

# Chapter 4 – Earth's Water

## Lesson 2 – The Water Cycle



# What makes water change form?

- Water can be in three forms, or states:
  - **solid** - ice
  - **liquid** - water in a glass or lake
  - **gas (water vapor)** - invisible gas in the air or steam

# What makes water change form?

- **evaporation**: liquid changing to gas when it heats up



- **condensation**: gas changing to liquid when it cools down



# What makes water change form?

- **melting**: solid changing to liquid when it heats up



- **freezing**: liquid changing to solid when it cools down



**melting**

**evaporation**

**solid + heat = liquid + heat = gas**




**condensation**

**freezing**

**gas - heat = liquid - heat = solid**



# What happens to water after it evaporates?

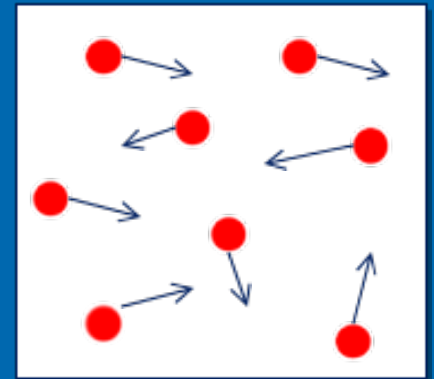
- **Evaporated water goes up into the air and is moved by wind (moving air).**
  - **Air is made of particles of gases like oxygen.**
- 
- The background of the slide features a blue gradient with several faint, concentric circular ripples in the lower right quadrant, suggesting water or rain.

# What happens to water after it evaporates?

- **warm air:**

- **less particles**
- **particles move faster and spread out**

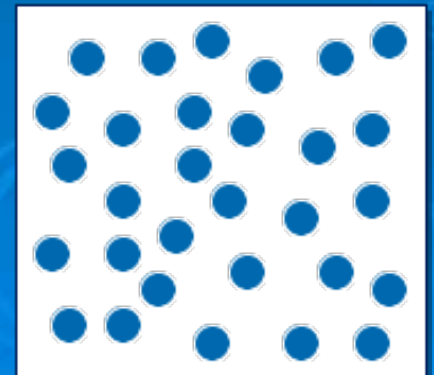
warm air



- **cold air:**

- **more particles**
- **particles closer together**

cold air



# What happens to water after it evaporates?

- Warm air rises.



- Cold air, because it has more particles, is heavier and sinks.





