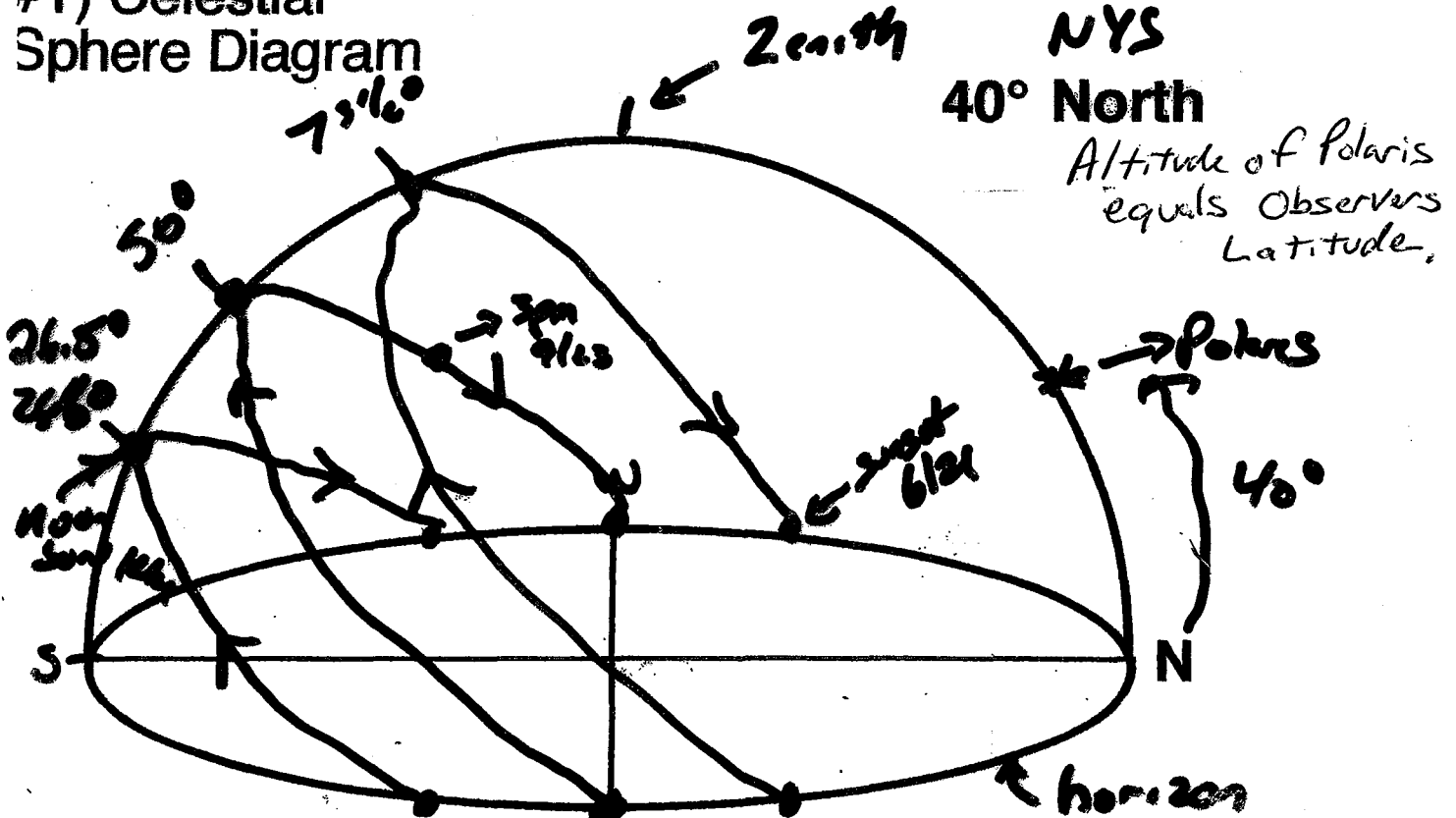


Top Ten Diagrams

Add Reasons for Seasons

#1) Celestial Sphere Diagram



Altitude of Polaris equals Observers Latitude.

Each season
Noon Sun
Days by $23\frac{1}{2}^\circ$

Label

Zenith
Horizon
All Directions
Location of Polaris
Path of the sun on

Altitude of Polaris = latitude

Equinox Path
due East -
due West

12/21
Equinox 6/21
Sunrise on March 21st
Sunset on June 21st
Noon sun on December 21st
Draw the sun on the path for Sept 23 at 3:00 PM

