Essential Question:
How does the water cycle explain various atmospheric conditions on the Earth?

Standard:

S6E3b. Relate various atmospheric conditions to stages of the water cycle

Water Cycle Pretest

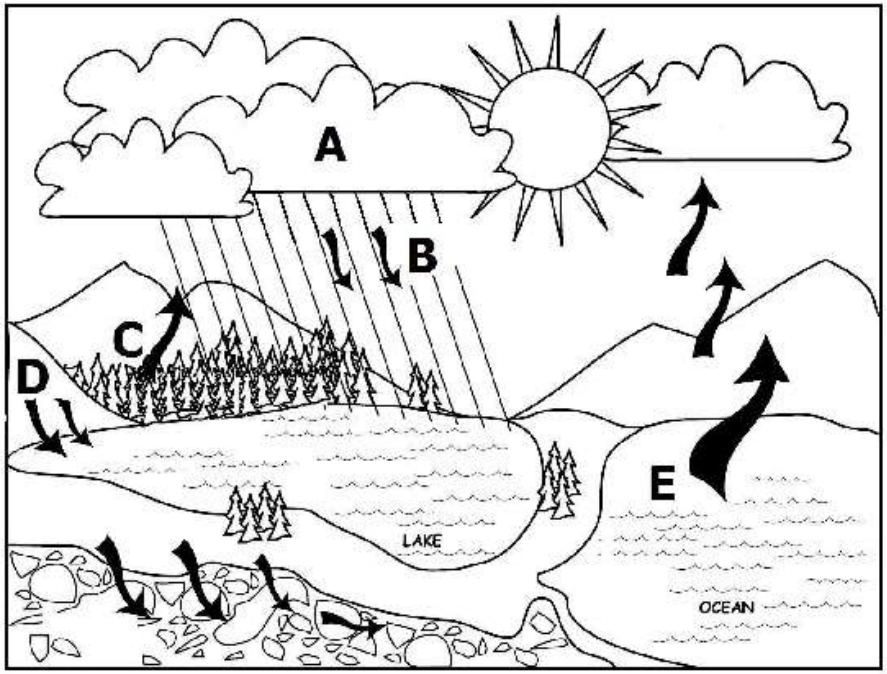
Water Cycle Pretest Name _____ Date _____ Period ____

Directions: Identify the processes shown in the water cycle diagram below.