# What happens to water after it evaporates?

## ● **Sea breeze:**

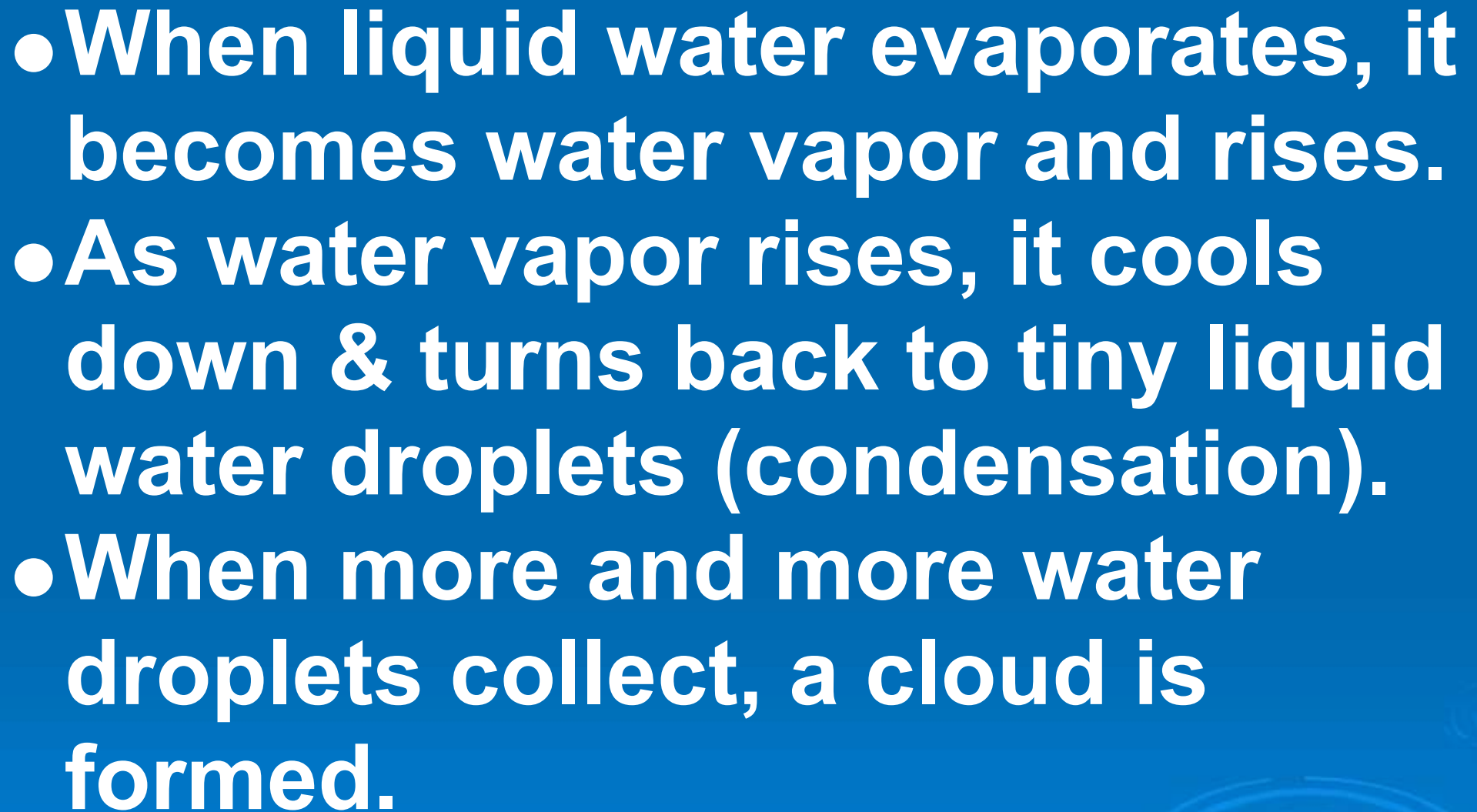
- Land heats up during the day.
- Air above the land gets warmer and rises.
- Air over water sinks and blows toward land to replace rising warm air.
- Moves from water to land.

# What happens to water after it evaporates?

## ● Land breeze:

- At night, land cools off faster than water.
- Air stays warmer longer over water, so it rises.
- Air over land sinks and blows toward water.
- Moves from land to water.

# How do clouds form?

- **When liquid water evaporates, it becomes water vapor and rises.**
  - **As water vapor rises, it cools down & turns back to tiny liquid water droplets (condensation).**
  - **When more and more water droplets collect, a cloud is formed.**
- 

# How do clouds form?

- **Cirrus clouds:**

- Form high in the sky
- Are thin and wispy



# How do clouds form?

- **Cumulus clouds:**
  - Puffy and white



# How do clouds form?

- **Stratus clouds:**

- Low-flying clouds
- Spread like a blanket across the sky



# Will it rain?

- **Precipitation**: water that falls from the air.
- It comes in four forms:
  - Rain
  - Sleet
  - Hail
  - Snow

# Will it rain?

- **Rain:**

- Liquid drops of water that fall when the temperature is above 32° F (freezing point of water).





# Will it rain?

- **Sleet:**

- Mixture of rain and snow



# Will it rain?

## ● Hail:

- Frozen rain drops
- Forms in layers – wind keeps pushing hailstone back up until it gets large enough to fall



# Will it rain?

## ● Snow:

- Water vapor turns directly into solid flakes (crystals).
- Occurs when temperature is below 32° F.

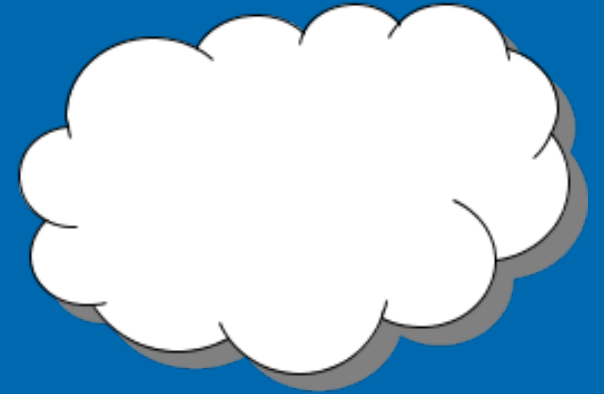


# The Water Cycle

Precipitation



Condensation



Evaporation



**Water bottle, hail, and cloud images courtesy of Wikimedia Commons and used under a Creative Commons Attribution license. All other images courtesy of Microsoft Office Online.**