12/21
3/21
May → 6/21
9/21
12/21

90°
- Latitude $\frac{90}{50}$
Angle of Noon Sun for Equinox

Equal Equator East

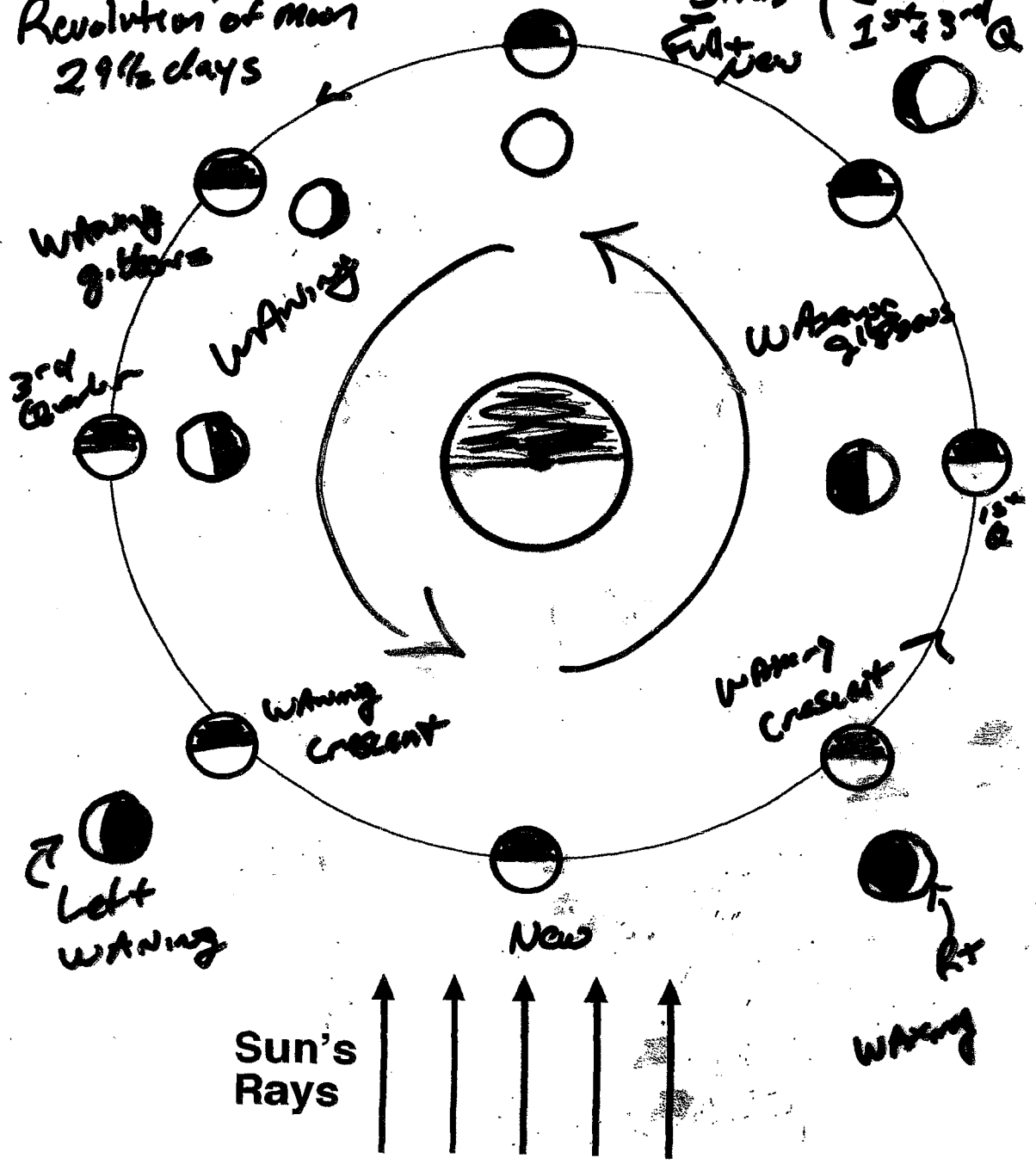
6/21 Summer - Add $23\frac{1}{2}^\circ$
12/21 Winter - Subtract $23\frac{1}{2}^\circ$

(DAY)

#2) Phases of the Moon Full

Revolution of Moon
29 1/2 days

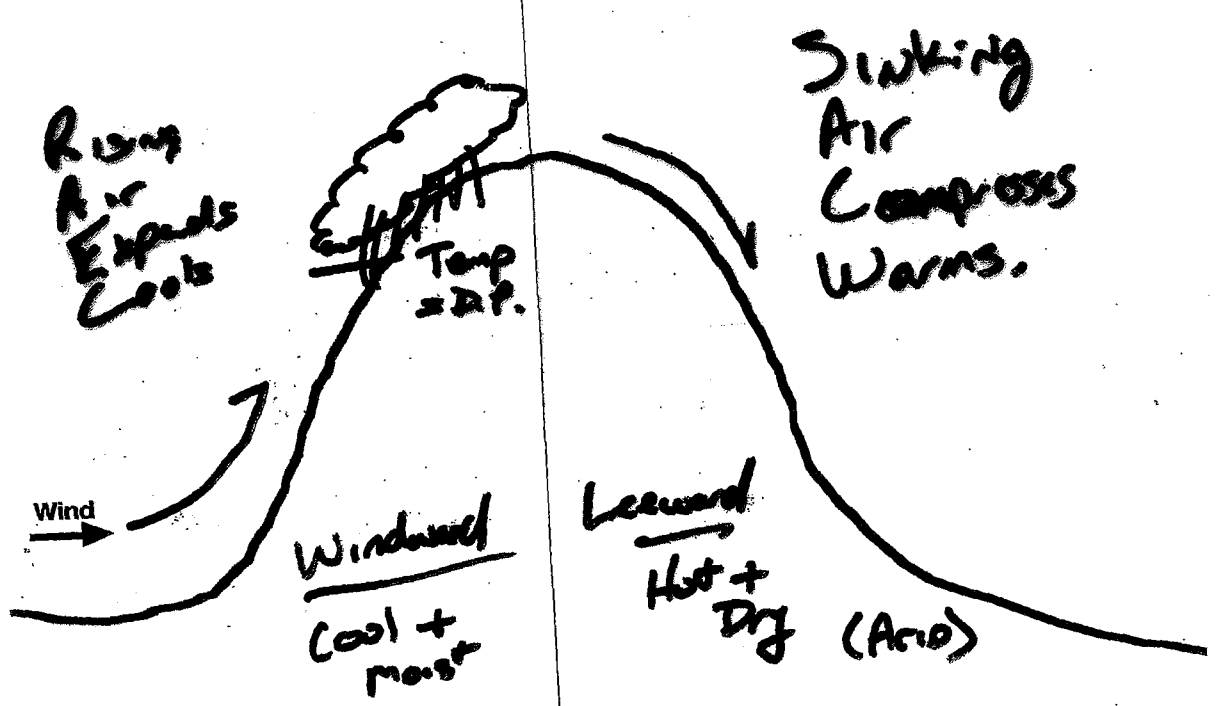
Spring / Waning
Summer / Waxing
Autumn / Waxing
Winter / Waning
1st & 3rd Q



