Grade 8 Science

Unit One: Water Systems on Earth

Chapter 3

Oct 3-11:06 PM

Heat Capacity

Heat capacity is the amount of heat that a substance can hold

Water has a high heat capacity so bodies of water can act as heat reservoirs in the winter because they stay warmer than the air/land around them

Oct 3-11:11 PM

Oceans, Climate, & Convection Currents

As the sun heats the surface of the ocean, heat is transferred to the air above it, making air less dense, so it will start to rise

When the air rises up so far it will start cooling down, become more dense, and sink

Once it reaches the ocean again it starts to heat up, and then the whole cycle starts over - this is called a convection current

This air movement (called trade winds) can happen over huge distances, air that is heated near the equator can drop back down much further away

Oct 3-11:30 PM

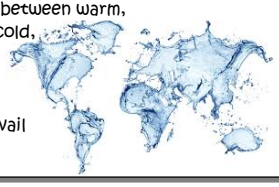
Newfoundland and Labrador Climate

The rapidly changing weather patterns in Newfoundland and Labrador are influenced by the interaction of the Labrador Current and the Gulf Stream

Warm surface currents transfer tropical heat to the atmosphere and colder currents remove heat from the atmosphere - when the warm, moist air above the Gulf Stream blows over the colder water of the Labrador Current, it cools and condenses, producing fog!!!

Therefore, temperature fluctuations occur rapidly in Newfoundland and Labrador due to our location between warm, tropical winds moving north and cold, arctic winds moving south

Local atmospheric temperatures depend on which of the winds prevail



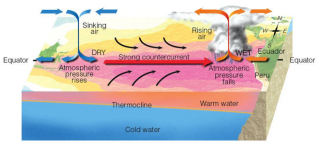
Oct 4-11:30 PM

El Niño

Pacific trade winds move warm surface water to different parts of the world, this causes cooler water to rise up from the bottom to take it's place

Sometimes the trade winds slow down, leaving a lot of warm water in the top layer of the ocean, then speed back up again

If the winds do not speed back up again, the water gets warmer and warmer, and does not move away causing warmer than normal weather



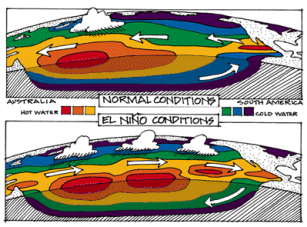
Oct 3-11:41 PM

Effects of El Niño

The warmer than usual water changes weather patterns

El Nino can create droughts in some areas of the world (like Australia, Africa, and Central America) and floods or bad storms in other areas (like Peru, Chile, and the west coast of North America)

This happens every 3-7 years!!!



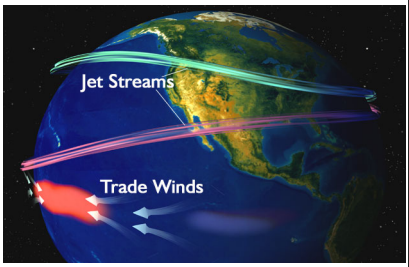
Oct 3-11:54 PM

La Niña

La Nina often happens after El Nino.

The Pacific trade winds start to speed up again, and causes nonstop upwelling of cold water as the warm water is pushed away

La Nina causes heavy rain in some areas (Australia, Africa and South America) and really good fishing because of the increase in upwelling



Oct 4-11:48 PM

El Nino vs. La Nina

	El Nino	La Nina
Trade Winds	Decrease	Increase
Ocean Temperature	Warming (Decrease Upswelling)	Cooling (Increase Upswelling)
Marine Productivity	Decreases (Decreased Nutrients)	Increases (Increased Nutrients)

Bookwork: Page 89 - Q's 1, 2, 5, 6, 7, 8, 9, 10

Oct 5-12:00 AM

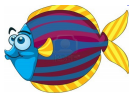
Over-fishing: when more fish are removed from their environment than can be replaced by reproduction

NEW TECHNOLOGIES HAVE MADE IT MUCH EASIER FOR PEOPLE TO OVER-FISH THE OCEANS:

1) Factory Freezer Trawlers are large ships that can freeze fish on the ship - this means they can stay out on the water longer, catch more fish, and don't have to go back until they are full

2) Sonar Technology uses sound waves to locate fish to catch

3) Trawlers are boats that drag nets through the middle of the water or on the bottom of the continental shelf - they catch a lot of fish at once but also things that they didn't mean to catch are also caught in their nets and they can damage habitats on the sea floor with their steel frames :(



Oct 5-12:08 AM

Offshore Oil

Leaks from the oil rigs pollute the environment around them

Most oil in the oceans comes from cities, farms, factories and buildings

ANY oil in the oceans is dangerous to the things that live in it

Seismic Testing: a method used to find oil deposited, it involves sending out a high pressure burst of air down to the sea floor. These shock waves can destroy fish eggs and larvae, cause fish to leave their habitats, and disrupt the migration of whales

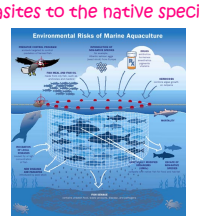
Sep 17-8:48 AM

Aqua Culture

Aqua culture is like farming, only the animals are in lakes, rivers, or the ocean rather than in a pasture. The fish are kept in a controlled, usually sheltered place (like a bay)

Aqua cultures can help to reduce the stress on wild fish populations if they are maintained properly

However, if an aqua culture species were to escape their controlled area, they could out compete the animals/plants already living there and spread disease and parasites to the native species



Sep 17-10:19 AM

Newfoundland Aqua Culture

Species include:

- Rainbow Trout
- Salmon
- Cod
- Shellfish
- Some aquatic plants

Sep 17-10:29 AM