүтээгч давалгаа

# 1. Changing coastlines

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If you sit on a beach, you can watch the waves crashing against the shore. After each wave, the water runs quickly back into the sea, carrying and moving fine grains of sand and pebbles. If you stand in the sea, you can sometimes feel the pebbles move under your feet. In storms, large waves can move huge boulders. The waves, with their load of sand, pebbles and rocks, pound the cliffs and dislodge big pieces of rock, which fall into the sea.

Coasts are always changing. Erosion occurs when the sea is wearing away the land. The material that has been eroded is transported by the waves to areas where deposition occurs when the sea piles up sand and pebbles to form new land.





# Erosion is carried out by:

**Hydraulic:** Waves have great energy which is released they break against the cliffs. Waves trap air in cracks in the rock. This air compressed by the waves, eventually causing them to crack.

**Corrasion:** Particles carried by the waves crash against the cliffs, eroding the cliffs.

**Solution:** The seawater slowly dissolves the cliffs. The material produced is carried away by the process of solution.

**Attrition:** Particles carried by the waves crash against each other and are broken up into smaller particles.

There is another process that happens when solution happens along a cliff. This is called solution weathering. It happens along a cliff face where carbonate is dissolved.

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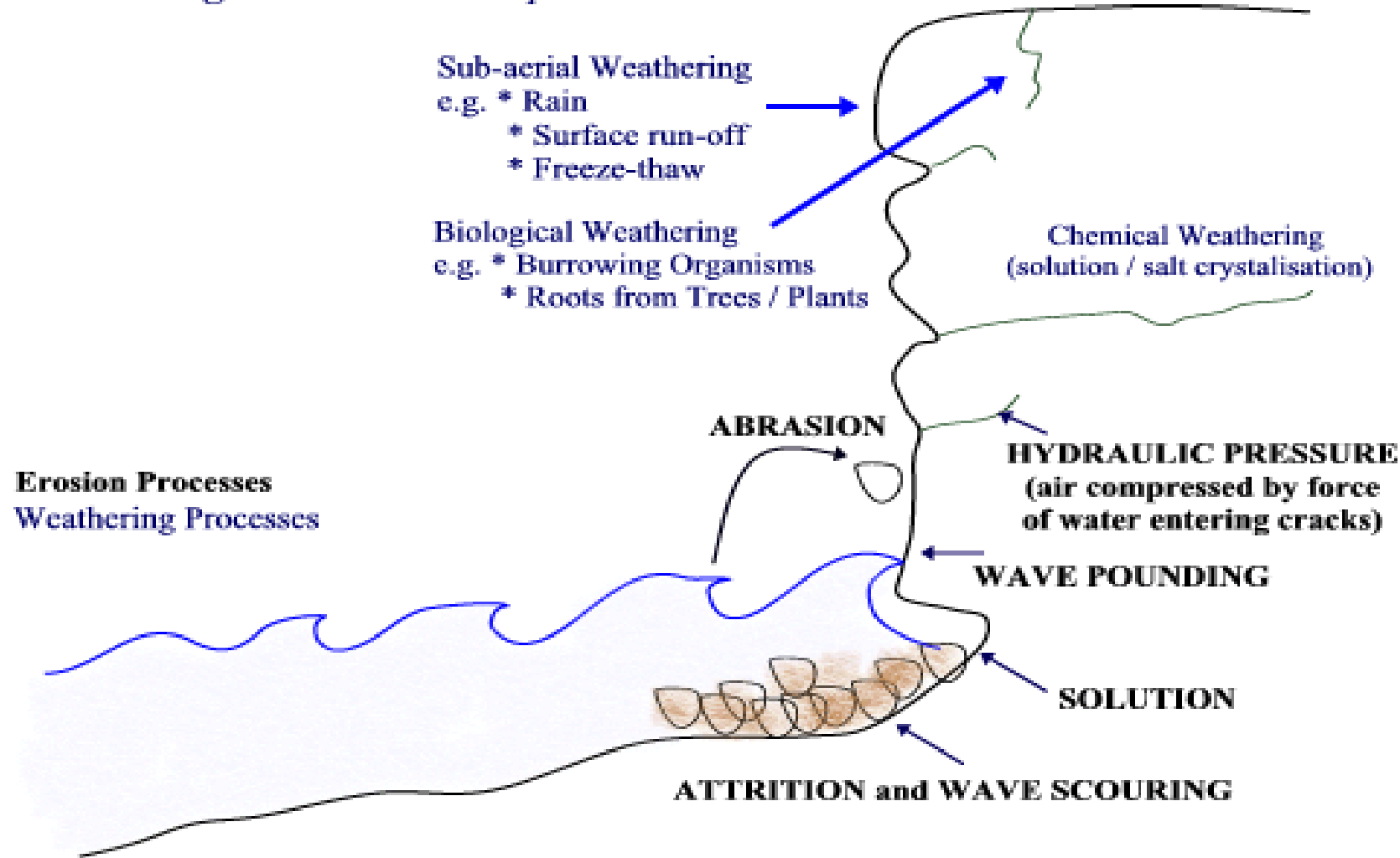
Waves crashing against cliff

hydraulic  
the waves. It  
and gradually  
sediment.

