

8.1 - Geological Features at Sea and on Land

The Earth's crust is divided into huge sections called _____ plates. The plates move around on top of liquid _____, molten rock. The plates _____, slide past each other, slip under each other, and separate from one another.

The _____ shelf is the gently downward slope of the ocean floor as it stretches out from the continent. Even though it is under the _____, it still is part of the continent.

A _____ is a mountain that erupts lava through the Earth's crust. Lava is magma which has reached the surface of the Earth. An underwater volcano is called a _____. As the seamount erupts more and more, solidified lava builds up forming a volcanic island. The _____ Islands are the best known volcanic islands.

A _____ is a deep, steep-sided valley. Canyons are usually formed by the _____ power of rivers which gradually carve away the walls.

A _____ is formed when two oceanic plates _____ (come together), and one plate slides under the other. This forms a very steep-sided drop in the ocean floor.

Most lakes in British Columbia were formed by _____.
As the glaciers moved across the land, they formed large basins which trapped water as the glaciers melted and retreated. Water enter lakes through ground water, precipitation, and inlets such as creeks and rivers.

A river begins in higher _____ from springs (ground water), or melting snow and ice. The water is pulled downhill by _____. New rivers _____ (zig-zag) throughout the land. Older rivers have had time to erode away at the bottom and banks of the river, leaving behind a straighter mass of flowing water.

A _____ is a area of land in which all the water flows into a _____ destination. Large rivers may contain many watersheds. The watersheds together make up what is called a _____.

The _____ follows along the crest of the Rocky Mountains. It contains sever glaciers which melt and drain into _____ different oceans; the Atlantic, the Pacific, and the Arctic.

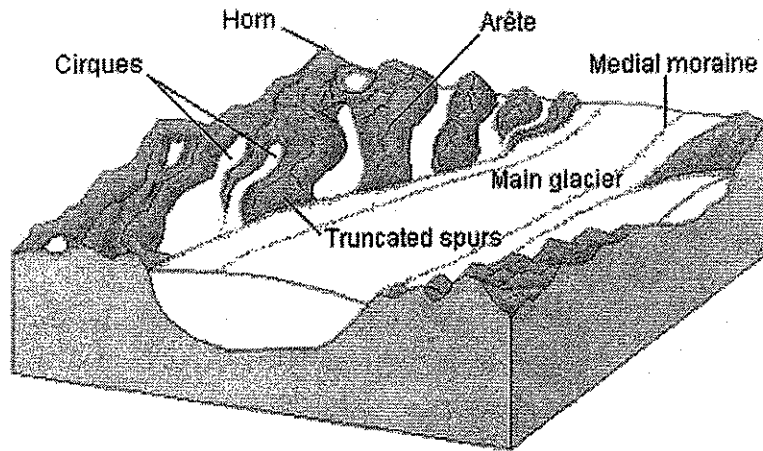
8.2 Glaciers: Rivers of Ice

A _____ is a mass of ice and snow which has _____ over thousands of years. Due to the increased weight as more snow is piled on, the lower layers compact and turn to ice. The _____ of the glacier and gravity cause the glacier to move slowly in all directions out from the center. The movement causes the ice to break apart creating _____, or deep trenches.

The polar _____ is the large sheet of ice covering the Arctic Ocean. It is not a glacier because it is not covering a land mass. An _____ is floating piece of ice that has broken off of a glacier. Although icebergs possess a threat to boats (Titanic), they provide a large amount of fresh _____ water.

As glaciers move, they _____ along with them rocks, gravel, and sand, which act like sand paper to shape the land below. _____, or grooves, are carved into the Earth's surface telling us which direction the glacier was moving in.

A _____ an armchair-like hollow in the side of a mountain formed by the freeze-thaw cycle of a glacier. The place where two cirques meet forms a ridge called an _____. When three or more arêtes shape the mountain into a pyramid shape, it forms a horn.