New - Near
Full - Far

Moon grows from the right
Moon diminishes from right

#3 Orographic Effect



Climate Factors

- 1) Latitude
- 2) Elevation
- 3) Orographic
- 4) Proximity to Water
 - Coastal - Smaller Temp Range
 - Cont - Higher Temp Range
- 5) Wind + Pressure Belts (p14)
- 6) Ocean currents (p4)

Imaginary Continent

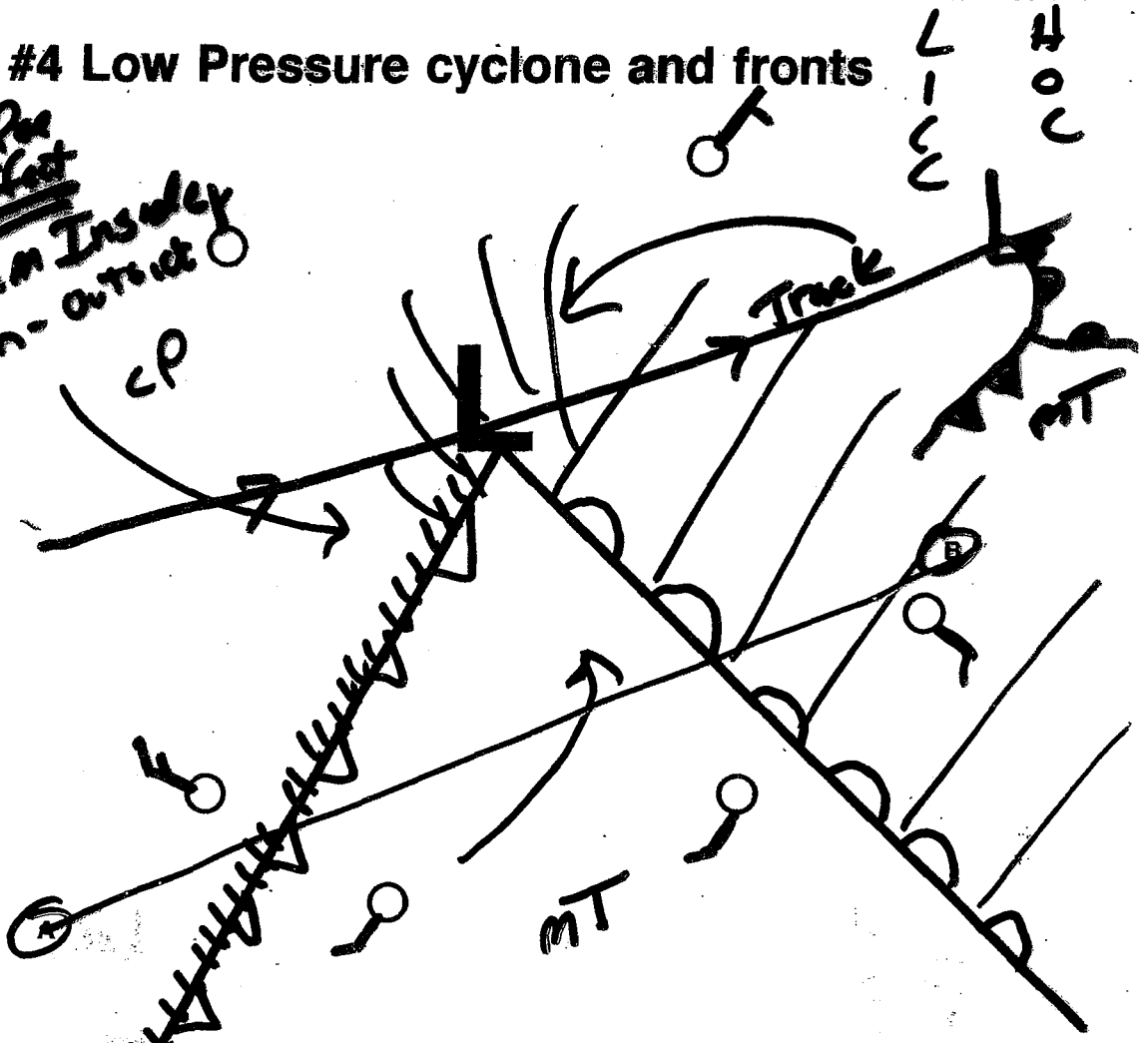
Use p 14 ESRT

L → Convergence (Wet)

H → Divergence (Dry)

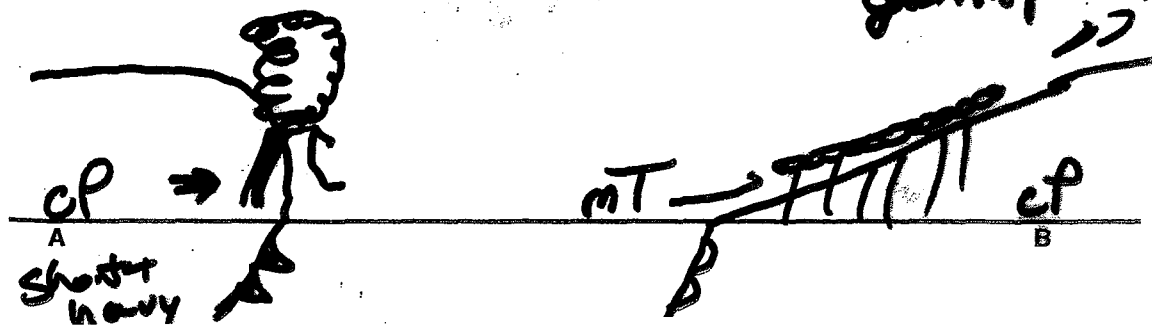
#4 Low Pressure cyclone and fronts

Teepee effect
 warm inside
 rain - outside



Front X
 Cold - short heavy precip.