Fig. 6.7 The processes of marine erosion

# Coastal Erosion and Weathering Processes

*Remember weathering and erosion do the most damage at the weakest points. Weathering also helps to weaken rocks making them more susceptible to erosion.*



Task 1: Explain how the waves are carrying out erosion and deposition in the area shown by the photograph.

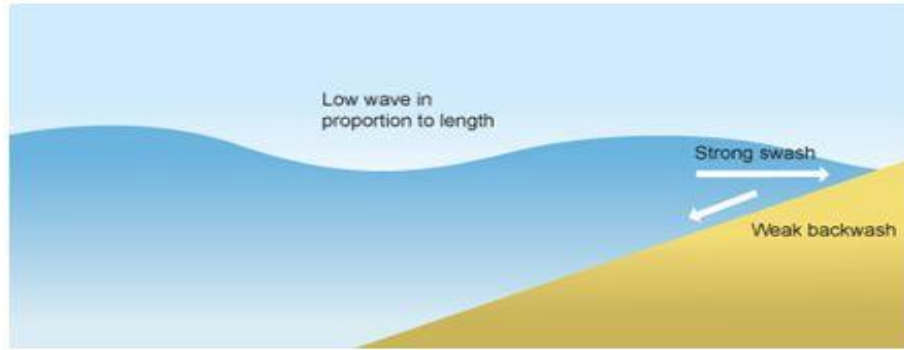
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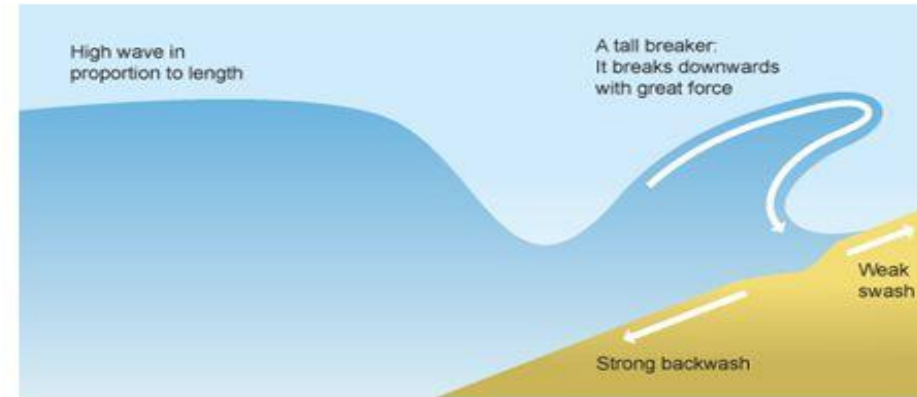
# Waves

## Constructive



- Strong swash
- Weak backwash
- Deposition occurs
- Low wave frequency
- Low wave height

## Destructive



- Weak swash
- Strong backwash
- Erosion occurs
- High wave frequency
- High wave height

## 2. Coastal erosion can occur rapidly.

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The amount and speed of coastal erosion depend on several factors:

- ❑ The type of rock that form the cliffs- limestone, chalk and granite are resistant rocks (often forming cliffs and headlands) which erode slowly, but less resistant rocks such as clay are quickly worn away.
- ❑ The strength of the waves, which depends on the wind speed, how long it has been blowing and how large an area of sea it has blown across (the fetch)
- ❑ The shape of the coastline- on concordant coastline, the rock strata are parallel to the sea and rates of erosion are similar along the coastline; on discordant coastlines, where bands of hard and soft rock outcrop at right angles to the sea, differential erosion may occur to form bays and headlands.
- ❑ How sheltered or exposed to wind and waves will suffer more erosion than those areas that are naturally sheltered (e.g. bays) or protected by coastal defences.





## Task 2:

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1. Describe the differences between destructive and constructive waves and the beaches they produce.
2. Explain why some cliffs can be eroded rapidly by the sea.
3. Describe the hazards of living on or close to the coasts.