8th grade Winds Notes (Week 21)

C-notes

Wind: air molecules move

Wind is air in motion.
It is produced by the uneven heating of the earth's surface by the sun.
Since the earth's surface is made of various land and water formations, it absorbs the sun's radiation unevenly.
Different latitudes receive direct or indirect rays

C-notes

Wind: air molecules move

Air molecules ALWAYS MOVE from high pressure area to a low pressure area

High and low pressure areas are caused by uneven heating of Earth's surface.

Air rises where surface is warm→ causes low pressure area

Air sinks where surface is cool → causes high pressure area

Simple Diagram of why wind “happens”

Wind: Summary

C-notes

Motion of air

Wind is the horizontal movement of air- usually parallel to Earth's surface- caused by air molecules moving from high pressure to low pressure areas

The upwards or downwards movement of air is caused by convection and cooling

Wind: Summary

C-notes

Patterns- Uneven heating, uneven pressure
WARMER SURFACE:
Lifting/lighter air
Less molecules left
LOW air pressure

COOLER SURFACE:
“Heavy” air- sinking
Huge number of crowded molecules
HIGH air pressure

Listening Actively

C-notes

Looks like	Sounds like

Looks like	Sounds like
• Eye contact • Nodding • Not DOING anything else	• "silent" – while other is speaking • Asking questions • responsive

C-notes

Local Winds: Sea & Land

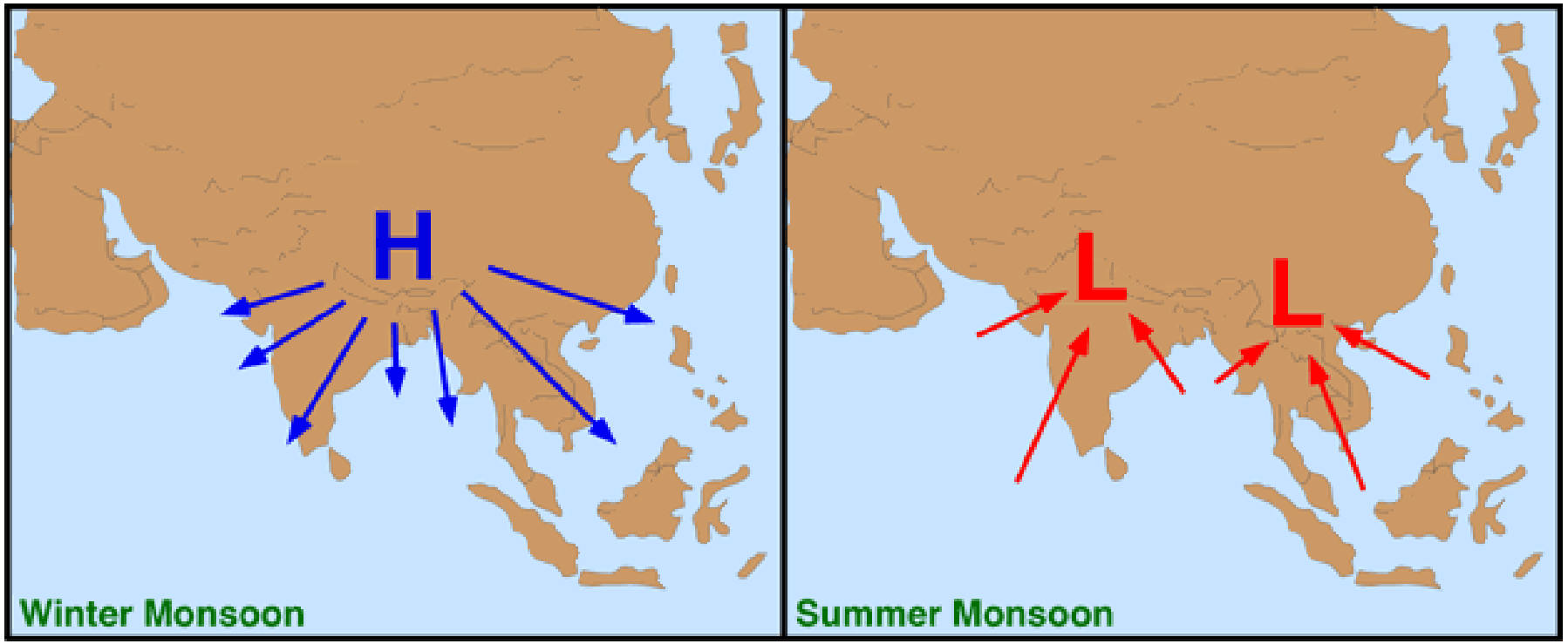
Land Breeze is a “local” wind:

