

Earth Science II

Name:

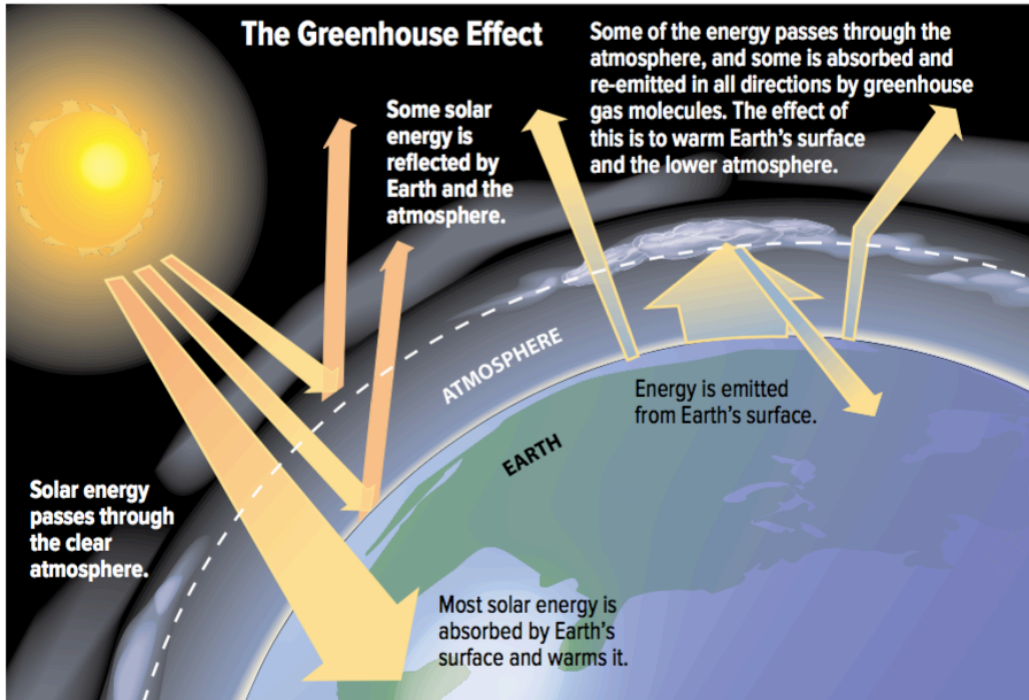
Date:

Block:

1. Solar Energy
2. Winds
3. Ocean Currents

Solar Energy

Solar energy comes from the _____. The solar energy that reaches Earth can either be _____ and/or _____ by Earth's _____ and its _____.



Within Earth's atmosphere, there are a number of _____ that help to trap _____ and keep the Earth's _____. Greenhouse gases absorb solar energy in Earth's atmosphere. Greenhouse gases can occur both naturally and through human activities.

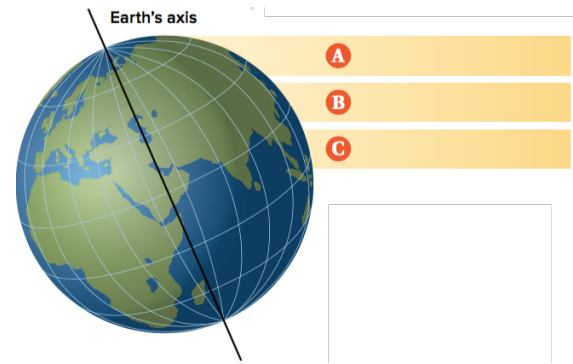
Table 4.3 Natural Greenhouse Gases

Greenhouse Gas	Sources	Other Details
water vapour	<ul style="list-style-type: none"> evaporation from water given off by plants, animals, and other organisms 	<ul style="list-style-type: none"> most abundant greenhouse gas produced during cellular respiration and certain plant processes
carbon dioxide	<ul style="list-style-type: none"> living organisms volcanoes, forest fires, decaying organisms, release from oceans 	<ul style="list-style-type: none"> second most abundant greenhouse gas produced in and by the cells of most living organisms through cellular respiration
methane	<ul style="list-style-type: none"> certain species of bacteria and other micro-organisms that live in and around bogs, wetlands, melting permafrost certain species of bacteria that live in the gut of animals such as cows and termites vents and other openings in Earth's crust on land and the ocean floor 	<ul style="list-style-type: none"> a by-product of cellular processes used by some micro-organisms to extract energy from food in the absence of oxygen
nitrous oxide	<ul style="list-style-type: none"> bacteria that live in oceans and wet, warm soils such as those in the tropics 	<ul style="list-style-type: none"> produced when certain species of bacteria break down nitrogen-rich compounds for food

