Feb 17 Convection Currents Notes Pt. 2

Directions: Follow along with the class as we fill out our notes.

High pressure (H)

- As air masses cool, they becomes more dense and sinks toward the Earth's surface

Low pressure (L)

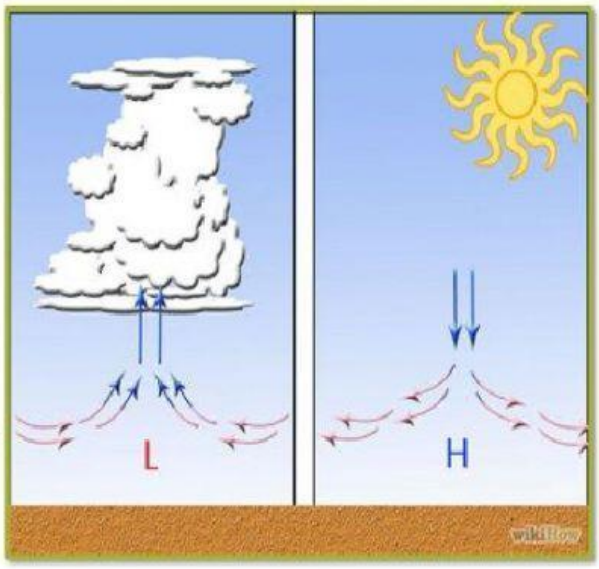
- As air masses warm, they becomes less dense and rises above the Earth's surface

Convection Currents

Using the words "cool" and "warm," fill in the temperature of the arrows:

Red arrow:

Blue arrow:



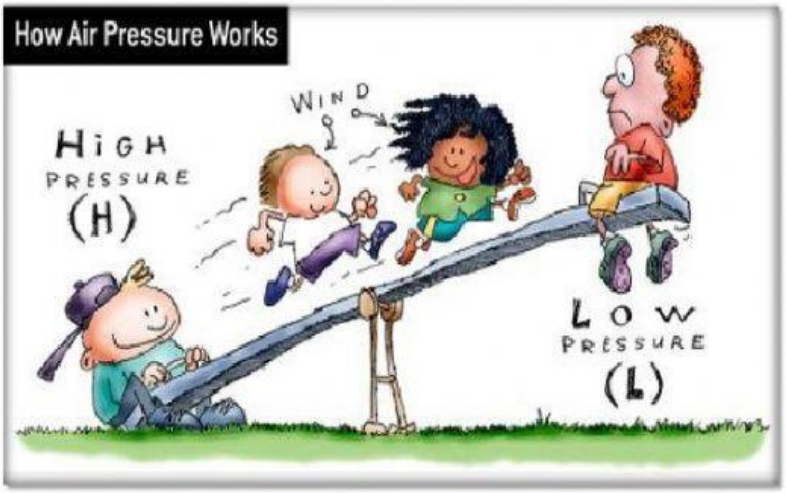
Think About It

The first component of a convection current is energy. As energy is added to molecules, they increase their motion, spreading further apart. This causes them to be less dense, so they rise above areas that are more dense.

The second component that affects a convection current is gravity. The gravity of our planet pulls objects "down" toward the center of our planet. It pulls on you, your shoes, your hair, and the air around you.

If the Sun heated our atmosphere and the molecules began spreading apart and rising but our planet's gravity was too weak to keep them down, what would happen?

Convection Currents



Wind

- The pressure difference between a high pressure area and its lower pressure surroundings cause a wind to develop
- Flows from higher to lower pressure

Using your own words, describe what is happening in this image.

Quick Action: INB

Convection Notes

Complete the organizer to the right by clicking on and dragging the correct statement to complete the first box. You will complete another box after each section in these notes.

Convection currents occurs between warm fluids and cooler fluids. They occur in Earth's mantle, oceans and atmosphere.

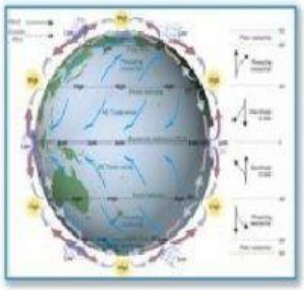
The pressure difference between a high pressure area and lower pressure surroundings.

