Storm eventually dies out after the OCCLUDED stage.

**BLUE NORTHERS**

Ex: Temp goes from 75° and drops 40° can happen within an hour.

- **RAIN FALL IN THE TROPICS** is majority caused by convection.
  - When Florida gets a frost, they pull oranges off tree and juice them.

**ZONAL FLOW**
- Storms move straight across U.S. from **W→E**
  - Thus, **COLD** in the NORTH, WARM in SOUTH.

When wind is blowing from **SOUTH** → **RAIN**
When wind is changing direction → **COLD FRONT PASSES**

**VIOLENT WEATHER**

Thunder storms = **Hot and moist air**

- Sierra Nevada gets thunderstorms all the time. **Warm/moist air comes from Gulf of Mexico.**
  - Convection, sun warms ground → **Hot air rises**
Cold fronts can also move the hot air from ground and cause a lot of violence of regards to wind.

Air that moves into a cloud is spinning thus breaking up electrons in cloud.

**Stage 1:**
- Virgin
- Rain that evaporates before it hits ground

**Stage 2:**
- Ice rises up to troposphere
- Ice falls and cold air sinks down
- Makes a down draft

**Mature Stage:**
- Gust front is cold air pushed down onto ground

**Think** = plane story

70% of lightning happens within the cloud or jumps from cloud to cloud.

Lightening makes the (thunder) sound.

0 vacuum created after lightening.

Air moves back to hole and comes together and bounces back away.

For every 5 sec, before you hear thunder that is 7 miles.
Storm dies when it runs out of energy

**Ball** stage: dissipating

All Down Drafts

**Ball** - Lightening can break windows and bounce around the room. Stops when it loses energy

<Plasma>

<Steam lightening> type
EXAM II on APRIL 19th
[3X5 CARDS OKAY FRONT BACK] – identify diagrams<+>
[NO CLIMATE QUESTIONS] / 100 QUESTIONS - GET ORANGE SCAN TRON

(Book Need to read for final)
EARTH ABIDES
- Enjoy
- Why would Geography teacher have me read this book
- Know basic gist of book

STORMS – Fueled by H2O VAPOR HEAT
- Steered by organized jet stream.

Storms that don't have jet stream support, tend to
DIE OFF – AND VICE-VERSA

COLD FRONT usually on the western side of storm.
WARM FRONT usually on the eastern side of storm.

If Cold Front = if one side is colder than the other
Then it's called a Cold occlusion front

PREVIOUSLY STUDIED STAGES OF THUNDER STORM

Accumulus stage → Mature stage → Disappearing stage

[only up-drafts]

Convection built thunderstorms ➞ will DIE off when sun goes DOWN.

Cold Front built thunderstorms ➞ Tend to move along
The states / land
THUNDERSTORMS
- Frontal Passages
- Stirring

Need Extremely Warm & Humid Air

Very few tropical cyclones become Hurricanes

HURRICANES
Are Seasonal

As Hurricane runs over cold water - it loses its energy and starts to die off

As Hurricane runs over warm water
It amplifies the strength of storm
If hurricane moves onto land → it produces large amounts of rain.

Hurricanes cause major damage to cities/areas near coast.

Wind travels counter clockwise around low of storm.

1. Hurricane coming onto land
2. Higher waves are found north of eye of storm.
3. As well as, huge storm wave floodings.

El Niño tends to reduce number of hurricanes of Atlantic
La Niña tends to increase number of hurricanes of Atlantic

Hurricanes considered when wind speeds exceed 73 mph.

[5 stages]

Class 1 → Class 5
Not as violent → Most violent

Floodings → cause the greatest $$$ in damage.
Storm gets a Name → once it hits speeds of 35+ mph it is considered TROPICAL CYCLONE.

Retired Names = meaning that the Tropical Cyclone Storm (Hurricane) that is so powerful.

Once Hurricane Changes Oceans it Receives a New Name.

Typhoon is SAME AS a Hurricane → But name is Changed when it crosses the International Date Line.

Thus, a typhoon is heading for Japan.

Cyclones also have their own local Names

EX: Australia → Call it "Willy-Willy"

Hurricanes can spawn a Tornado

Hurricanes Form around Mexico

Cold fronts Reason why we don't get hurricanes
**Tornado**

- Can pack winds up to 300 mph.
- Are formed by all that has been previously discussed.

**Cause**

- Cold fronts
- Hurricanes
- Tropical cyclones
- Orographic lifting

**Tornado Alley**

- Area located across mid area of U.S. that has more tornadoes than anywhere else in the world.

- Storms tend to occur in the afternoon peak period: 5 PM - 7 PM

**Fujita Scale**

- F.1 → Winds of 35 mph
- F.5 → Winds exceeding speeds of 300 mph

**Doppler Radar**

- Can tell you how fast air is coming toward you and how fast it is traveling away from you.

**Hooked Echo**

**Mobile Home Parks**

- Not very safe
NOTES AFTER EXAM II
INFO ON FINAL [from today till Final Exam]

3.30.00

19-9

Besides where they are born
- **Extra-tropical Cyclones** → made up of fronts
- **Tropical** - All one air mass - cyclones
  - Hurricanes [mT]
  - Latent Heat → phase change → 4th way to transfer energy.

