

#33: Layers of the Atmosphere

THERMOSPHERE

MESOSPHERE



STRATOSPHERE

TROPOSPHERE



Surface

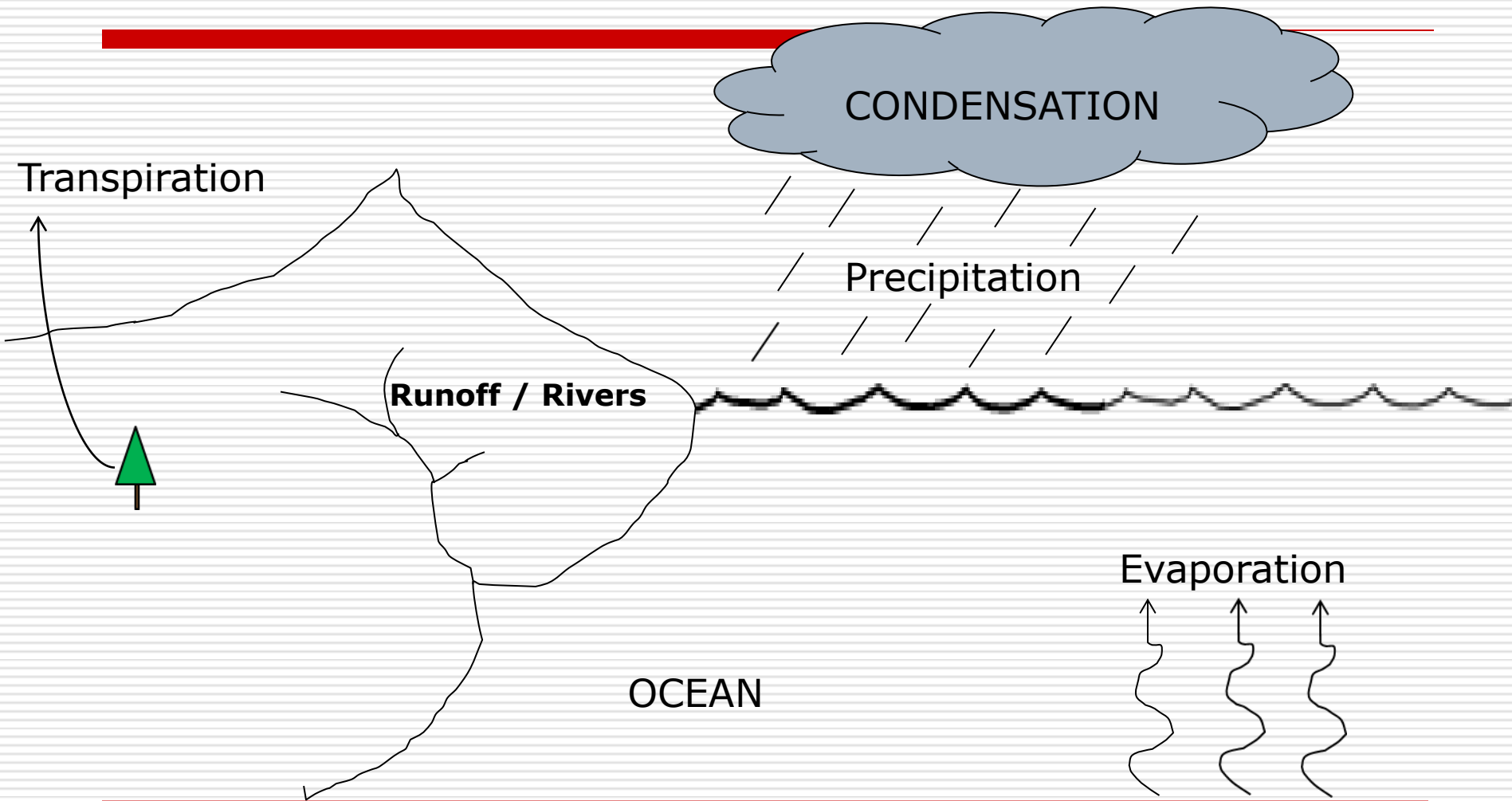
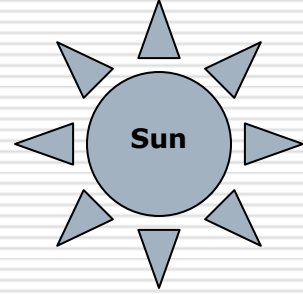