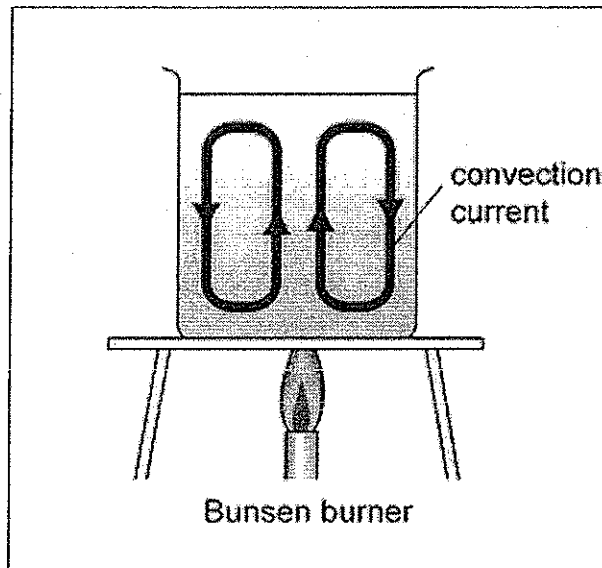
Flowing water from rivers carve valleys into a _____, however, a large glacier will scrape away at the bottom forming a _____ valley bottom.

A _____ is a narrow inlet in the coast which is formed as glaciers scrape U-shaped valleys below the sea line.

When a glacier pushes aside gravel, sand, and boulders; it creates large _____ called moraines. Melting water running under the glacier deposits material beyond the end moraine, creating snake-like mounds of sand and gravel called _____. As the glacier melts away, it may leave behind large abandoned boulders (Parrens beach) called _____.

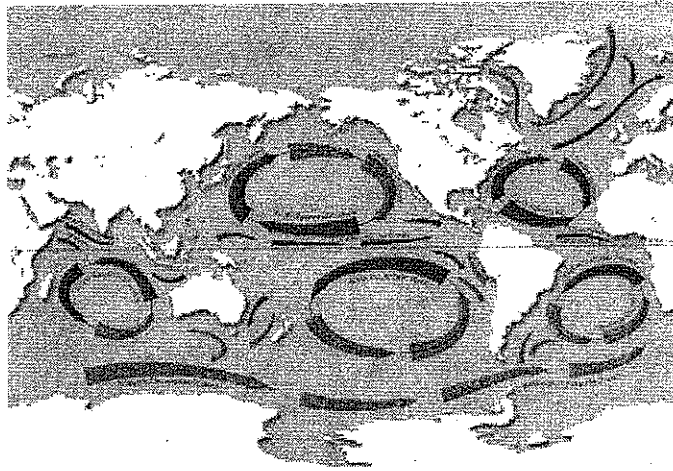
8.4 – Currents

A _____ is created when cold water _____ and pushes the _____ water upward. A current caused by differences in temperature is called a _____ current. When air warms, it causes the molecules to _____ out farther becoming less _____, and therefore causes it to rise above the cooler more dense air. The _____ air then moves in and replaces the rising warm air.



Convection _____ are important to many aquatic _____ by helping to distribute oxygen, and _____ through out the water system.

Convection currents exist in the _____. Cold water from the _____ sinks and flows towards the equator. As the water at the equatorial regions _____, it begins to sink and move back towards the poles starting the cycle again. A _____ is a consistent circular pattern in the ocean current.



Surface Ocean Currents

8.5 – Water, Weather, and Climate

_____ is a measure of an object's ability to _____ its heat. Substances with a _____ specific heat capacity require _____ heat energy to increase their temperature than those with a low specific heat capacity, and therefore take a lot longer to _____ down.

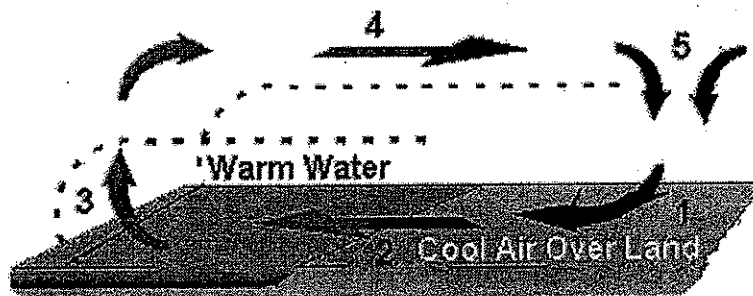


_____ has a very high specific heat capacity. Large bodies of water such as oceans and lakes increase and decrease in temperature much _____ than the surrounding land formations, and therefore can affect the weather and climate of the area.