Front Y
 WARM - slow steady gentle precip



#5 Elliptical Orbits

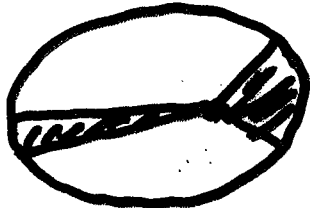
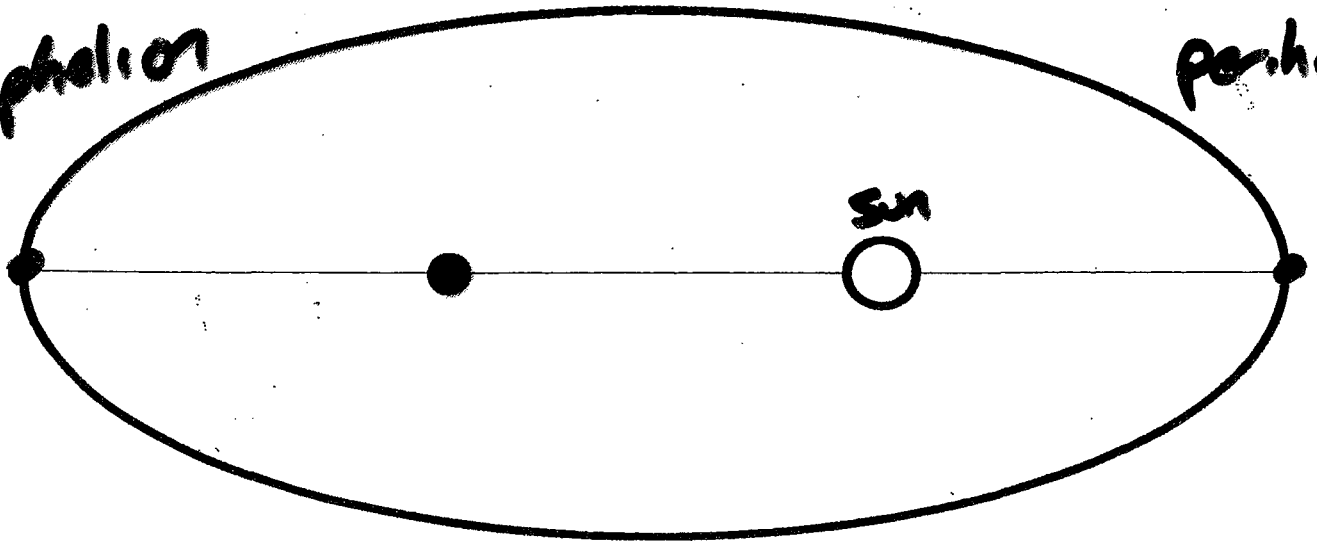
$$e = \frac{d}{L} \quad 0 \leq e < 1$$