"Troy Sipped Milk from his Thermos"

#34: Heat Transfer

- ❑ **Convection** – currents from flowing fluids / warmer = less dense = rises
 - ❑ Fireplace warms the second floor of cabin
 - ❑ **Conduction** – Contact / touch
 - ❑ Frying egg in pan
 - ❑ **Radiation** – Direct path through space / out in all direction
 - ❑ Sun heating sand at beach
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#35: Water Cycle



#36: Greenhouse Effect

- ❑ Radiation (light / “short-wave” energy) from the Sun hits Earth. Most of it gets absorbed by the surface.
- ❑ This makes the ground hot / this heat energy (long-wave) is released from Earth and absorbed by CO₂ and H₂O vapor in the air.
- ❑ **GLOBAL WARMING** – burning fossil fuels (oil, gas, coal) adds CO₂ and increases this effect

#37: AIR MASSES

- ❑ From land / **dry** / CONTINENTAL —————→ **c**
 - ❑ From ocean / **wet** / MARITIME —————→ **m**
 - ❑ From north / **cold** / POLAR —————→ **P**
 - ❑ From south / **warm** / TROPICAL —————→ **T**
 - ❑ **mT** = wet and warm
 - ❑ **mP** = wet and cold
 - ❑ **cT** = dry and warm
 - ❑ **cP** = dry and cold
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#38: Weather Variables

□ **TEMPERATURE** - amount of HEAT energy the air has

■ **THERMOMETER**

□ **HUMIDITY** – amount of WATER vapor in air

■ **PSYCHROMETER**

□ **PRESSURE** – weight of air

■ **BAROMETER**

#39: Dewpoint Temperature

- When air cools the the “Dewpoint Temperature,” water vapor in the air will form tiny droplets

 - **CLOUDS** -
 - **CONDENSATION** point temperature
 - Relative Humidity = 100%
 - Air is saturated / full of water vapor
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#40: Relative Humidity

- Percentage of water vapor in the air
 - Relative to temperature
 - **WARM AIR CAN HOLD MORE MOISTURE THEN COLD**
 - EX- 50% HUMIDITY AT 80°F, becomes 100% IF THE AIR COOLS TO 60°F
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#41: How a CLOUD forms

- ❑ Warm air rises (less dense)
 - at a **FRONT**
 - ❑ It expands and cools
 - ❑ CONDENSATION (gas to liquid) occurs
 - ❑ The tiny droplets of water form on dust particles
 - **CONDENSATION NUCLEI**
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#42: High Pressure vs. Low Pressure