_____ deals with daily outdoor conditions (temperature, precipitation, etc), while _____ deals with the average of weather conditions over many years.

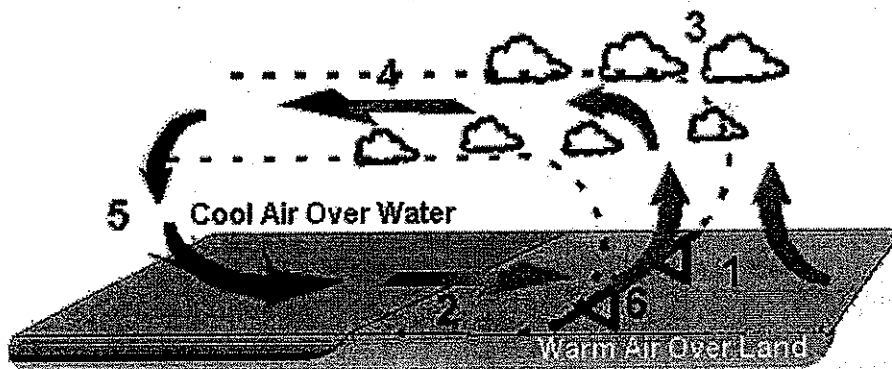
During the night, the _____ cools much faster than large bodies of _____. The _____ air of the water is less dense and therefore rises up, while the _____ air from the land moves in to fill in its place. This creates a _____ breeze, forcing air out into the water.

Land Breeze Circulation

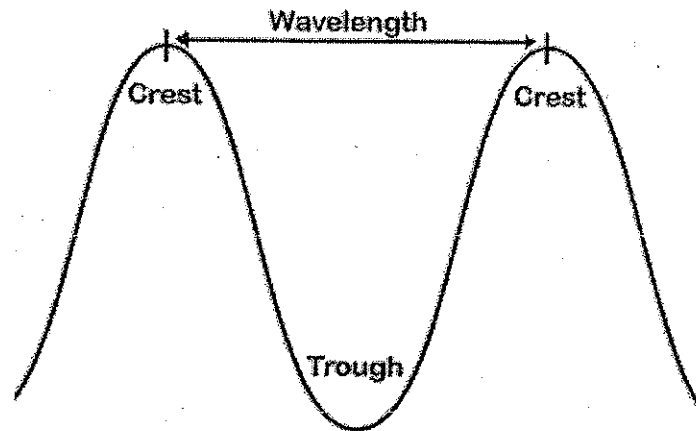


During the day, the _____ heats up _____ than large bodies of water. The warmer air of the land is less dense than the cooler air above the water, and therefore rises up. The _____ air from the water moves in and fills in the place of the warm air, thus forcing air onto the land creating a _____ breeze.

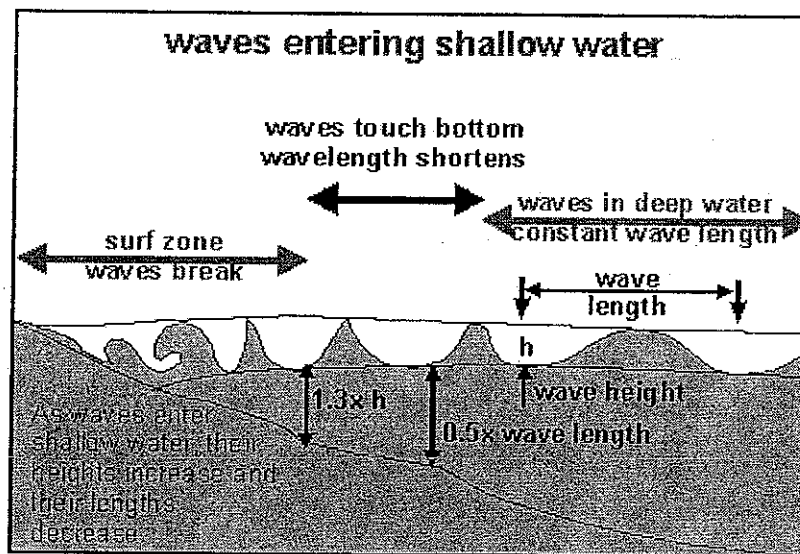
Sea Breeze Circulation



8.6 Waves



A _____ is a large destructive wave, usually caused by an _____, volcanic eruption, or an underwater _____. Although on the ocean they may be less than 50 cm high, once they reach more _____ waters they increase in both _____ and _____. When they reach shore, they can cause devastating results. Satellite images are improving the ability to _____ and track ocean waves, providing people with an opportunity to evacuate an area.