↑
circular

a is a semi

aphelion

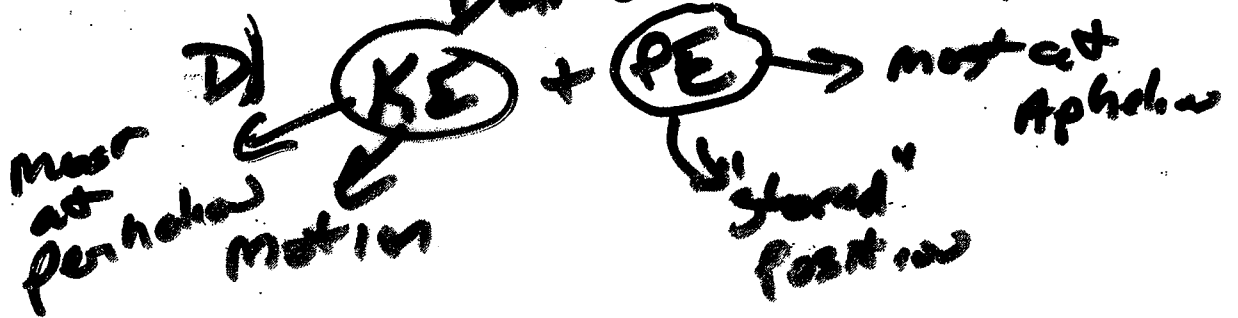
perihelion



Equal Areas
in
Equal
Time

Causes Changes in

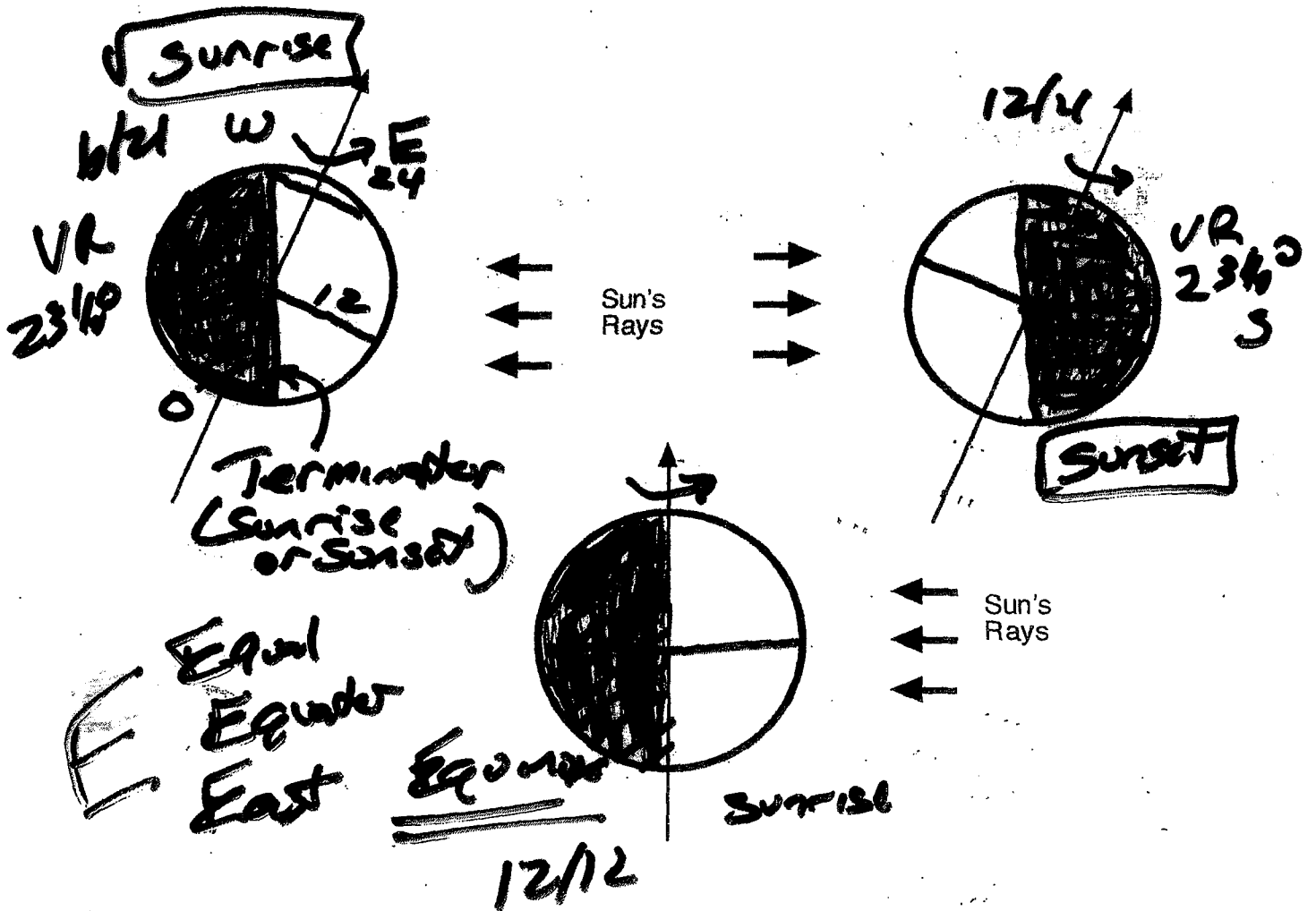
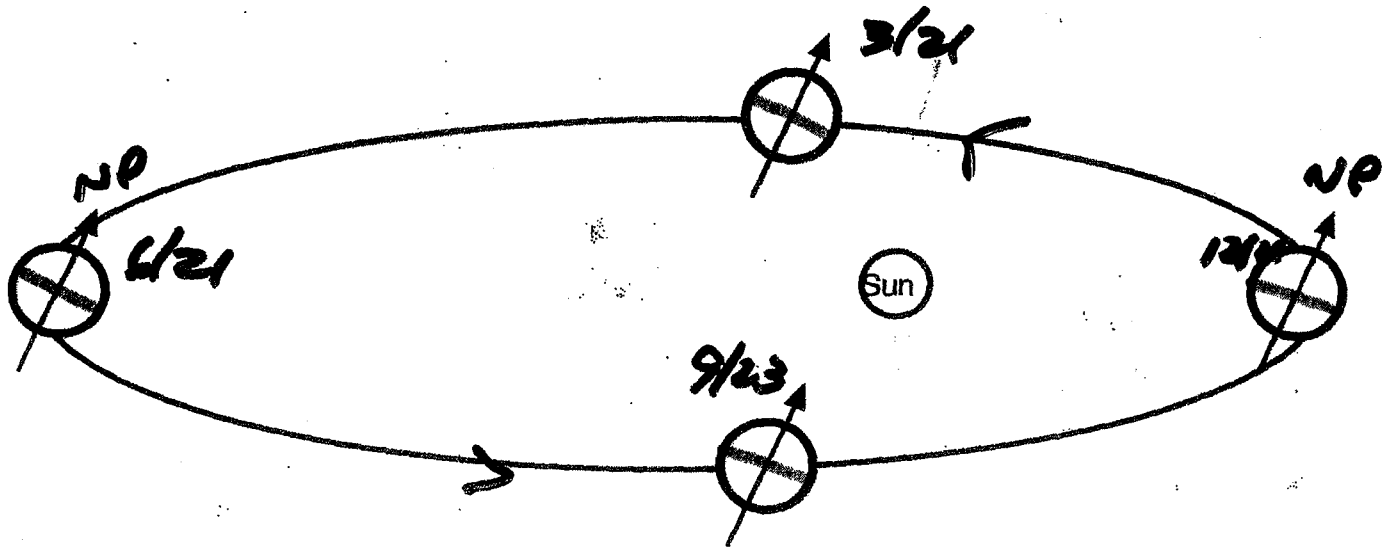
- A) Gravitational pull - max perihelion
- B) Orbital Velocity - max perihelion
- C) Apparent Diameter - max perihelion



#6 Earth's Orbit [not to scale]

