TOPIC: Ppt & EVAPORATION

DATE:

FILE UNDER: ESR 320

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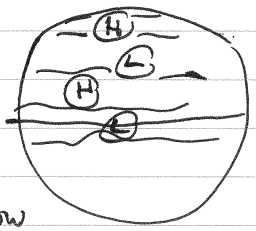
(1) RAIN: Sequence - Evaporation & convection upwards
- ~~cloud~~ fo - Cooling due to elevation
- Cloud formation
- Coalesce cloud droplets into rain or ice or snow.
- Falls thru air to earth

(2) COOLING MECHANISMS

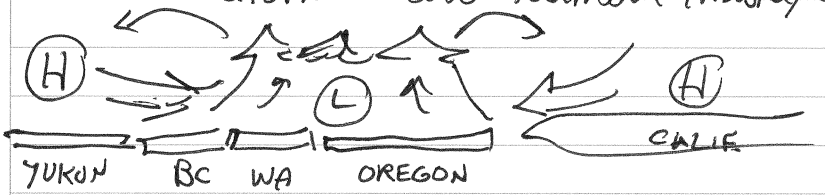
CYCLONIC, OROGRAPHIC, CONUECTIVE

CYCLONIC ("Cyclone" any low pressure zone)

a) Non Frontal:



We'll see later that earth is divided into bands of generally high & low pressure. Oregon in winter is mostly low pressure air "squeezed" between high pressure in California and Northern Alaska/Canada

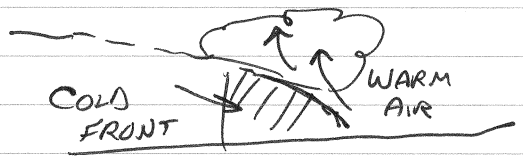


The air rises over the NW most of the winter cools, produces long storms (24-72 h or more) of moderate rainfall (@ maybe 1-3" every 24 hr)

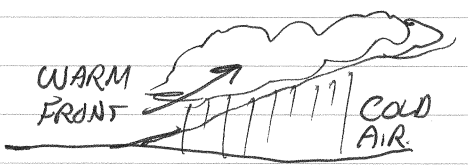
Occasionally Huge rains in subtropics

FLA record 1930 stalled typical storm 38.7" in 24 h

(3) b) Frontal: Same idea but occurs when an organized "front" moves in

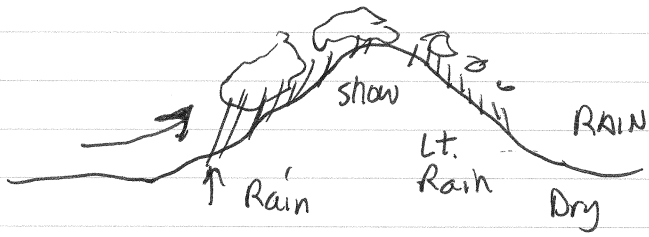


cold air wedges under warm, pushes it up STEEPLY. SUDDEN INTENSE RAIN



Warm air rides up over cold rises more gradually CLOUDS FIRST, then LONG SLOW RAIN

(4) OROGRAPHIC



↑ Moderate, moist

More extreme Temps
Dry

(5) CONVECTIVE:

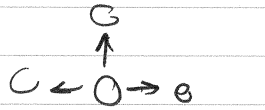
Storms - LOCALIZED
- short
- Intense (3"-4" per h common)

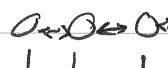
~~Occasionally prolonged as in Large, Stalled Hurricanes~~

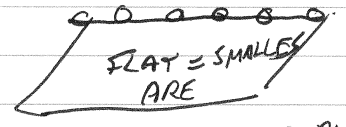
(6) RAIN COALESCING: CCN - cloud condin Nuclei

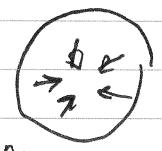
Marine - salt particly
Terres - Dust
Absence (ultra clean air) → supercooling

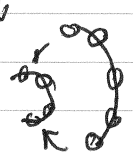
(7) SURFACE TENSION



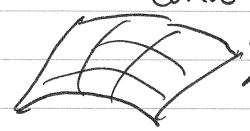








Tighter the curve, the more th

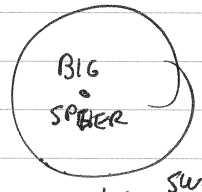


$\gamma = \frac{F}{L}$ Force / Len

UNITS $E = F \cdot d = F \cdot L$

$F = \frac{E}{L}$

$\gamma = \frac{E}{L^2} = \frac{E}{Area}$



Low surf energy

High Surf Energy

SURFACE PULLS

Energy AND E must come from somewhere

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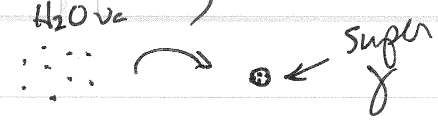


(8) CCN : Raindrop ~ 2-3 mm

~~CCN~~ ~

CLOUD DROP ~ 0.02 mm ($\times \frac{1}{100}$ th)

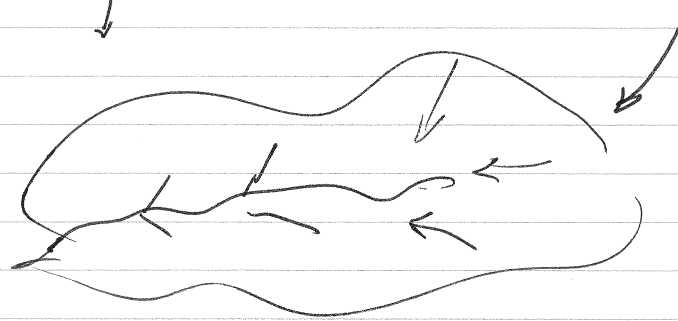
CCN ~ 0.1-0.2 μm $\frac{1}{100}$th

- With no CCN Water-Vap supercool well below 0 °C
- Above 0°, V.P. ~ 400% supersat'd to form drops

O ↓ G ↓

Rain forms, falls to eath

CATCHMENT OR WATERSHED



Google Ea

Rain gages mm/day mm/yr

wiki

EVAP N US: CLASS PAN 47.5" x 10" ALSO mm/d

120 cm x 25 cm

LAKE : ~0.75 x PAN

Sunken Colorado PAN : Closer to lake. ~0.8 x PAN

SUNK TO ~ 5cm (2") of rim)