□ HIGH Pressure

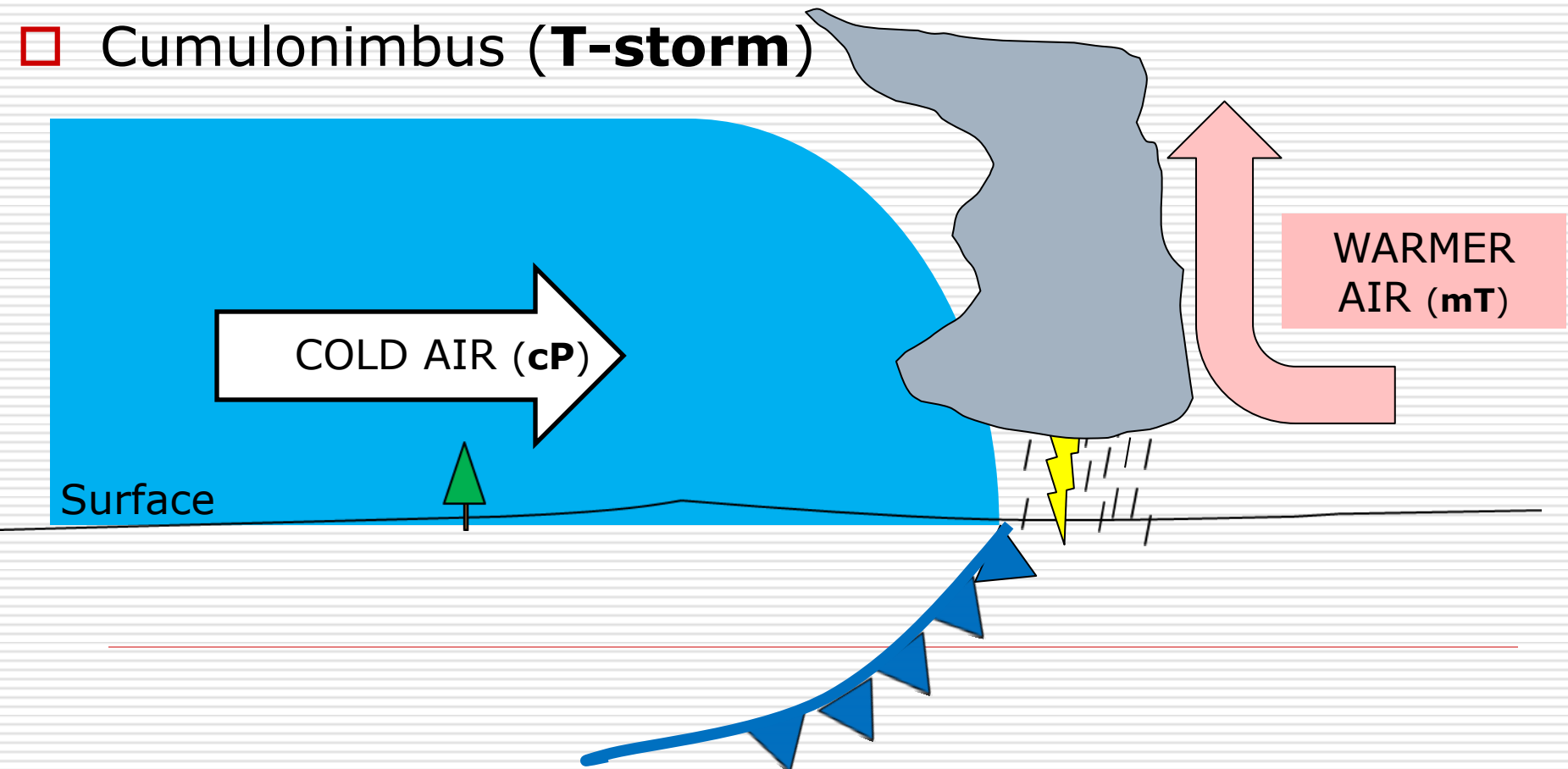
- CLEAR / SUNNY / "HAPPY"
- COOLER TEMPS
- HEAVY / DENSE / SINKING AIR