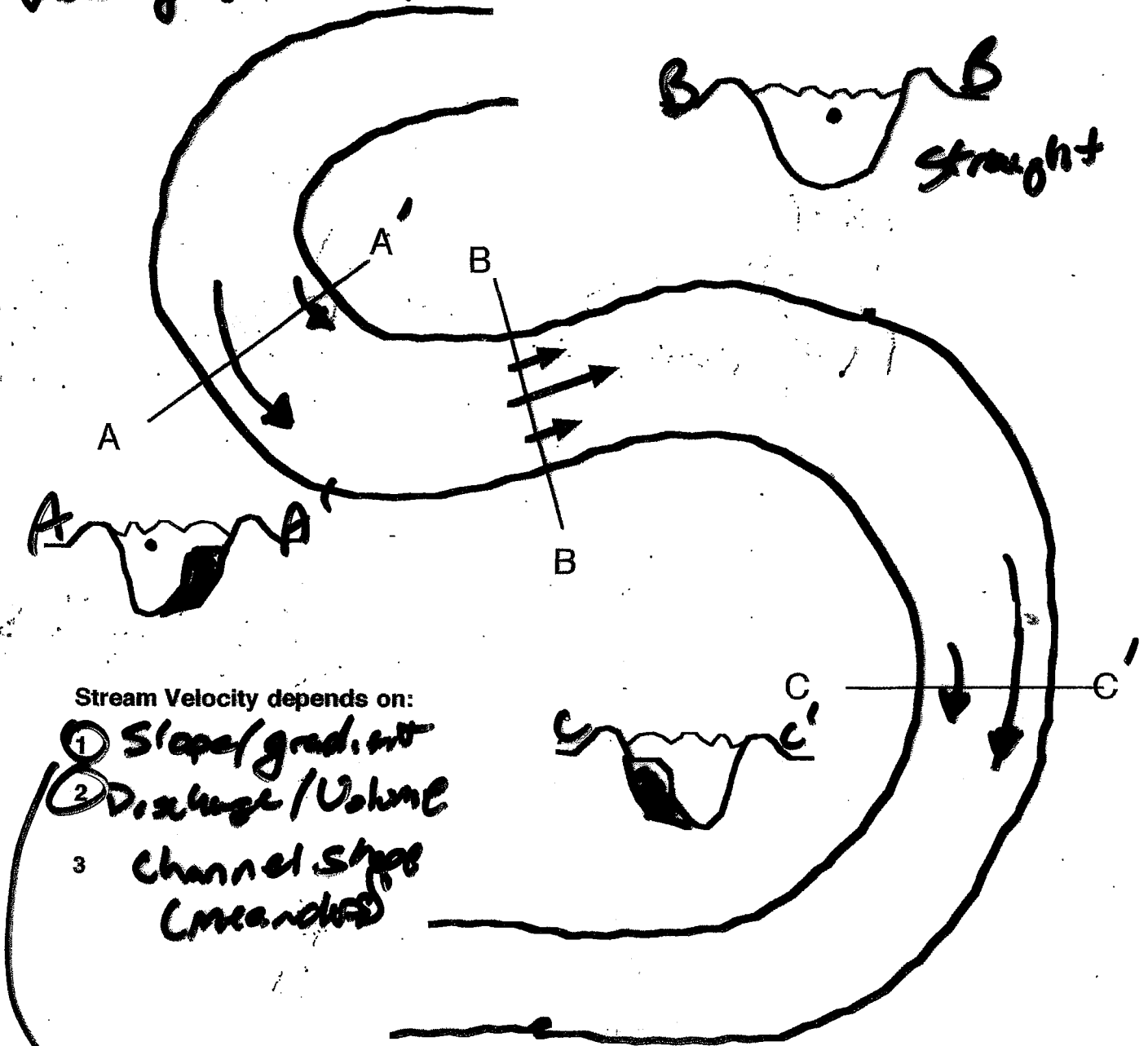
Seasons

- 1) Tilt of Axis $23\frac{1}{2}^\circ$
- 2) Revolution of Earth,
- 3) Parallelism of Axis



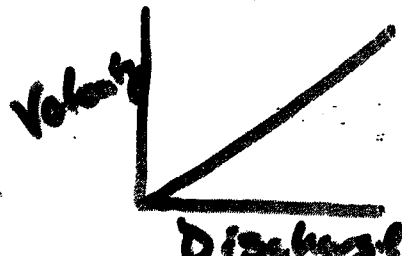
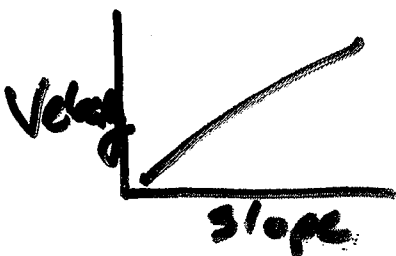
#7 Streams and Meanders

Velocity \uparrow - erosion (outside)
Velocity \downarrow - Deposition (inside)

