If all the water drained out of the oceans, what would we see?

We would see a land surface that is even more rugged than on the continents.

-higher mountain ranges than any on dry land

-deep valleys called trenches

-underwater volcanoes.

All of the features formed by plate tectonics!

Where is the deepest place on Earth?

Hint: Think of a band's name.


Mariana Trench

Read the booklet on waves, tides, and currents and answer the questions that follow.

The shape of the Earth, affects the climate.

The air at the equator receives more energy than the air at the poles. This makes the equatorial air warmer than the air from the poles. (Answer #1 in Booklet)

The presence of water also affects the climate.

Water has a higher **heat capacity** than land does. What does that mean again?

The presence of water also affects the climate.

Water has a higher **heat capacity** than land does. What does that mean again?

-Water can hold heat better than land does.

During the day the sun warms the land but during the night, the land cools down more quickly than the water.

Land surrounded by water has a bit of a higher temperature than those in the same region but far away from water. (Due to water's high heat capacity.)

For example, British Columbia is beside the ocean. So in Victoria, B.C. the temperature differences between day and night, or between winter and summer are not as great as they are in Yorkton, Saskatchewan.

However, because water holds heat longer, it doesn't warm up as quickly. Therefore land warms up quickly, so the air above the land is warmer than the air above water. So the air above land rises, up above the land and water, and the cool, moist air from above the water moves in and brings storm and rain to land.

This is why it rains more around large lakes/bodies of water. (Answer #2)

The presence of water also affects the climate.

Thunderstorms happen when warm, moist air rises and cools quickly in the atmosphere. If the air mass is warmer than the air that surrounds it, it will keep on growing taller. (Answer #2...again...because there were two number 2's)

Natural features (such as mountains, hills, plants) also affect the climate.

What is a microclimate?

Natural features (such as mountains, hills, plants) also affect the climate.

What is a microclimate?

Microclimates are small regions within a general climate zone that have their own unique climatic conditions.

This can be caused by natural features (water, mountains, hills, etc.) and plants because plants may give off water, make shadows, or block wind. (Answer #3)

This is why generally warm cities can still have mountains with snow on top.

Answer #4-What did you answer for question #4?

Ocean currents can also affect climate.

For example, if the current starts near the equator, it will carry warm water with it. If it starts closer to the poles, it may carry very cold water down.

A change in ocean currents is one of the key indicators of the climate event known as El Nino. Every few years a southward current travels early, warming the west coast of South America and causing heavy rain (typically in December.)

Ocean currents can also affect climate.

-Answers on the board are much more brief than yours will be, this is because I only provided small points so that we could discuss the answers in depth.

1. How are currents different from waves?

The water in currents actually moves from place to place.

2. Why are there different ocean temperatures and different salinity at various parts of the ocean?

This is due to currents deep in the ocean.

3. How do oceans influence the climate in Saskatchewan?

We aren't surrounded by water, so our temperatures will be cooler than if we were near water. We also do not get as many rainstorms brought in by the air above water.

4. Do you think currents could form in large lakes? Explain

Oceans have currents because that water is moving constantly. Lake water remains fairly still, however if there was a way to have it move constantly, there could possible be small currents.

Map on Textbook Page 317.

If the wind that is driving the current is moving in a straight line. Why do the currents curve?

Partner Activity:

1. Blow up a balloon and tie it. The tie is the north pole and the opposite end is the south pole.

2. Without popping the balloon, tape a piece of paper on the balloon vertically (hot dog, not hamburger).

3. Partner 1: Try drawing a straight line from the Top to the bottom while looking down from the North Pole.

4. Partner 1: Try again as your partner turns the globe (not too fast) counter clockwise?

What happens to your straight line?

Map on Textbook Page 317.

If the wind that is driving the current is moving in a straight line. Why do the currents curve?

Map on Textbook Page 317.

If the wind that is driving the current is moving in a straight line. Why do the currents curve?

The Earth is rotating underneath the wind, therefore the currents curve as they travel away from the equator. This is also why storms spin opposite ways in the northern hemisphere and southern hemisphere. This is called the Coriolis Effect. (Named after the scientist that discovered this idea.)

What about Glaciers? Do they affect Earth's surface?

What is a glacier?

What about Glaciers? Do they affect Earth's surface?

What is a glacier?

Most of the water on Earth is in the oceans as salt water. Majority of the fresh water is locked into the ice and snow of the polar icecaps and glaciers. These masses are thousands and thousands of years' worth of snowfalls, pressed into hard, solid ice.

Glaciers move in response to gravity.

Today there are continental and valley glaciers only in specific areas, but in history, large parts of Earth were covered by glaciers. There are known as Ice Ages, and much of Canada's geography was shaped by these huge sheets of ice.

If we travelled back in time 15 000 years to this same place in Saskatchewan, it would probably be covered by a thick layer of glacial ice, about 1km deep.

As the ice sheet moved out of the province, it left behind rocks and debris. The large boulders left became rubbing stones and huge blocks of ice that melted left large depressions that filled with water and those are now called sloughs.