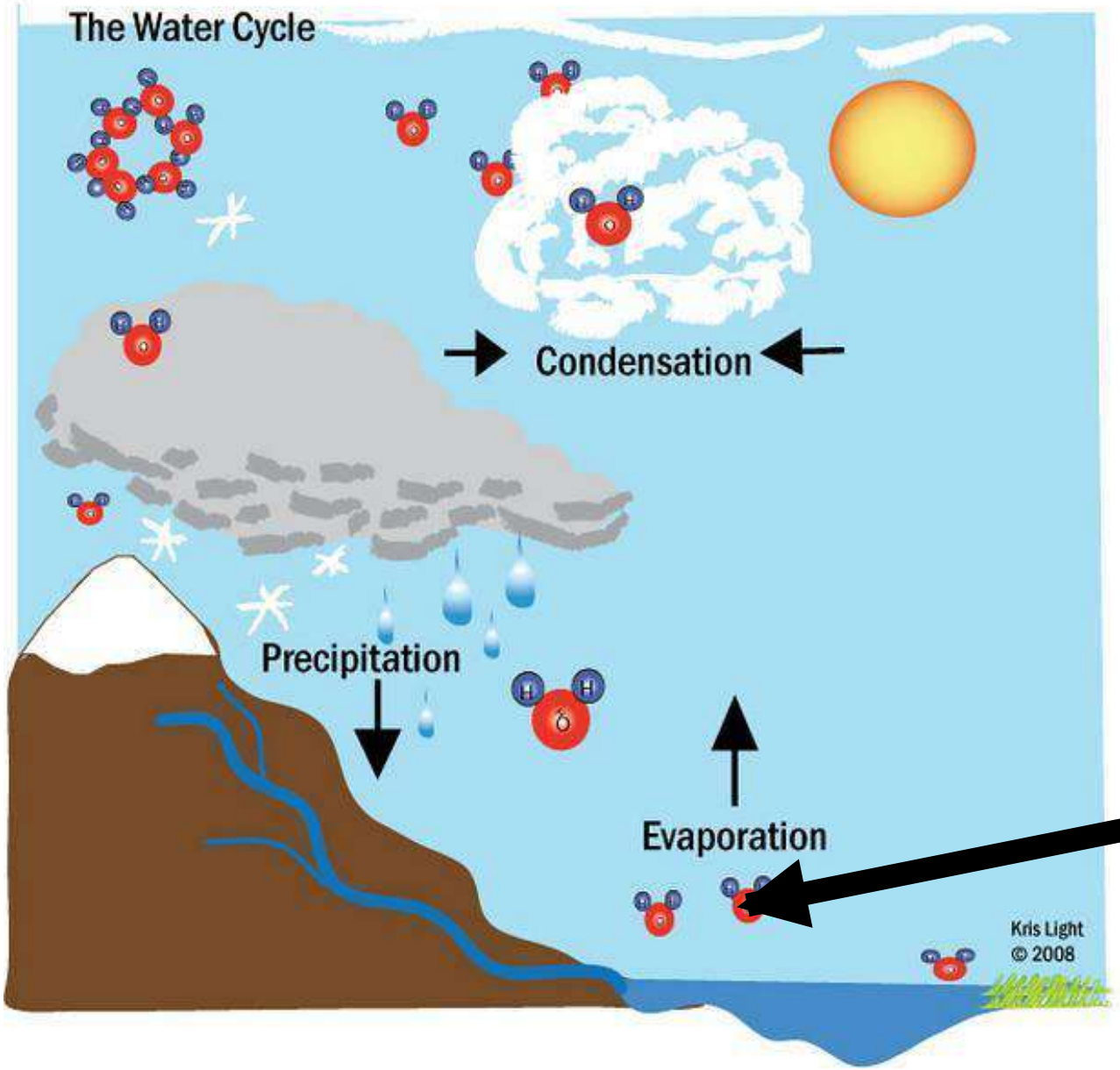
A. _____ D. _____

B. _____ E. _____

C. _____



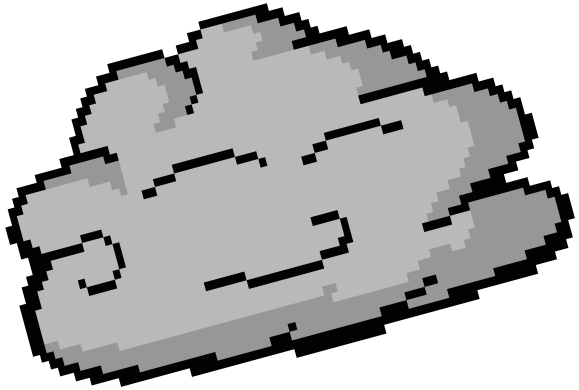
Remembering the Water Cycle



Water Vapor Molecules

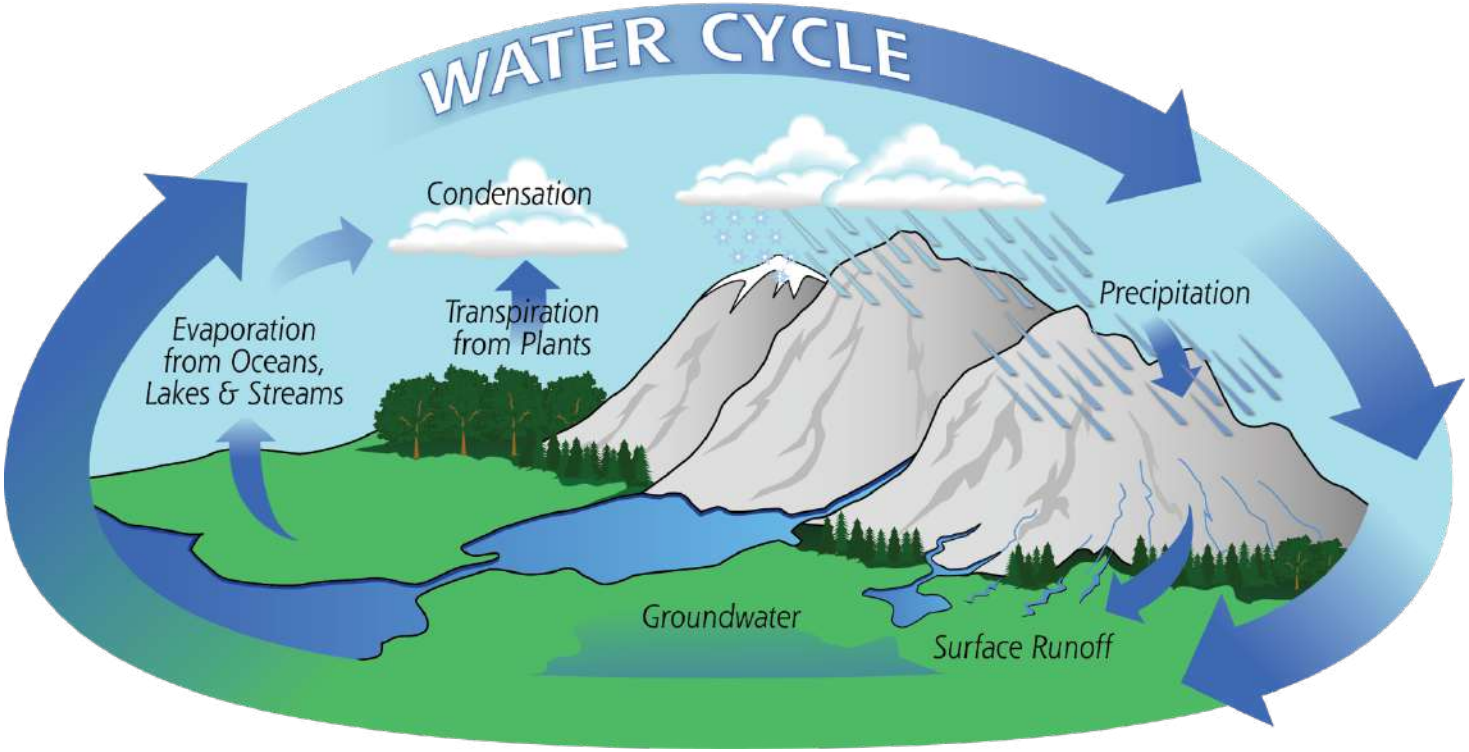
Stages of the Water Cycle are connected to atmospheric conditions.

Turn to an elbow partner and discuss what is meant by atmospheric condition and possible examples.