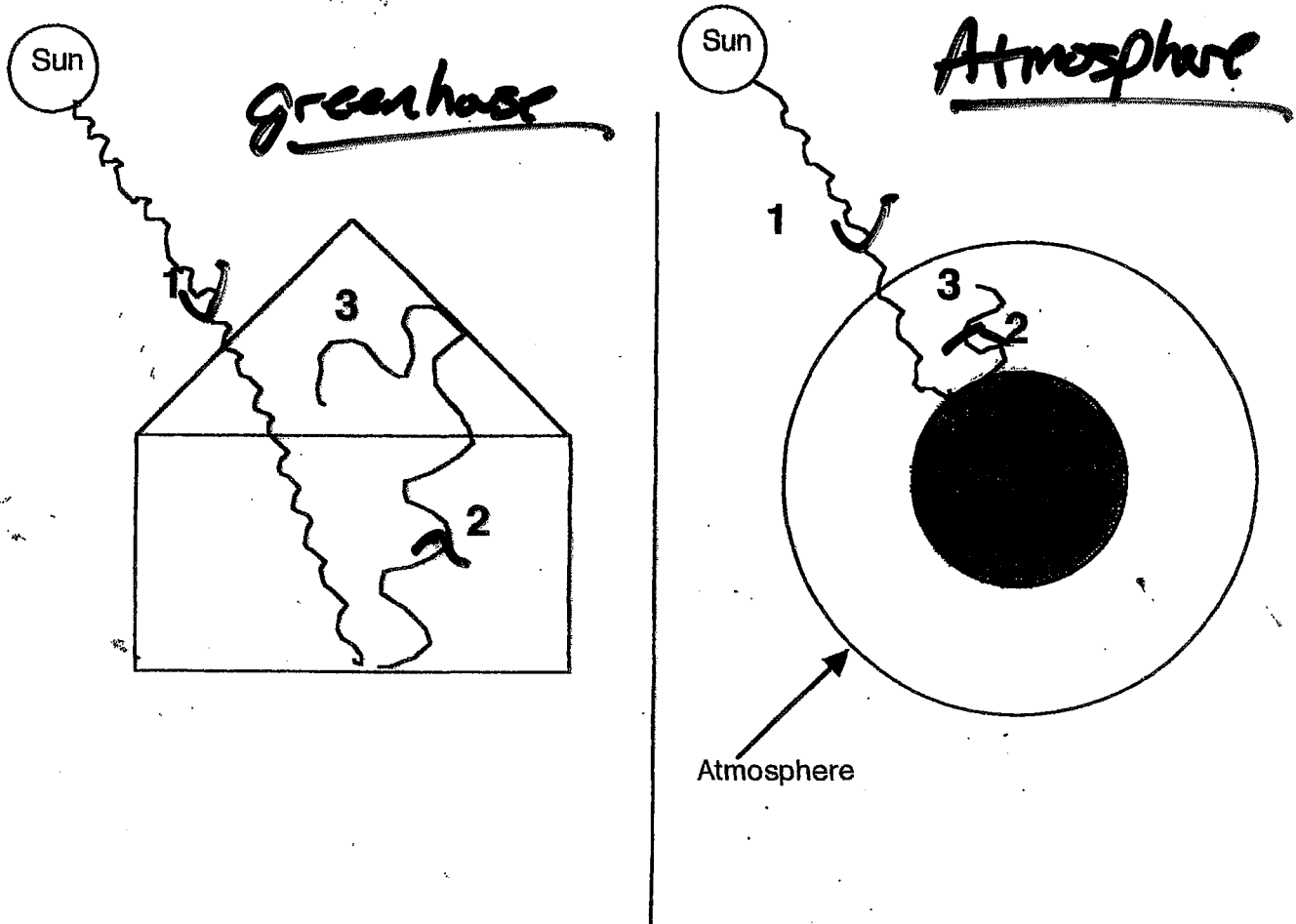


Stream Velocity depends on:

- ① Slope/gradient
- ② Discharge/Volume
- ③ Channel shape (meanders)



#8 Greenhouse Effect



3 Infrared is reflected.

1 Short-wave Insolation is absorbed.
 2 Long wave Infrared is reradiated

3 Infrared is absorbed by greenhouse gases.

Terrestrial Radiation

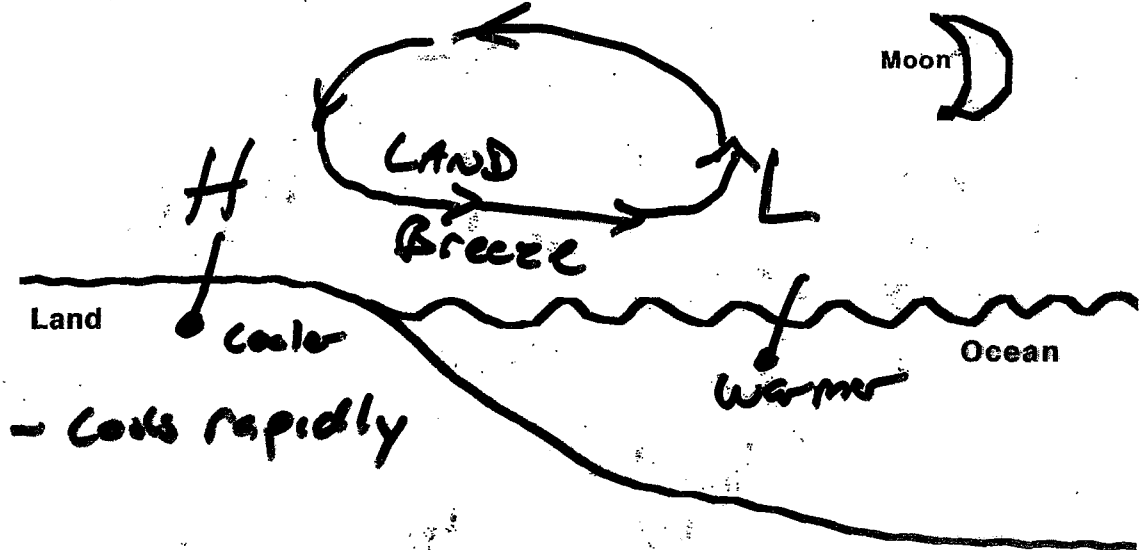
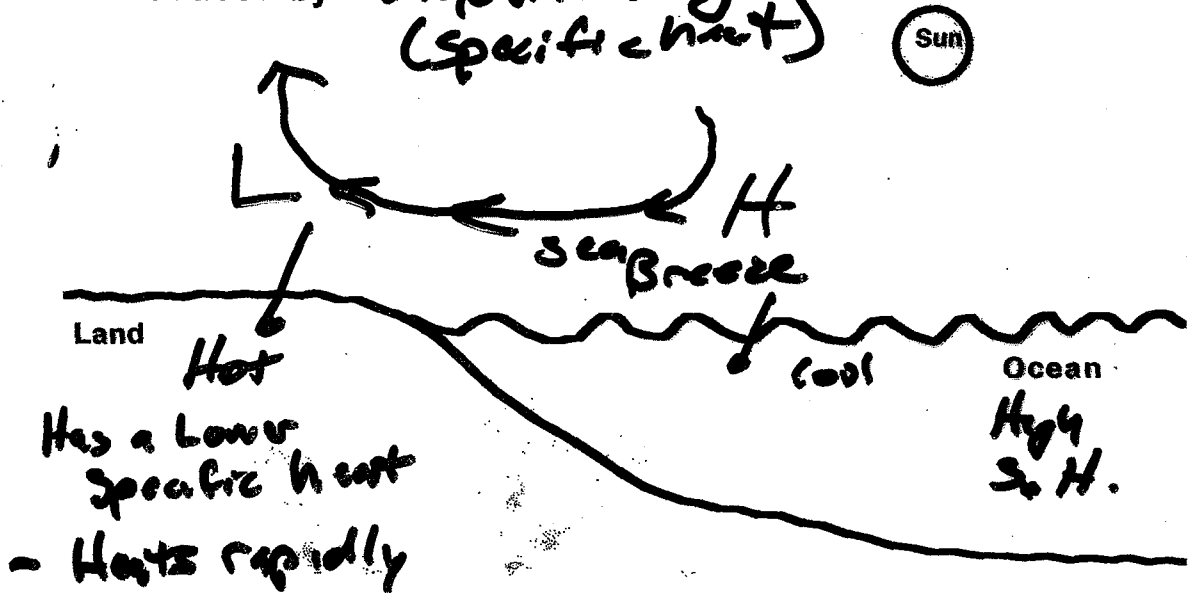
CO₂
 water vapor
 Methane