Greenhouse Gases from Human Activities	Sources
Carbon dioxide	<ul style="list-style-type: none"> Released from burning fossil fuels (coal, natural gas, oil)
Nitrous oxide	<ul style="list-style-type: none"> Enters the atmosphere when fertilizers are applied to crops
Methane	<ul style="list-style-type: none"> Released in large amounts by herds of cattle

Winds

Winds occur when the _____ of the Earth is _____ . The reason why Earth's surface is heated unevenly is because of Earth's _____. The Earth is closer to the Sun at the equator which will result in more solar energy reaching that part of the Earth; this will cause areas at the _____ to be _____. Less direct sunlight is able to reach the north and south poles of the Earth; this will cause areas at the _____ to be _____.

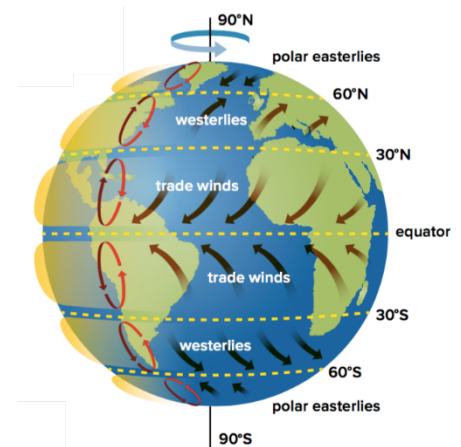


_____ air (less dense) near the Earth's surface _____ and eventually cool downs while _____ air is _____ and _____. This movement of the air is what causes winds to form. This phenomenon is called _____.

Along with the rising and sinking of the air, the _____ plays a part in how wind is distributed around the Earth. The Coriolis effect occurs due to _____; Earth tends to rotate faster at the equator than at the poles. The Coriolis effect makes things (like planes or air) travelling around the Earth appear to move in a curved fashion.

There are three major types of winds that the Earth has:

1. _____:
 - Move east to west
 - Air near the equator warms, rises, and travels north or south
 - At the north or south, the air cools, sinks, and moves west
2. _____:
 - Move from west to east
 - Steady winds that move much of the weather across North America
3. _____:
 - Travel from east to west
 - Move cold air from polar regions back toward equator



Practice Questions:

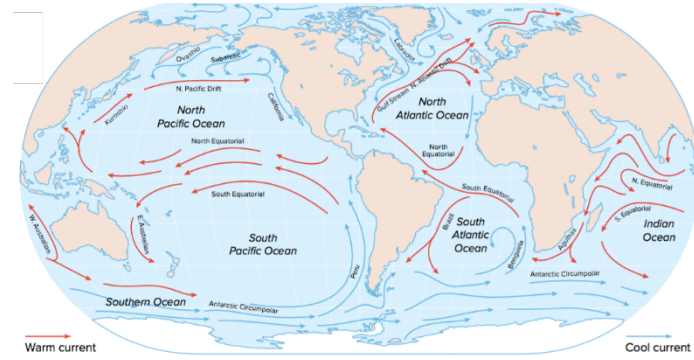
1. Predict what would happen to Earth's four spheres if the concentration of greenhouse gases in the atmosphere increased

2. Create an illustration to explain how the warming and cooling of air generates wind

Ocean Currents

_____ are also able to move thermal energy around the Earth. There are two major types of ocean currents:

1. _____
 - a. These are created by the movement of the wind
 - b. Warm currents move heat from the equator to the poles while cold currents move cold water from the poles to the equator



2. _____
 - a. A system of deep water currents that move deep _____, _____, and _____ around the Earth
 - b. _____ of this water is based on the _____ of the _____ and the _____
 - i. Cold water is denser than warm water so it will sink; warm water is less dense than cold water so it will rise
 - ii. Saltier water is denser so it will sink and move the less salty water up