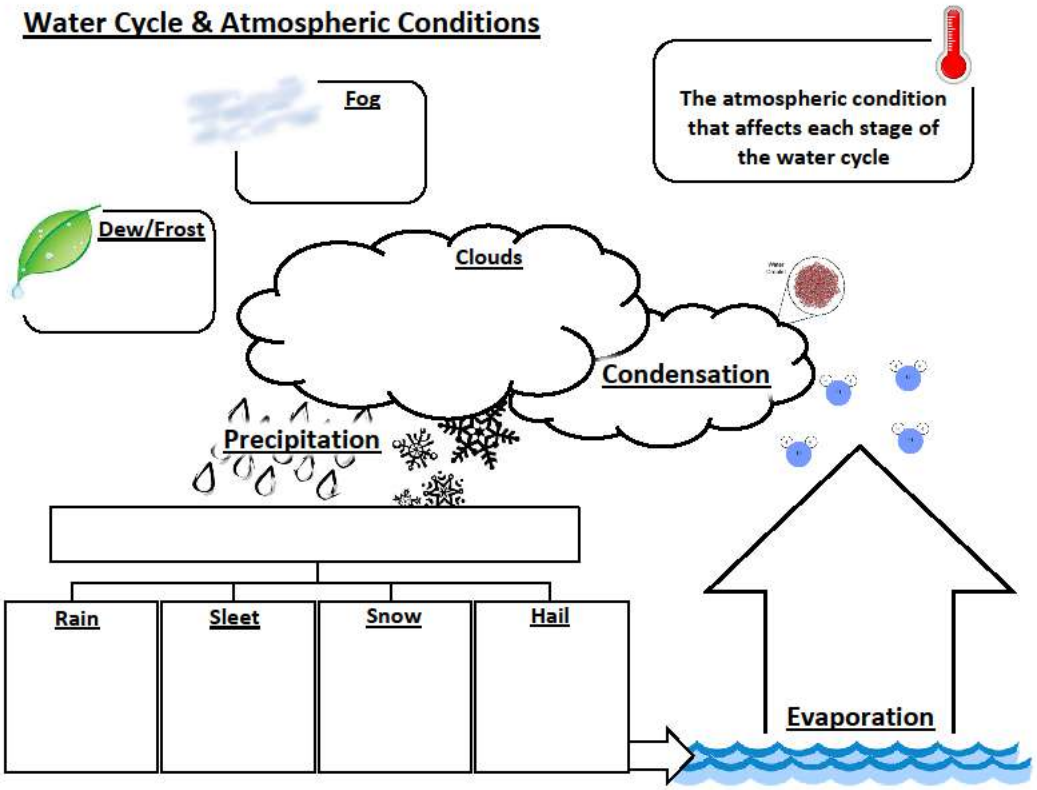


Atmospheric condition refers to the state of the atmosphere in terms of temperature and wind and clouds and precipitation.

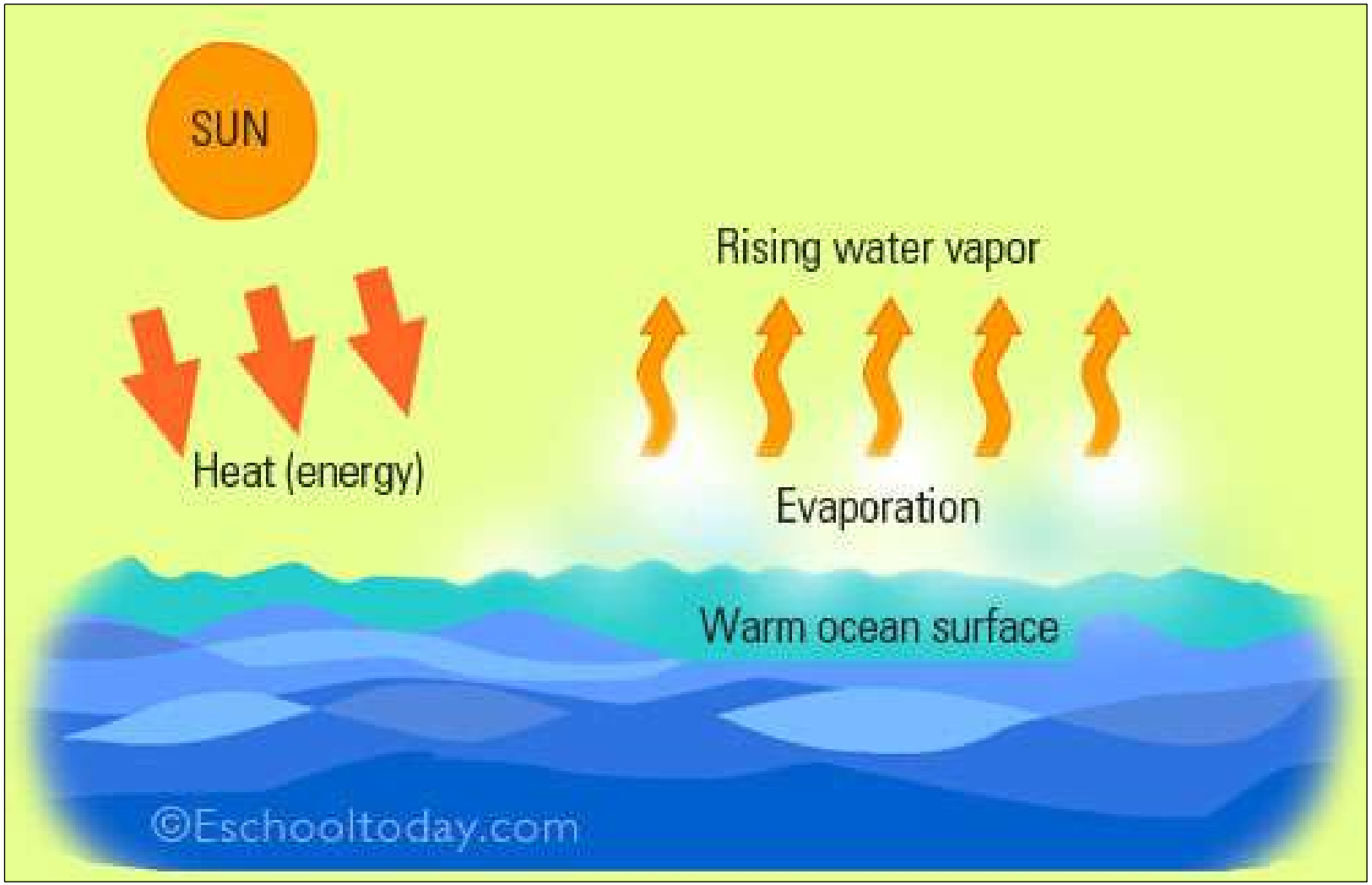
In this lesson, we are going to look at some of the atmospheric conditions that are related to various stages of the Water Cycle.