- Very Heavy Storms → Heavy Rain fall
  - You will see ice Crystal
  - But, Cloud can still Rain without ice crystals

- **CLIMATE** → 5: long term weather.

**GREEK** libraries → literally means SLOPE OF THE SUN

500 BC.

By 4th century Greeks

- Circumference
- Diameter
- ° of tilt of Axis
- Seasons
- (etc.)

Western world = Dark Age = Up until the 1500's (AD)

By 1492 America was discovered

Galileo invented weather thermometer in 1609

100 years later, °C and °F came into effect
1643 - Barometer was invented
1735 - Hadley talked about CELLS - weather
1800 - (Around) people began to explore the world in a weather sense

Darwin
Humboldt - carried a barometer with him and charted dawn info.
In 1817, he made maps of worlds.
Alexander von Humboldt - wrote book "Cosmos"

Descriptive climatology - describe what you see

1900s - Köppen - began to make classification of world climates [MAPS]

Some idea as to what it's like to be in the particular climates:

RANGE (a → e)

BASICALLY

Plants tell you a lot about the climate:

Redwood trees = damp, moist
Oak trees/grassy = hotter/drier
Ice plants = can't take cold temp

Biosphere/biogeography:
Distribution of animals over different areas - will also shed light as to what the...
**Range (A→E)**

**Distinctive Trees:**
- Tree drops leaves.
- Reasons why leaves drop:
  1. Cold
  2. Photosynthesis
  3. Drought
  4. If tree is Dead

- Are the Tropics (near the equator)
  - In tropics, all rain is produced by convection.
  - Seasons don't exist.
  - Coldest time of year/day just before sunrise.
  - Hot/humid majority of time.
  - More varieties of bugs ⇒ Thus, bugs can carry diseases, so more diseases.
  - More types of bugs.
  - Monominus

**Two Types of Climates**

- One type is where it rains all the time very wet. Usually it rains around 3PM ⇒ Because that's when it heats up the most and rains come from convection.

- Trees found are evergreen, hardwood. Thus, trees grow very tall and thick.

**Tropical Forest**

- There may be as many as 100 different types of trees.
- Not enough sunshine, thus, no vegetation on ground.
- Grass has a higher albedo than the forest, thus, decreases temp.
Tropical Wet and Dry

- For 2 months it doesn't rain.
  - Thus, trees drop leaves, some trees go dormant.
  - Wet/dry tropics = land is not as fertile.

The wettest place on Earth is Kawi (Alkali Rain forest).

Next would be India which receives 400+ inches of rain a year.

- During the summer in the wet/dry tropics, it rains.
- During the winter in the wet/dry tropics, it's dry (dry season = no rain).

Because it's so wet, people tend to build houses up on stilts.

Water level rise

Deserts of the world—found on either side.

[Hot Desert] [Step Desert]

2 types of deserts.

How to make a desert:

[If the potential for evaporation exceeds the potential for precipitation]

Hot Deserts => very very dry if potential for evaporation exceeds the potential for precipitation.
Found in the B Climates are Xerophytes (means any plant that holds water)

- Plants are spaced very far apart
- Type of Cactus called Saguaro

During the end of the raining period, they weigh down because they store water

- Joshua Tree - Yucca tree.
- Joshua tree (Sonora Desert →) go in spring or fall.

DATE SHAKE - In Indio, CA

[Early morning @ desert is very cold]

- Major cause of precipitation in desert → is caused by convection

How do animals survive in desert?

1. Critters are majority all nocturnal (more alive @ night)
2. Plants also multiply rapidly reproduce
Climate History/Climate Classification

Climate = long term.  
- Climate is unique to the day
- Climate = May determine

Köppen - used vegetation for his first map classification

Today, they take an average temp. of 30 years.
- And that determines classification A, B, C, D, E, F?

Pink Salmon - A climates biogeography is a good indicator of vegetation.

Tropics -
- Wet tropics
- Dry tropics (2 months or more dry)

Green potential for evaporation exceeded
- Results of dry air - Deserts have the greatest daily range (hot to cold)
- Of temp. (night - day)
- Store Hz
- Aloe - Joshu tree

Yellow - Very dry, plants very far apart.

Yellow Brown - Step desert, not as dry. Same plants as pine nuts come from this area.

Yellow area - but more of them per sq. area.

<Death Valley - Summer >

Desert surface - Has a lot of salt in it. Thus acts like a dry sponge that takes a long time to dry.
Desert:
1. Quality in Wastes (Flash Flood) is not very good.
2. Water evaporates and leaves mineral salt deposits.
   - Dry Salt Bed.
   - Playa: flat ridges called Salt Flats.

(Playa Lake) is located in a valley or Salt Flat

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Subtropical Climates (Mar, Oct) found between: Cold regions / Warm regions of tropics

- Major precipitation is caused by frontal ascent of cold fronts, warm fronts
  Rain comes as extratropical storms (bring rain)

Most of these climates are located near oceans. Cold Fronts

- Lt. Green = Rain all the time. Located on the east side of continents, also on warm ocean currents.
- Dark Green = Mediterranean Climates

California = is different in nature don't get rain in Summer

- Caco Brown = Rains in summer/not winter

Lt. Green
- Subtropical Humid Climate
  - A lot of HURRICANES

21 = Test