□ LOW Pressure

- CLOUDY / RAINY / "LOUSY"
 - WARMER TEMPS
 - LIGHTER / RISING AIR
 - Occurs at **FRONTS**
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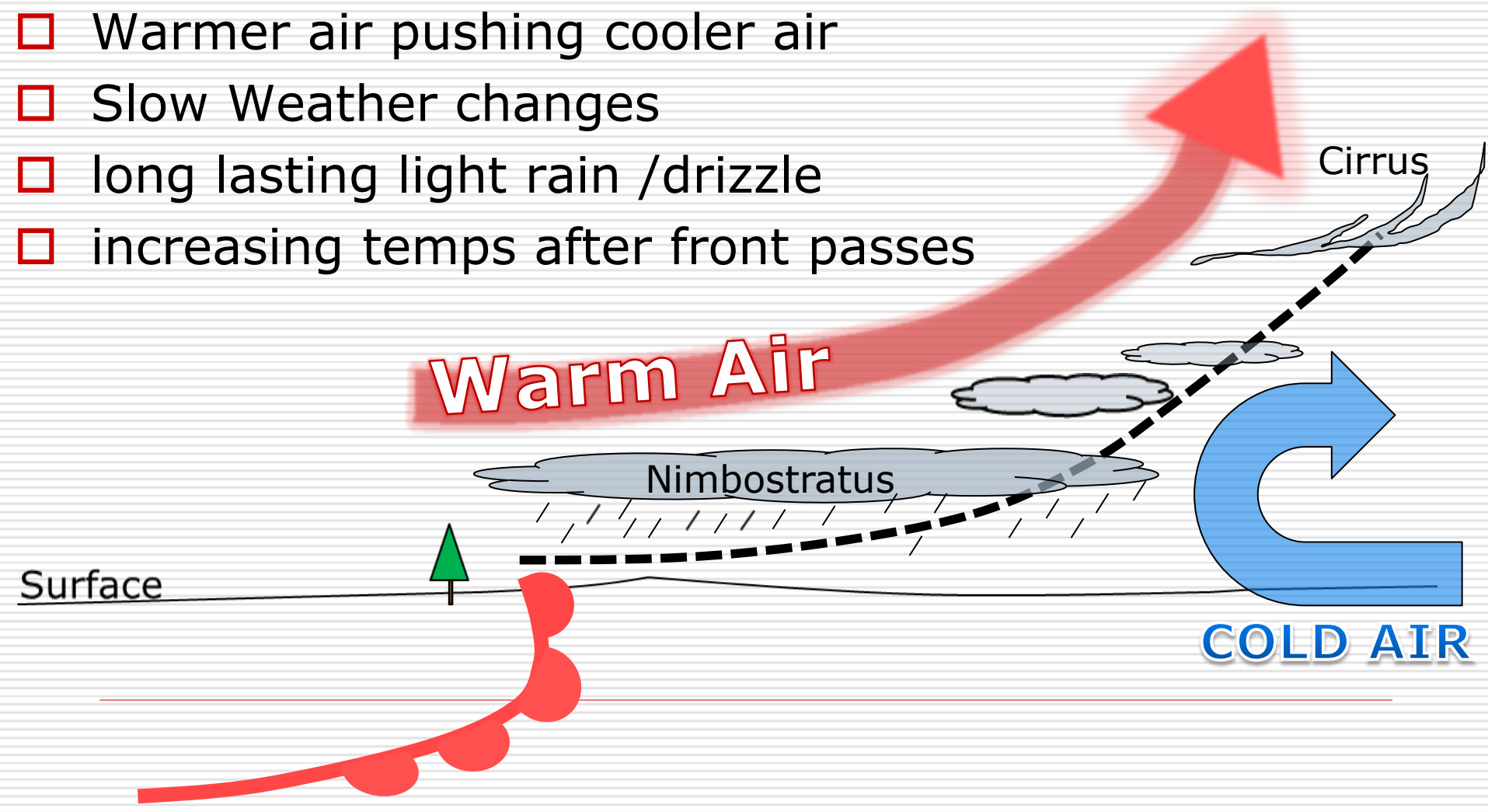
#43: Cold Front

- ❑ Colder air pushing warmer air
- ❑ Fast / Heavy Rain for short time / decreasing temps
- ❑ Cumulonimbus (**T-storm**)



#44: Warm Front

- ❑ Warmer air pushing cooler air
- ❑ Slow Weather changes
- ❑ long lasting light rain /drizzle
- ❑ increasing temps after front passes



#45: “Jetstream”

- ❑ River of air
- ❑ High up in the Atmosphere
- ❑ **Moves all Weather / storms**
 - **WEST to EAST** (in U.S.)