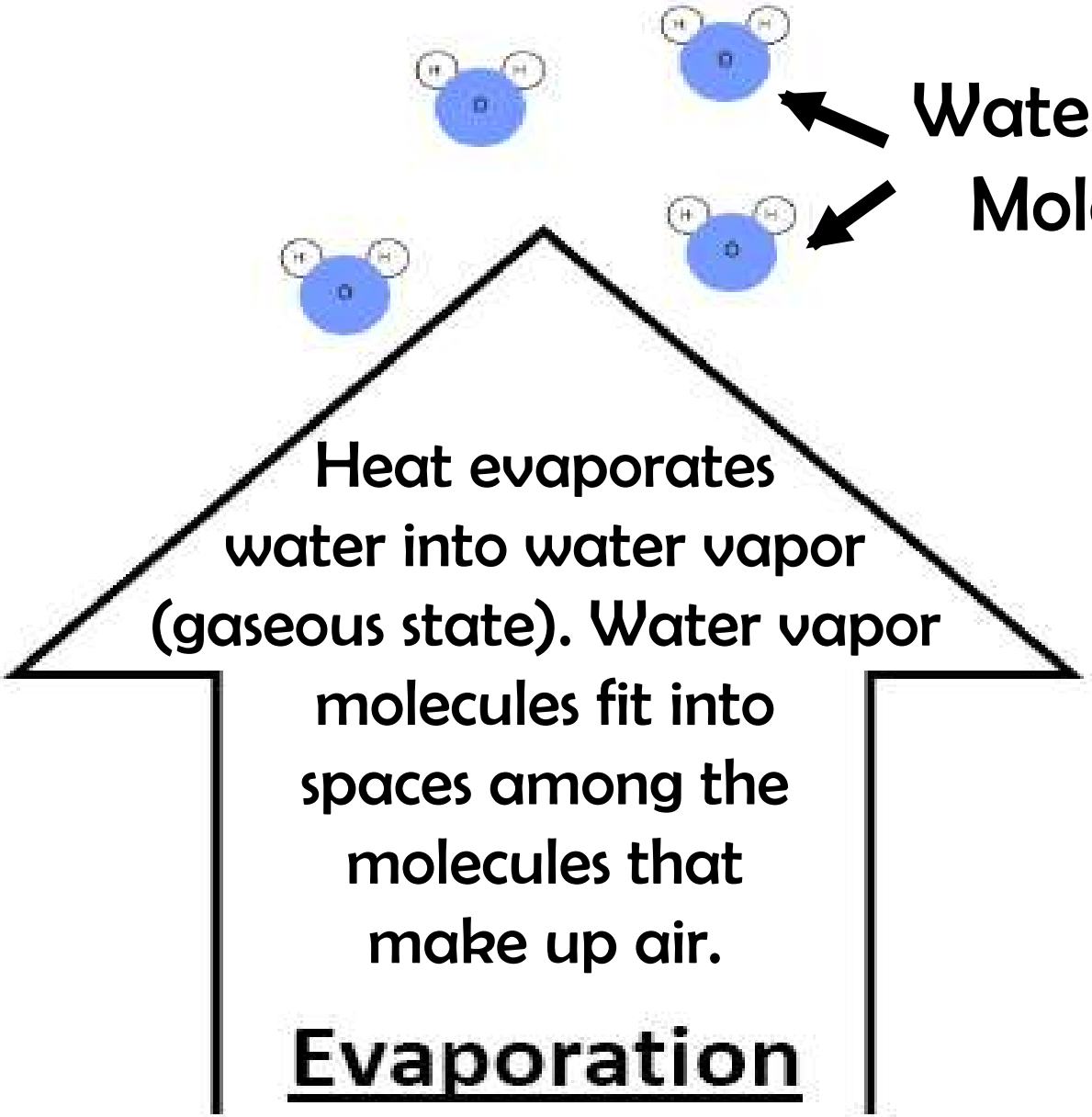


Use your graphic organizer to record important information during the lesson.