greenhouse gases.

Burning fossil fuels produces CO₂

#9 Sea Breeze - Land Breeze

Caused by - Unequal heating
(specific heat)

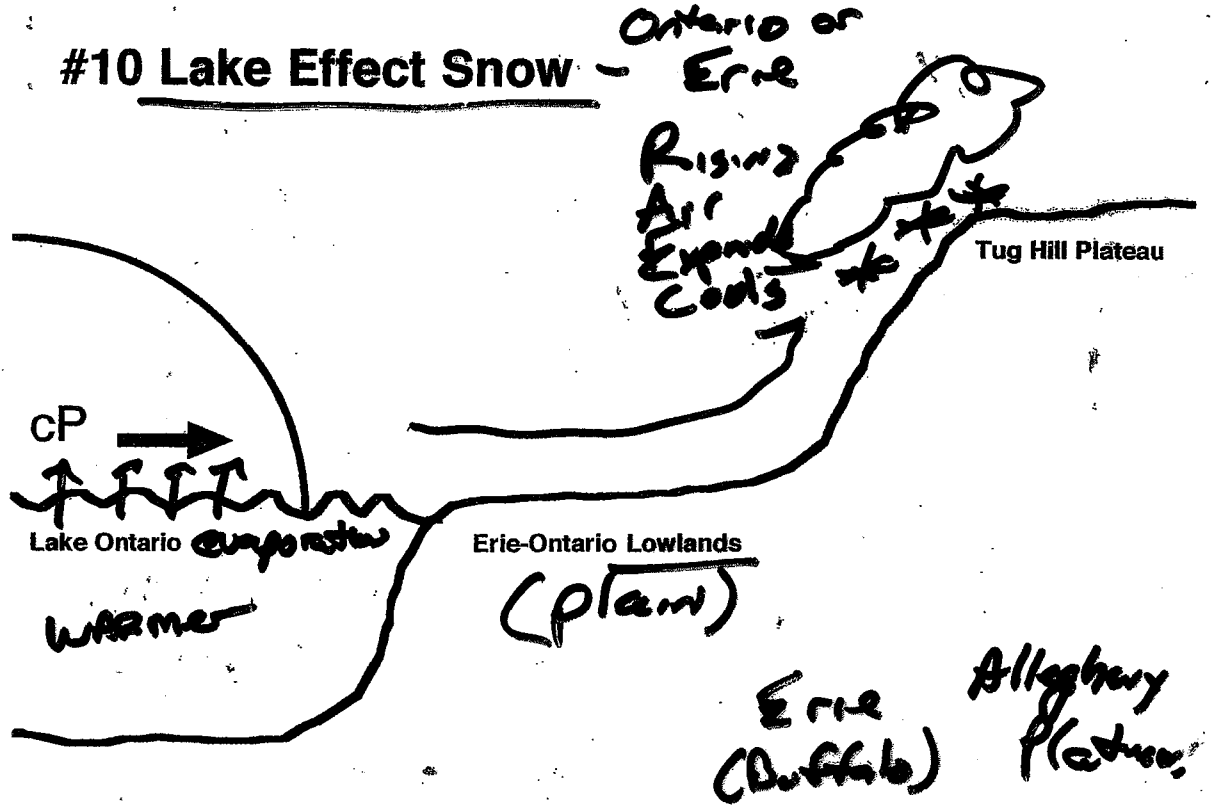


Monsoon - Seasonal Shift in Winds

India / SE Asia

Summer - Wet
Winter - Dry

#10 Lake Effect Snow - Erie



Stream Flow

