The warmer the air is, the greater the amount of H2O the air is able to hold—thus, equals more clouds, rain, storms.

Storms = f. Interruptions in Global Winds.

Primary Winds:
Tell you that the climate @ the coast is different than inland. Also will tell you that climates from one coast to the other are maybe different.

Second Order Winds:
Winds that do not take place on Global scale. They cover Continents—while they are in effect they take control of winds—when they leave the Global Winds take over.

3 Systems of Second Order Winds:
1. Hurricane/Tropical Cyclone
2. Extra Tropical Cyclone
3. Monsoon

Cyclone = Means a Low Pressure Area
Anticyclone = Means a High Pressure

Assignment:
In 25 words or less—what is a Monsoon
**3rd Type of Winds** (Monsoon) → **2nd Order Winds**

**Monsoon** & Seasonal Reversal of the Winds

**Reversal** means it changes $110^\circ(+) \rightarrow 180^\circ$ every year in the middle.

**Distance Sun travels until it gets dark**

**Takes Alot of Energy to Evaporate H$_2$O**

**H$_2$O Can Transfer Energy by Convection & Radiation**

**EL NIÑO**

The slowing down of the winds ⇒ causes upcurrents since winds not moving as quick it slows the ocean currents causing ocean to warm...

When ocean cools off, change of temp ⇒ changes in pressure high/low ⇒ makes winds

**@ Night Time**

Ground cools quicker than the H$_2$O. Think = beach sand difference day/night
<in relation> to monsoons

- **Summer → Asia gets hot (northern hemisphere)**
  - Land gets hot → making low pressure
  - Air moves from high → to low
  - Cloud forms / causing rain

- **Wet monsoon**
  - Called wet because clouds are forming causing RAIN

- **Winter → Asia gets cold (northern hemisphere)**
  - Cold air is very dry / holds no moisture
  - Thus, considered

  **Dry monsoon**

- West coast of Africa has monsoonable circulations

- **Australia** is the opposite of Asia
  - Thus, when Asia is experiencing a dry monsoon (winter), Australia is experiencing a wet monsoon
2nd Order Winds (3 types)

- Tropical Winds - Hurricane
- Extra Tropical - Cyclone
- Monsoons

LOCAL WINDS
depending on where you are

1st type of local winds

LAND SEA BREEZE REVERSAL

Where and under what conditions would you find the greatest and strongest winds?

WHERE: H₂O is the coolest and land is the warmest.

LOCATION:
Near Africa
(South East)

6 very strong winds/sea breeze around 25 mph.

Some days - The seabreeze is stronger than other days.

⇒ Because valley areas may be very HOT, thus causing a very LOW pressure AND pulling the sea breeze all the way into the valley
**Urban - Heat Island effect**

**Mountain Valley Breezes**

- **Bird Soaring**
- **Cold Day**

**At Night** Air cools and sinks down to valley and the pattern reverses now air is going down towards the valley.

**Valley Breeze + Sea Breeze** $\Rightarrow$ makes an even stronger breeze (day-time)

Mountain and valley $=$ doesn't relate to
There are more variations in climate in Santa Cruz than there are from Boston to N. Carolina.

Another type of wind—

**Katabatic Winds** = Have potential for blowing 100 mph. Very cold air.

Basic environment is affecting the winds.

**Adiabatic Winds** = Winds that are not affected by environment around it.

Win in California.

Santa Ana Winds (form of Adiabatic Winds) come straight around the Rocky Mt.'s.

Dry Adiabatic Lapse Rate

\[ = 5.5^\circ F \text{ per 1000 feet} \]

Loess (loess) = Very good soil. Soil came from Ice Age. Very fine soil. Growth for potatoes and carrots grow very good.

How to figure temp in LA:

1. \((5.5) \times (4) = 22\)
2. \(22.0 + 70^\circ F \Rightarrow 92^\circ F\)
Santa Ana Winds = Can Be Very Dangerous
Very Common in December & January
(JAN. 1<sup>st</sup> Very Special Day → ROSE BOWL PARADE)
= Cleans out pollution.

IN THE ROCKY MOUNTAINS THEY ARE CALLED
SHANOKE'S (sp)?
NOX'S (Nuck)