1- DIRECTION: from land to sea

2- Why? Water is warmer than land

3- So…high pressure over land; low pressure over water

4- Time: night-time


H
Winter Monsoon
L
L
Summer Monsoon

C-notes

Local Winds: Monsoons

Winter:
High pressure is over the land; low pressure is over water (ocean, sea)
Result: Wind goes from land to sea. It is a DRY WIND

C-notes

Local Winds: Monsoons

Summer:
Low pressure is over the land; high pressure is over water (ocean, sea)
Result: Wind goes from sea to land. It is an extremely WET wind

C-notes

Local Winds: Sea & Land

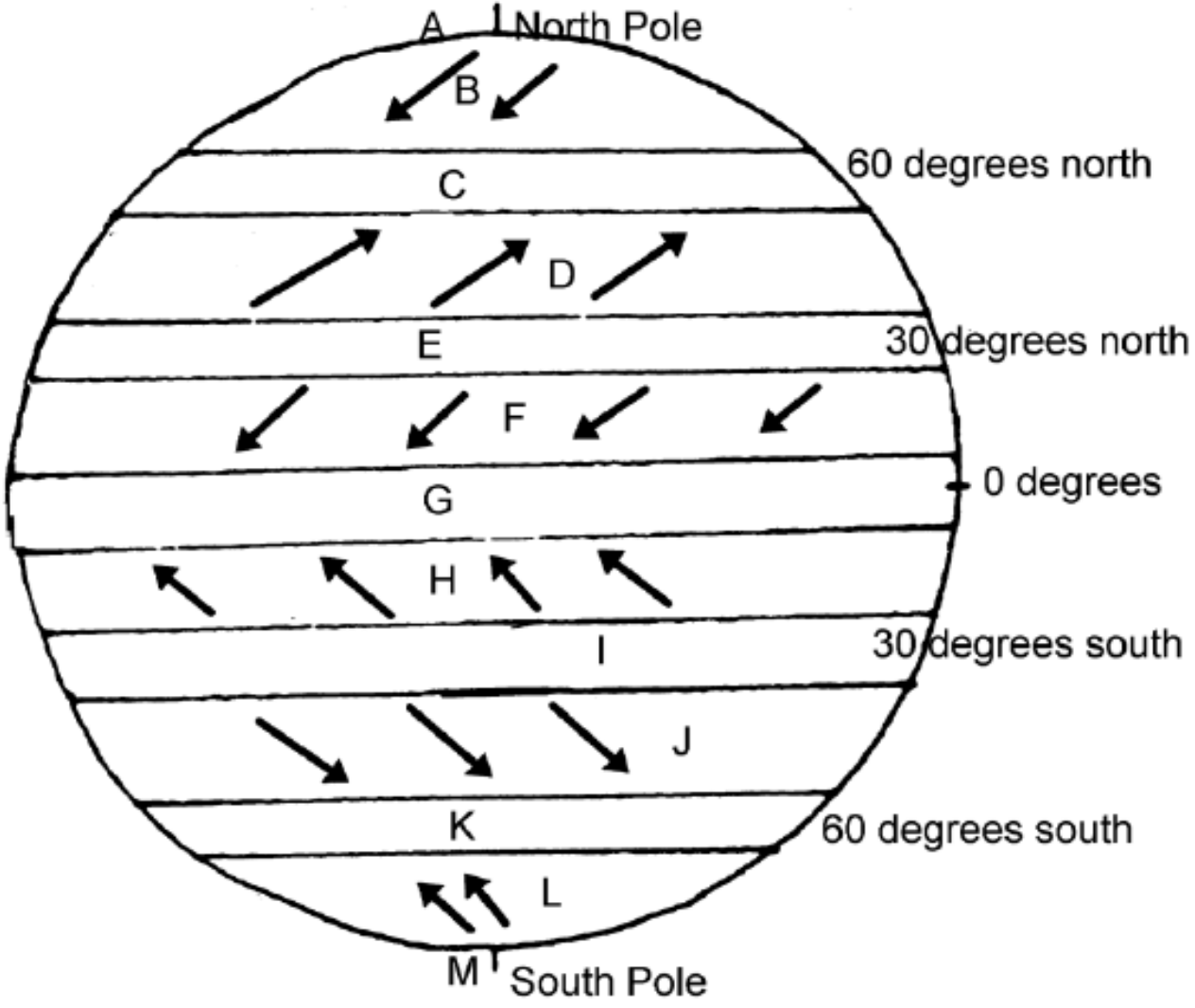
Sea Breeze is a "local" wind:

1- DIRECTION: from sea to land

2- Why? Land is warmer than water

3- So…high pressure over water; low pressure over land

4- Time: DAY-TIME


A
North Pole
B
60 degrees north
C
D
E
30 degrees north
F
G
0 degrees
H
I
30 degrees south
J
K
60 degrees south
L
M
South Pole

Global Winds

C-notes

Are large scale wind patterns on Earth. The wind moves from high pressure areas to low pressure area.
Cause: uneven heating

Calm Regions

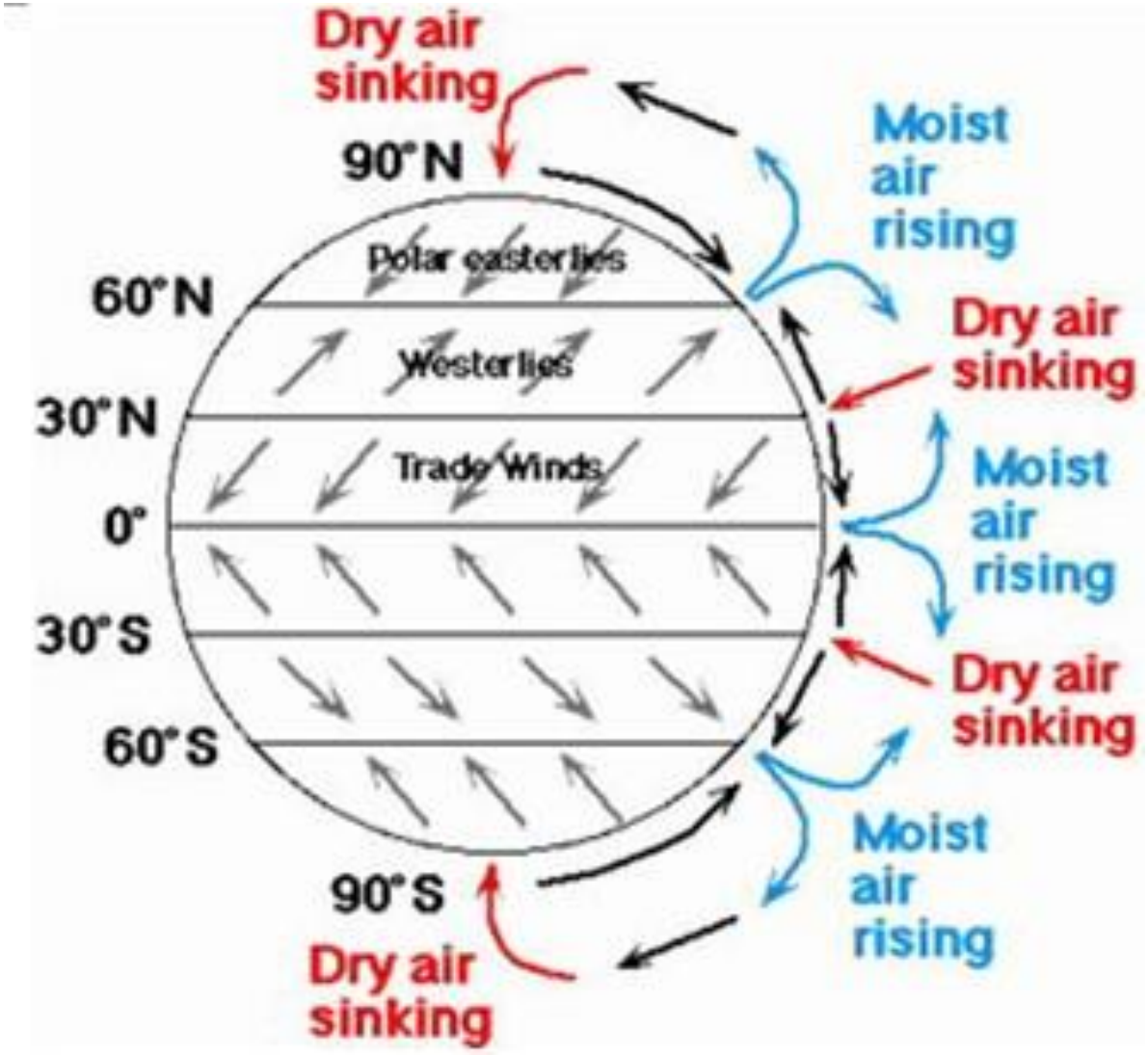
C-notes

Areas of Earth where there are little or NO global winds.
They are at the equator (0 degrees) and at *30N and 30S latitude
*** Major deserts**

Calm Regions

C-notes

1- Doldrums- located AT the equator
2- Horse Latitudes- at 30N AND at 30S



Easterlies:

Westerlies:

Trade Winds:

At what latitudes are there Low pressure areas?

At what latitudes are there High pressure areas?

Easterlies:

AT THE POLES
DIRECTION: E (east)
Latitude: from 90N to 60N

Westerlies:

DIRECTION: W (west)
Latitude: from 60N to 30N
***CONTINENTAL U.S.**

Trade Winds:

DIRECTION: NE (northeast)
Latitude: from 30N to 0 degrees
***on either side of the equator.**

At what latitudes are there Low pressure areas?

At what latitudes are there High pressure areas?

Group A

1. **What happens to air molecules when there are differences in air pressure? Include a diagram**

