Erosion of Submerging Coastlines

Submerging coastlines have beaches that gently slope into the ocean.

Terms Related to Water/ Wave Erosion

Three Ways Waves Erode

. **Hydraulic pressure** = The pounding force of water/waves

. **Corrosion** = Minerals such as calcium carbonate & limestone dissolve in the water

. **Abrasion** = rock & sand particles suspended in the water bump, grind, scrape & gouge surfaces the water hits.

Longshore drift terms

. **Headlands** = the protrusions of land that extend the farthest out into wave action.

. **Longshore drift** = refers to the fact that dominant waves have enough energy to carry silt/sand from headlands along the shore where it is later deposited.

. **Wave Refraction** = waves bending around headlands as they hit the shallow water by shore

. **Spit** = A ridge of sand running away from the coast, usually with a curved seaward end. Spit grows in the prevailing direction of longshore drift. Ends are curved by the action of waves in different directions.

. **Bay Bar** = A ridge of mud sand or silt extending across a bay.
Formed when spits stretch across the mouth of the bay.

. **Bay Beach** = An accumulation of sediment deposited by waves and longshore drift along the shore of a bay.

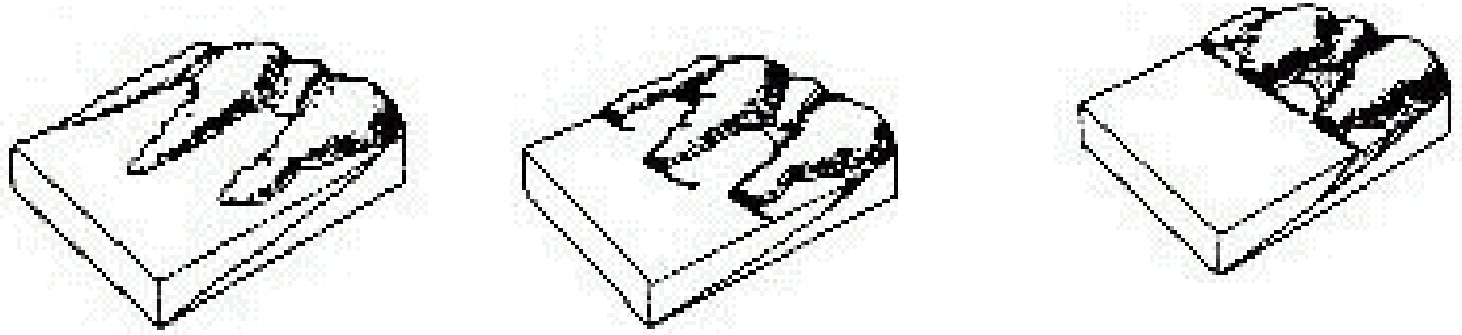
Straightening of an Irregular Submerging Coastline

. Irregular submerging coastlines have **headlands** that protrude out from the shore line.

. The erosion of the headland can deposit silt in the bay which forms a **Bay beach** as it tends to reduce the irregularity of the coastline. The headland is reduced due to erosion and the bay is being filled by deposition.

. Longshore drift results in some sand being deposited parallel to the shore but connected to the headland. These silt deposits are known as **spits**.

- Longshore drift and deposition can continue to the point that the spit closes off the mouth of the bay. This extensive deposit is known as a bay bar. As you can see it tremendously reduces the irregularity in the coastline.
- Continued erosion and deposition can straighten a coastline over a long period of time.



The Evolution of Sea Stacks

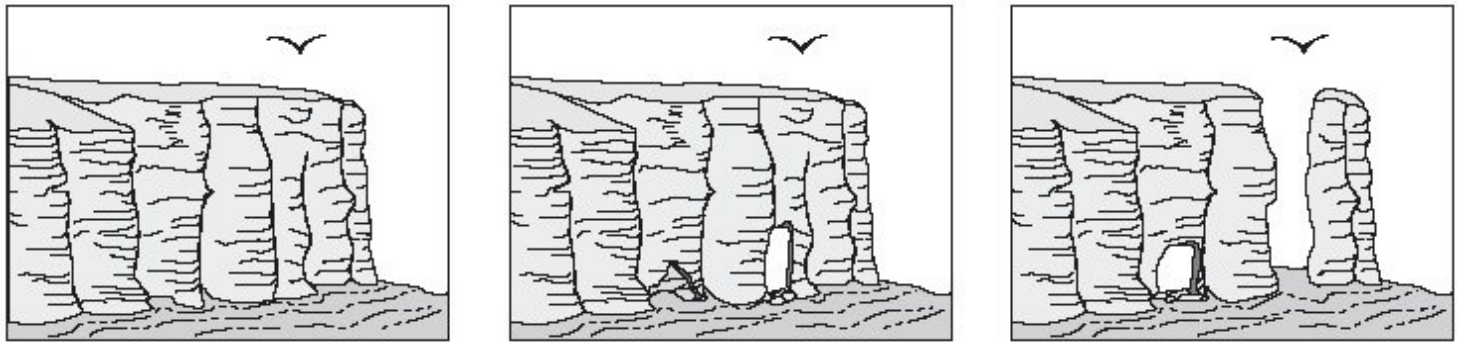
Sea stacks are common in eastern Canada. Many have plant growth on top. Sea stacks are columns of land standing in the ocean just off shore. They are created over a long period of time after land structures have eroded away. First sea caves are formed in a headland. Continued erosion turns sea caves into sea arches. Erosion and eventual collapse of the arch top leaves a sea stack standing in the ocean. (Figure 3.11 on pages 49-49)

Sea Cave Formation: "a" in figure 3.11 on page 48

Waves strike the headland first, refract around the headland and put hydraulic pressure on both sides of the headland. Erosion of the weak portions create caves & blow holes in the sides of the headland.

Sea Arch Formation : "b" in figure 3.11

Eventually sea caves get deeper until they connect inside the headland forming a complete passage way or "arch" through the head land.



Sea Stack Formation: "c" in figure 3.11

Continuous erosion of sea arches causes the collapse of the ground over the arch. This leaves a pillar or "STACK" of land standing alone where the headland was.