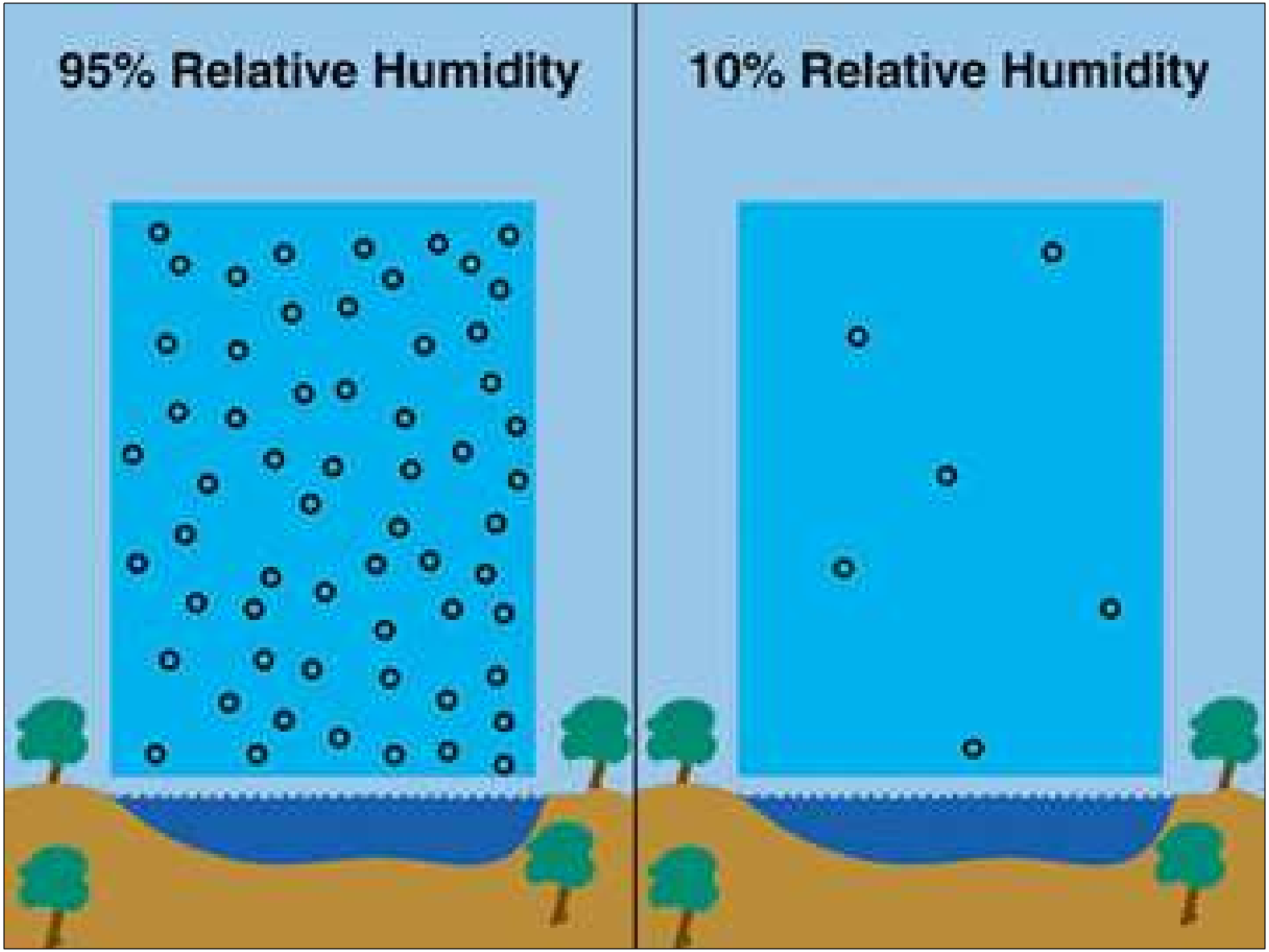


Evaporation



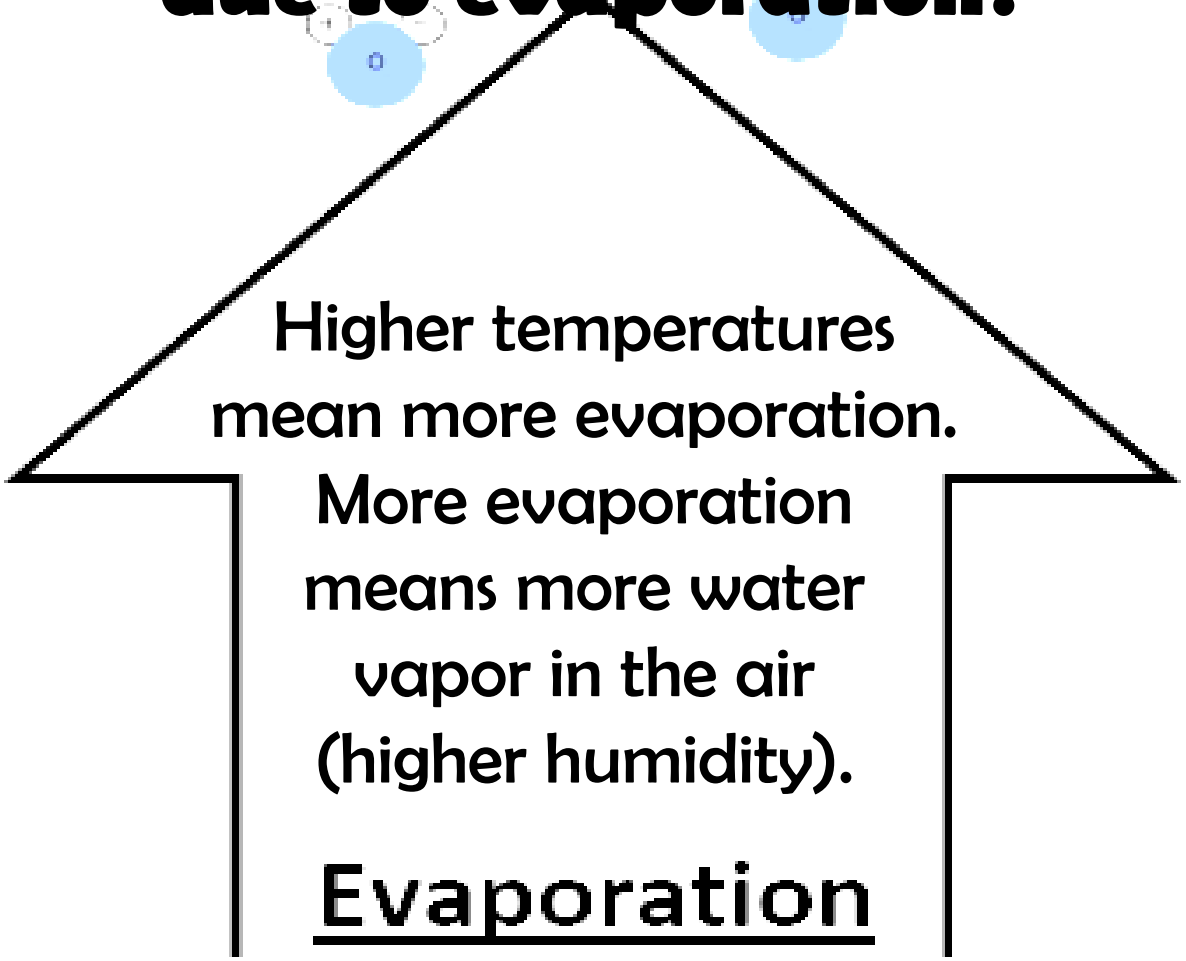

Water Vapor Molecules
Heat evaporates water into water vapor (gaseous state). Water vapor molecules fit into spaces among the molecules that make up air.
Evaporation

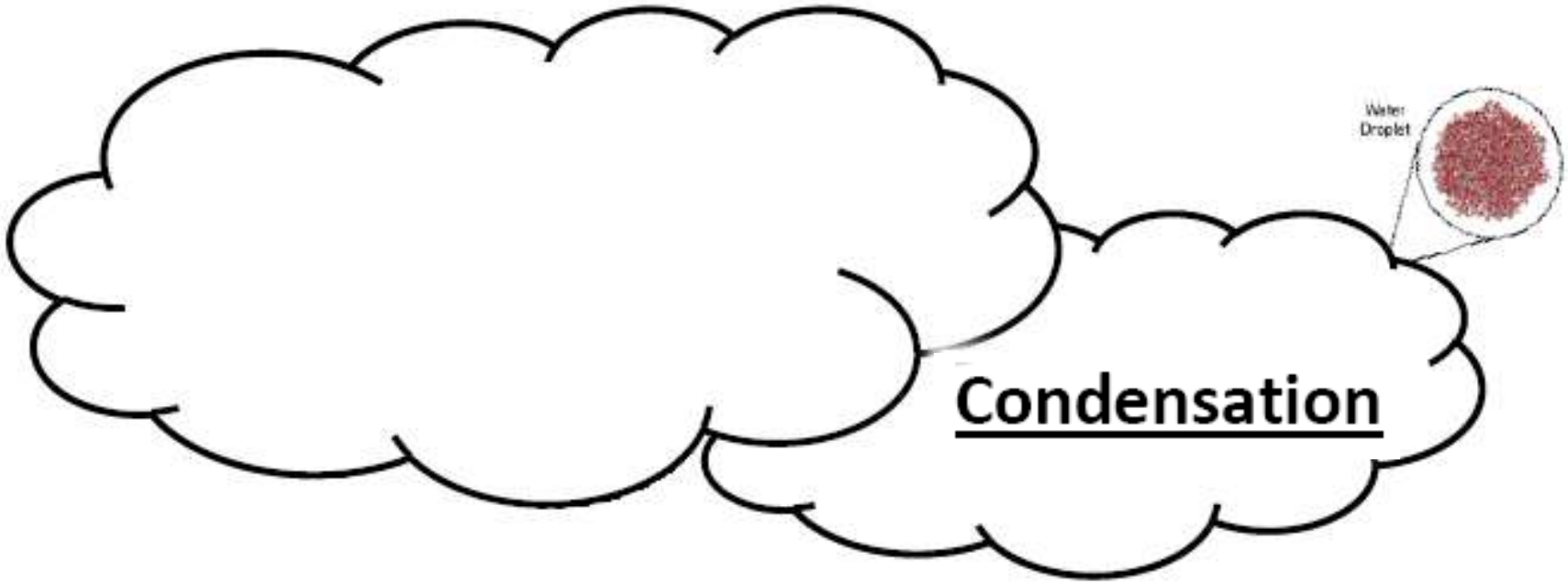
Humidity is the amount of water vapor present in the air.