When there are differences in air pressure that causes the molecules to move from a high to low pressure area. In an area of low pressure, air rises leaving less molecules; an area of high pressure air sinks and therefore has more molecules. The difference in pressure makes the molecules move from the "crowded" area of High pressure towards the area of low pressure. These moving molecules are the wind.

2. Describe what a sea breeze is and why it happens

A sea breeze is a local wind that occurs during the day. This happens because the land is warmer and air rises creating a low pressure area. The water is cooler and air is sinking creating a high pressure area. The air moves from the water towards the land.

Group B

3. Describe what a land breeze is and why it happens

A land breeze is a local wind that occurs during at night. This happens because the water is warmer and air rises creating a low pressure area. The land is cooler and air is sinking creating a high pressure area. The air moves from the land towards the water.

4. What events cause wind to happen?
First, the surface has to be heated by the sun. The heating of the surface is uneven- depending on the type of surface or the latitude of the surface. That difference makes areas of rising or falling air which creates areas of low and high pressure. The air molecules will always move from high to low pressure.

Global Winds (both)

Use the globe image provided to label the indicated letters and answer the questions:

B EASTERLIES
D WESTERLIES
E HORSE LATITUDE
F TRADE WINDS
G DOLDRUMS
I HORSE LATITUDE
J WESTERLIES
L EASTERLIES

5. At what latitudes is air sinking? 90N, 90S, 30N, 30S
6. At what latitudes is air rising? 60N, 60S, 0 (EQUATOR)