Convection Currents

What causes wind? Drag answer here	Choose the diagram that illustrates a sea breeze. In the textbox describe what is happening in the image.
Choose the diagram that illustrates a land breeze. In the textbox describe what is happening in the image.	Describe convection currents and where we can find them in the Earth's processes.

Convection Currents

Earth's atmospheric convection currents cause:

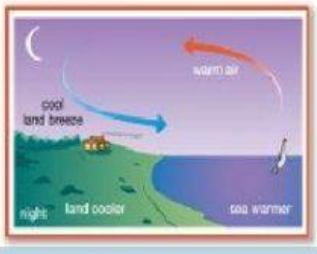


A

A. Global winds
B. Local breezes
C. Cyclones (Hurricane/ Typhoon)
D. Thunderstorms

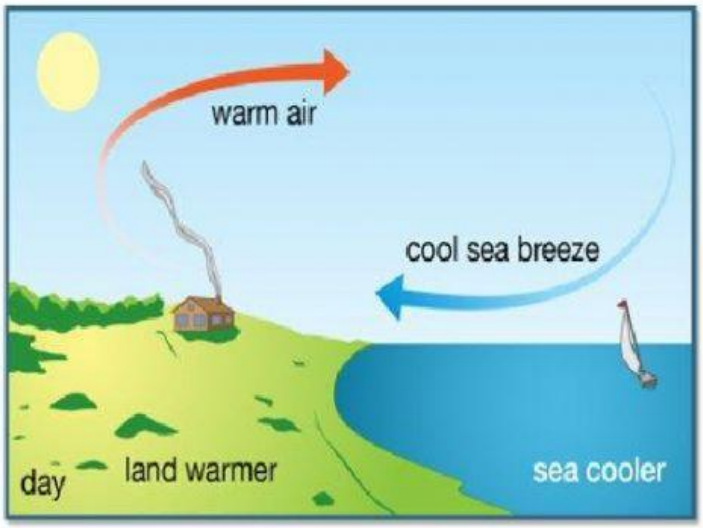
C

B



D

Convection Currents



Local Breezes

Sea breeze

- Gentle wind that flows from the cool air over the water (high pressure) toward the warm air over the land (low pressure)
- During the day solar radiation heats the land more quickly than water

Why is the land warmer than the water during the day?

Quick Action: INB

Convection Notes

Complete the organizer to the right by clicking on and dragging the correct diagram to complete the second box. You will complete another box after each section in these notes.

Convection currents occurs between warm fluids and cooler fluids. They occur in Earth's mantle, oceans and atmosphere.

The pressure difference between a high pressure area and lower pressure surroundings.

Convection Currents

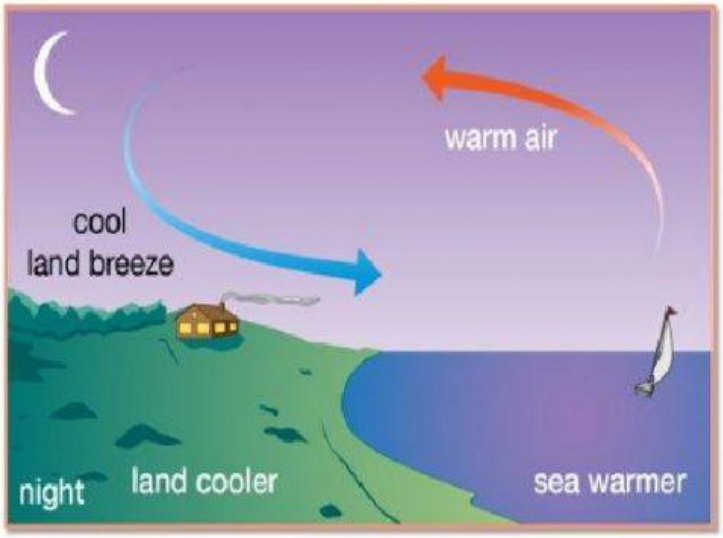
What causes wind?	Choose the diagram that illustrates a sea breeze. In the textbox describe what is happening in the image. Drag image here
Choose the diagram that illustrates a land breeze. In the textbox describe what is happening in the image.	Describe convection currents and where we can find them in the Earth's processes.