95% Relative Humidity
10% Relative Humidity

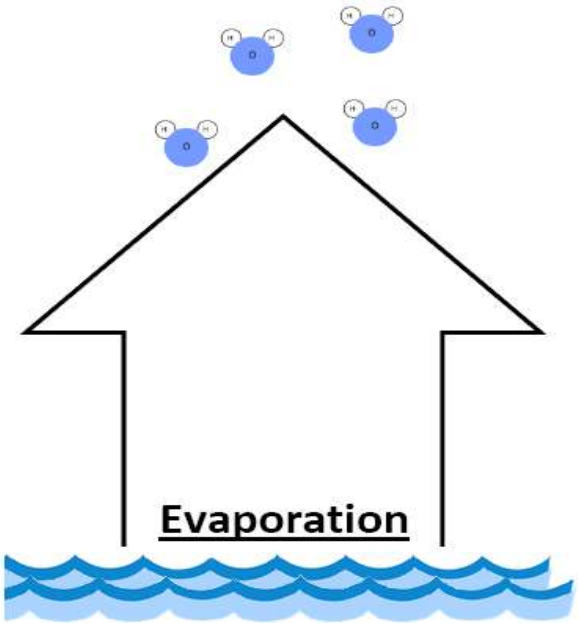
How does temperature affect evaporation?

What atmospheric condition occurs due to evaporation?

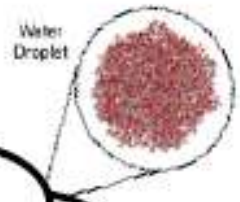




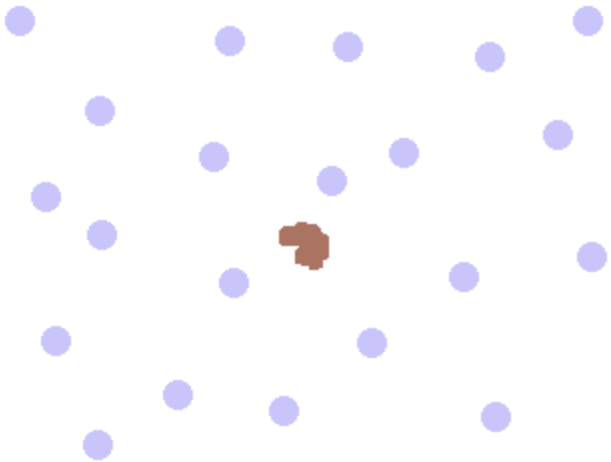
At cooler temperatures water vapor molecules slow down and form droplets of liquid water. The air is saturated (holding as much water vapor as it can).