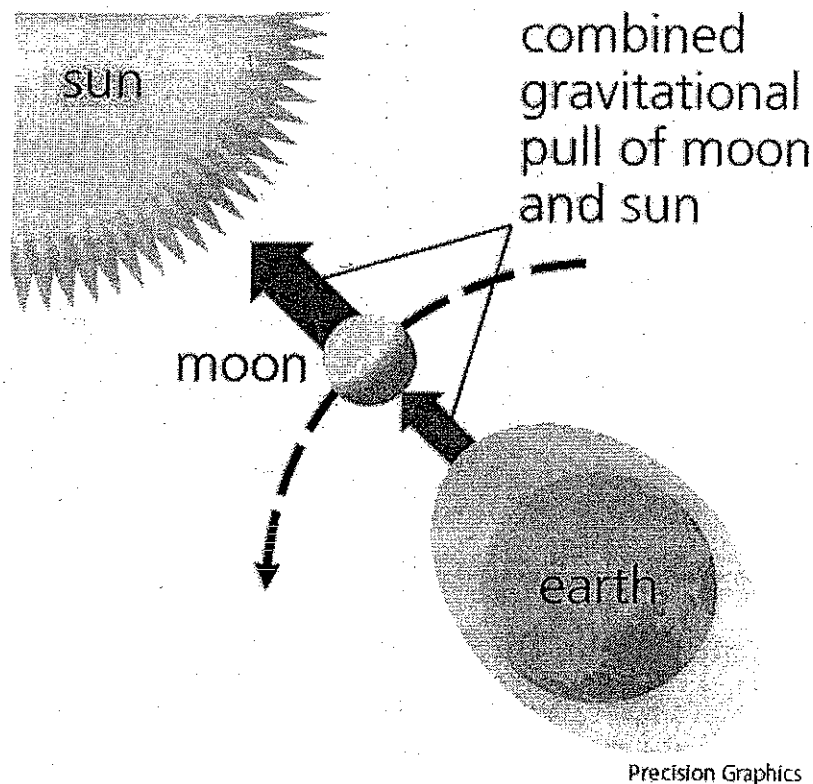
Ocean _____ can have a major effect on the world's _____. As warm currents from the south move across the water onto land, they pick up a lot of _____. When the moist currents hit the mountainous regions of the shore, in order to rise up rapidly, they must _____ a lot of the moisture as rain. As the winds move further _____, they carry with them a lot less moisture, thus inland places have much less annual _____. Also, as the warm moist air blows across a cold current, the air cools and the moisture condenses as _____.

The _____ currents moving down from the North carry with them a lot _____ moisture. Therefore when the currents flow onto the lands in California and Mexico, they carry with them less _____.

8.7 Tides

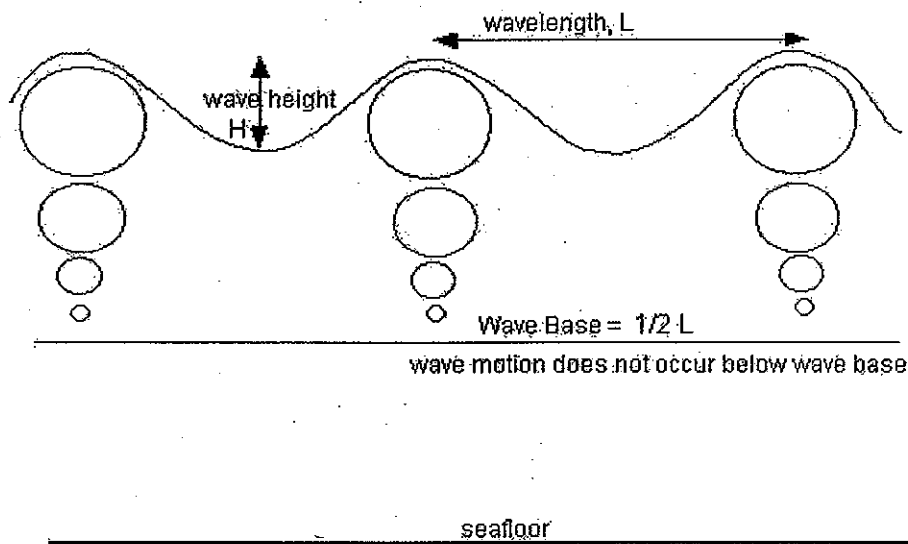
A _____ is a high and low water level caused by the _____ pull of the sun and moon, as well as the _____ of the Earth. The tidal _____ is the distance between the _____ and _____ tides. A line of debris usually represents the high tide mark.