Land breeze

- Breeze that flows from the cool air above land (high pressure) toward the warmer air above the water (low pressure)
- Caused by land cooling, more quickly than water, in the evening

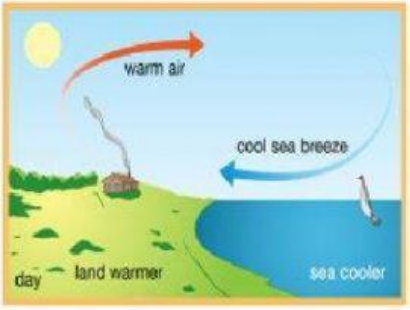
Why is the land cooler than the water at night?

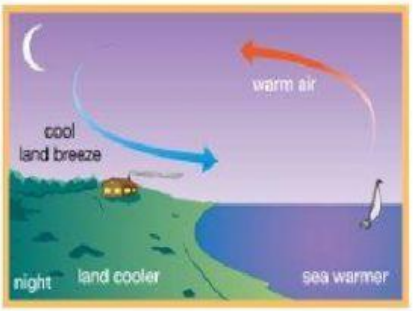
Convection Currents



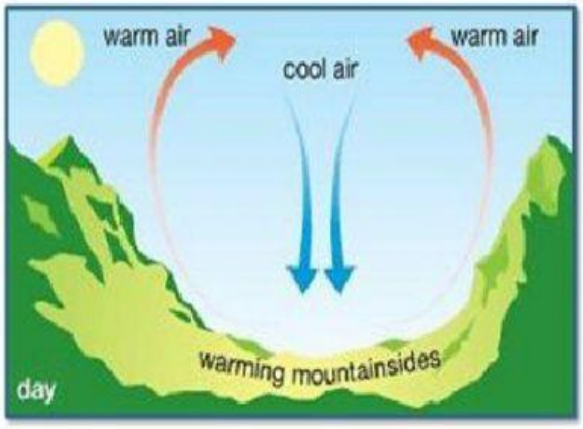
Think About It

On a hot summer day, you and your friends decide to go on a trip to the beach. As you walk toward the beach, a cool breeze finally hits your face and cools you off for a moment. Is it a sea or land breeze? How do you know?





Convection Currents



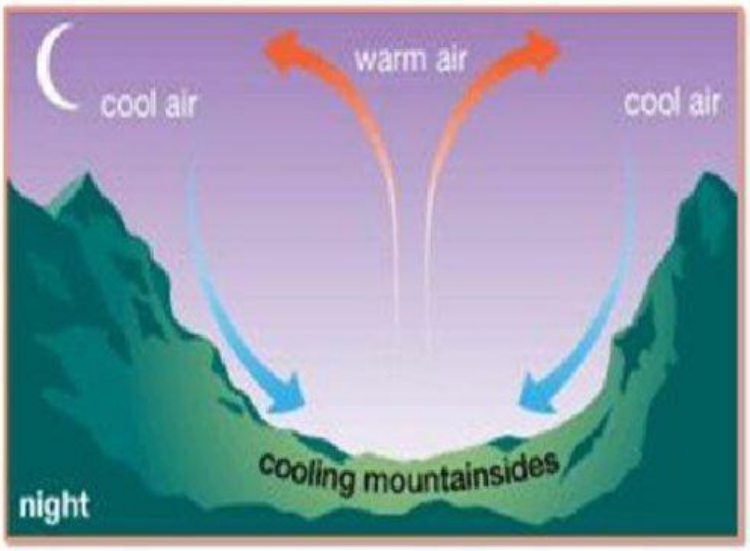
Valley breeze

- During the day, the surface of the mountain heats the air high up in the atmosphere, quicker than the valley floor heats
- This attracts the air from the valley, creating a breeze that blows from the valley floor (high pressure) up towards the top of the mountain (low pressure)