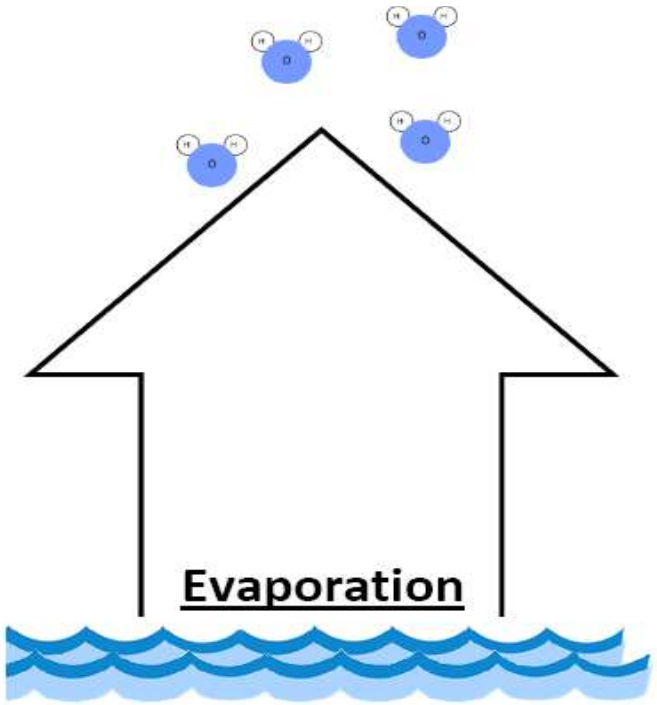


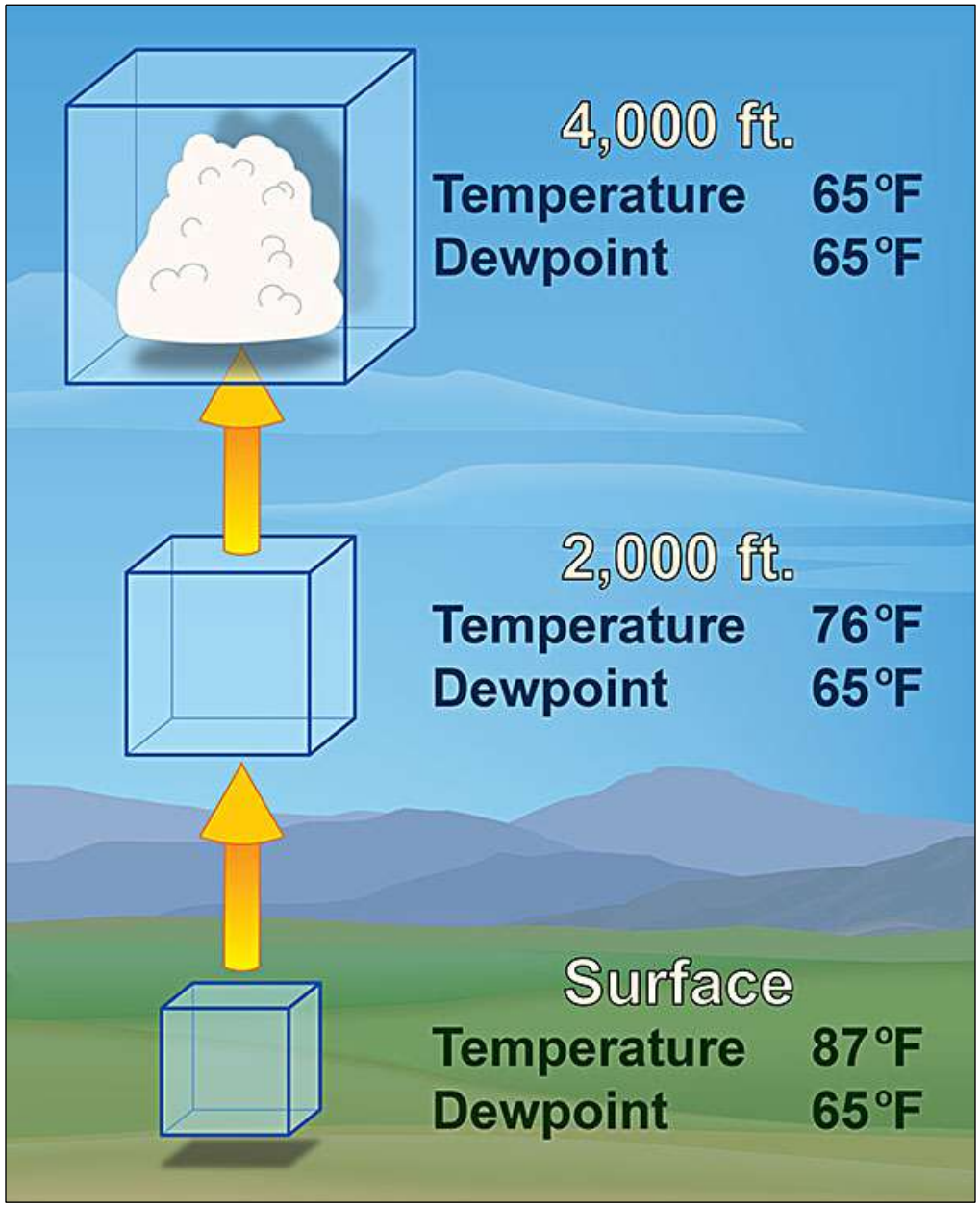
Clouds form when water vapor condenses in tiny droplets around small particles such as dust and salt.



Condensation

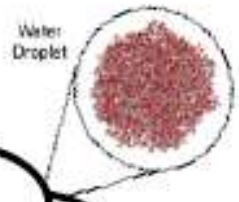






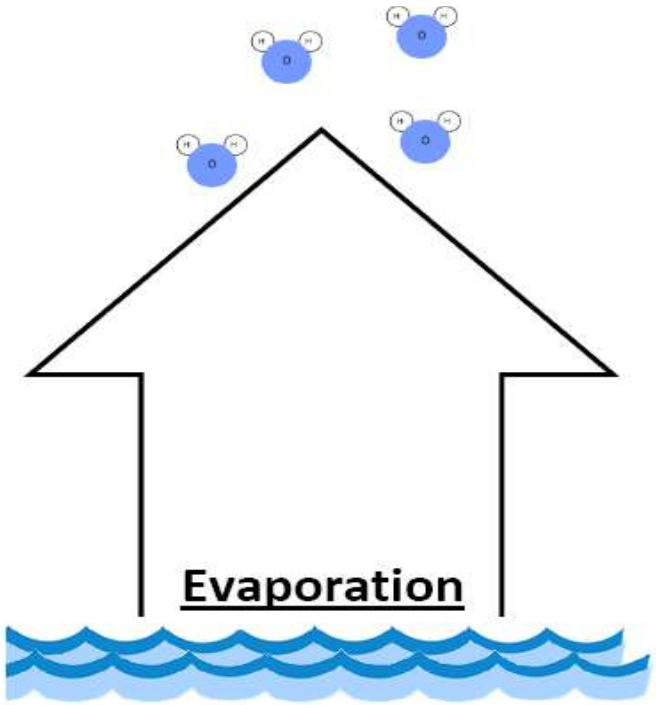
Dew Point is the temperature at which air is saturated and condensation forms.

Other Forms of Condensation

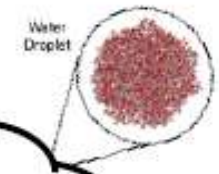


Condensation

Condensation can occur whenever air becomes saturated (holding as much water vapor as it can).



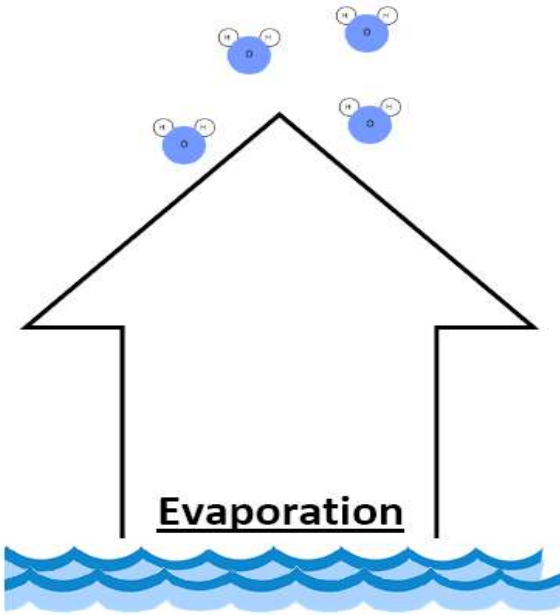
Other Forms of Condensation



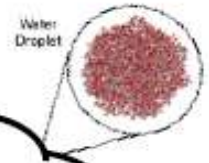
Condensation

Fog

When water vapor molecules suspended in the atmosphere at or near the earth's surface cool and condense, fog can occur (a cloud next to the surface)