Causes of Tides



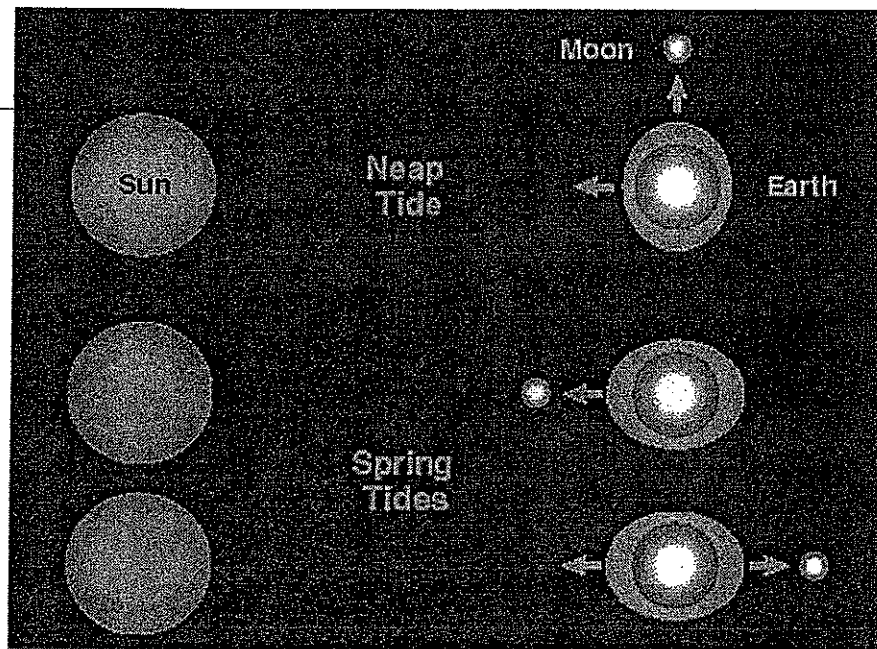
The greatest force creating the tidal affect is the gravitational pull of the _____ on the Earth. The _____ on Earth responds to these pulls by _____ out towards the force. As the Earth rotates on its axis, it causes the bulges to move continuously around the Earth. Most water bodies experience 2 high and low tides per day.

Waves can also be caused by _____ pushing down unevenly on their surface. As waves move across the water, it is _____ that is moving, not the water. An object _____ in the water would not be swept along the surface. Instead it would be moved up and down in a _____ pattern. As the wave approaches shallow water, the circular motion becomes distorted and the wave begins to topple over. Water returning from the beach slows the bottom layers even more, causing waves to curl. Tropical storms, such as _____, can cause tremendous waves.



Waves can provide both a positive and _____ effect on coastal area. Wave action can give the shoreline a make-over. Rough jagged surfaces can be _____ smooth as rocks are continuously _____ across the surface. Sand and rocks can be moved about and redistributed. Tourists gather from all over the world surf some of the most famous waves in Hawaii. While other areas spend a lot of money to try to counteract the force of waves by building protective barriers called _____.

The _____ also affects the tides, but not as significantly as the moon. When the sun and moon are pulling perpendicular (at _____ angles) to each other, the tidal range is the smallest. This is called a _____ tide. When the sun and moon are _____, this creates the greatest tidal range. This is called a _____ tide.



Local _____ may also play a small part in tidal range. A strong storm with winds blowing on shore, may create large waves that in combination with the normal tides can create _____ high tides.