Mountain breeze

- In the evening, the mountain slopes cool the surrounding air more quickly than the air found lower in the atmosphere
- This causes winds to blow down the mountain (high pressure) towards the valley floor (low pressure)

Convection Currents

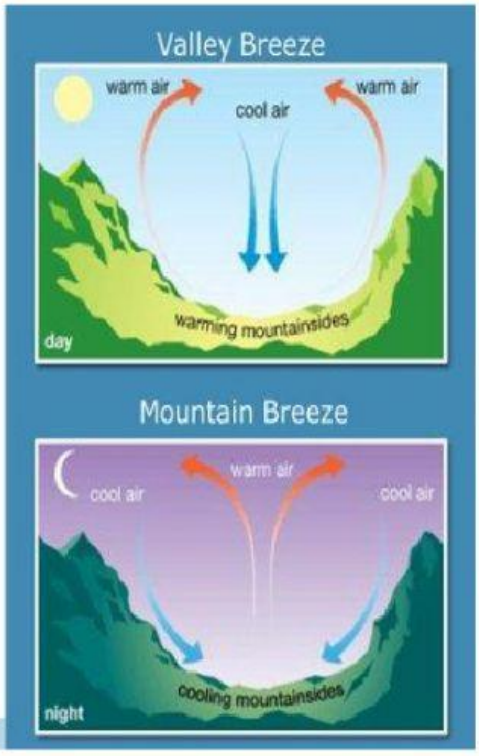


Convection Currents

Answer the following questions by comparing the breeze mountains cause in the day versus the night.

1. Where is the high pressure air travelling?

1. How do the mountains affect the airflow?



Quick Action: INB

Convection Notes

Complete the organizer to the right by clicking on and dragging the correct statement to complete the fourth box.

Convection currents occurs between warm fluids and cooler fluids. They occur in Earth's mantle, oceans and atmosphere.

The pressure difference between a high pressure area and lower pressure surroundings.

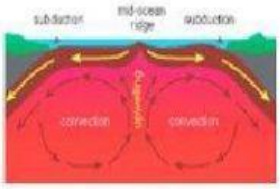
Convection Currents

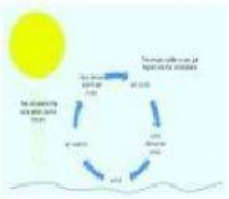
What causes wind?	Choose the diagram that illustrates a sea breeze. In the textbox describe what is happening in the image.
Choose the diagram that illustrates a land breeze. In the textbox describe what is happening in the image.	Describe convection currents and where we can find them in the Earth's processes. Drag answer here

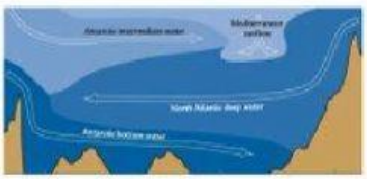
Think About It

Think about the first four diagrams of convection currents you saw at the beginning. Those diagrams are models that help us understand what we can't see.

If you were to redraw one of those four diagrams (pictured below) to just show where energy was added to the system and the effect of gravity, what would you draw?







Last Look

This or That

Let's see if you can crack the code. You will need to identify which key word is being described in each statement.

convection	Occurs when heat energy transfers between two parts of a fluid of different temperatures	conduction
sink	More dense fluids...	rise
sink	Less dense fluids...	rise
low pressure	As air masses cool, they becomes more dense and sinks toward the Earth's surface.	high pressure
low pressure	As air masses warm, they becomes less dense and rises above the Earth's surface.	high pressure
high/low	Wind moves from an area of _____ pressure to _____ pressure.	low/high
land breeze	Gentle wind that flows from the cool air over the water (high pressure) toward the warm air over the land (low pressure).	sea breeze
land breeze	Breeze that flows from the cool air above land (high pressure) toward the warmer air above the water (low pressure).	sea breeze