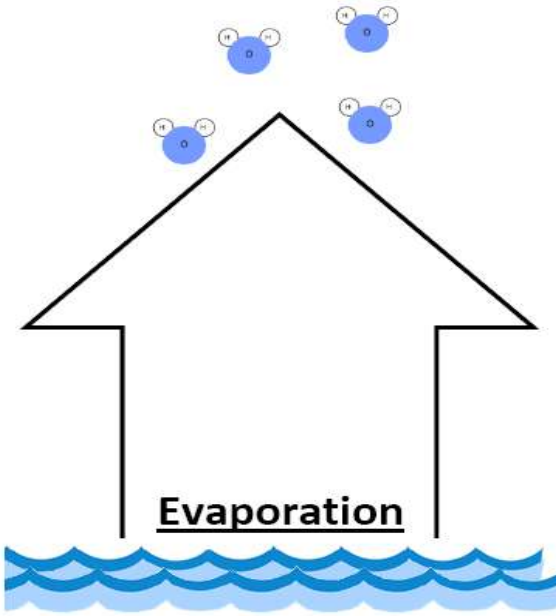
Other Forms of Condensation



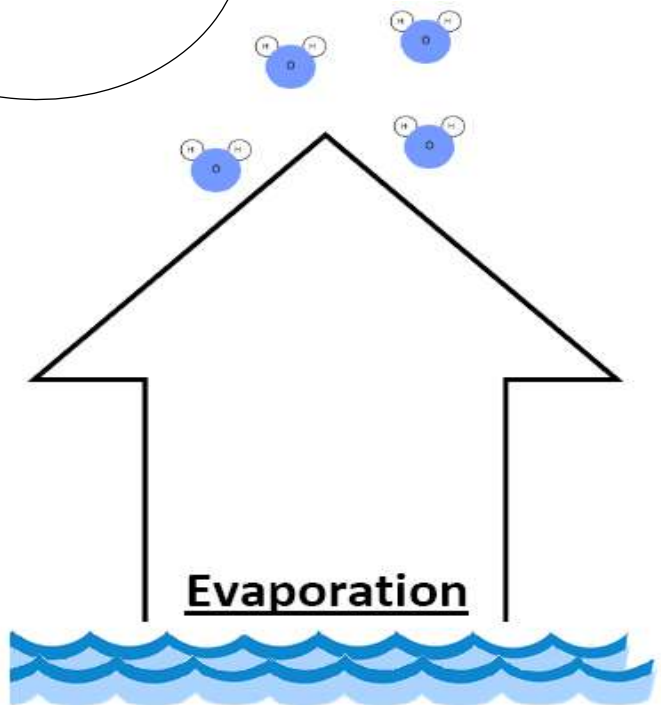
Condensation

Dew/Frost

Dew forms when water droplets condense from the air, usually at night, onto cool surfaces near the ground. Frost may form when temperatures are near 0°C.

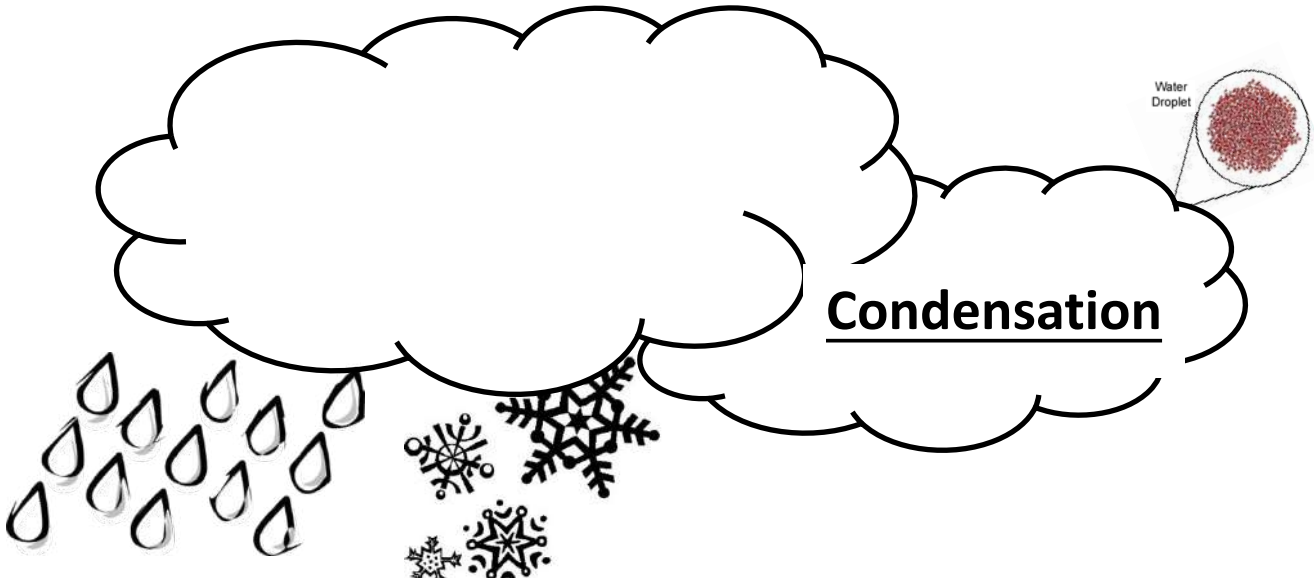


Lab/Demonstration of Condensation



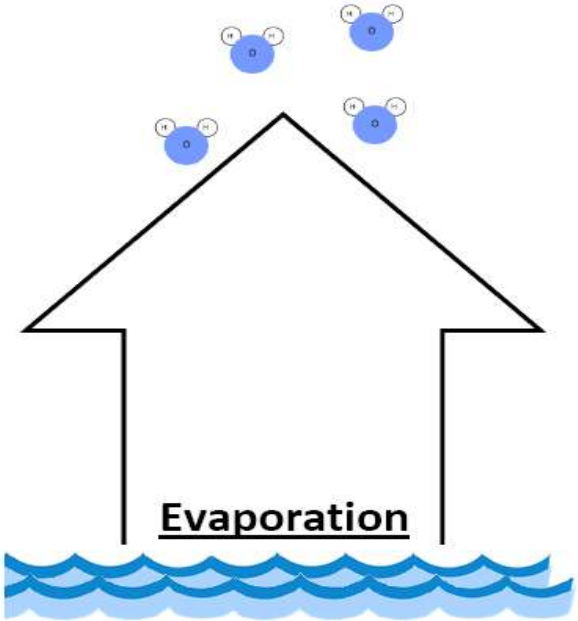
Think, Pair, Share:

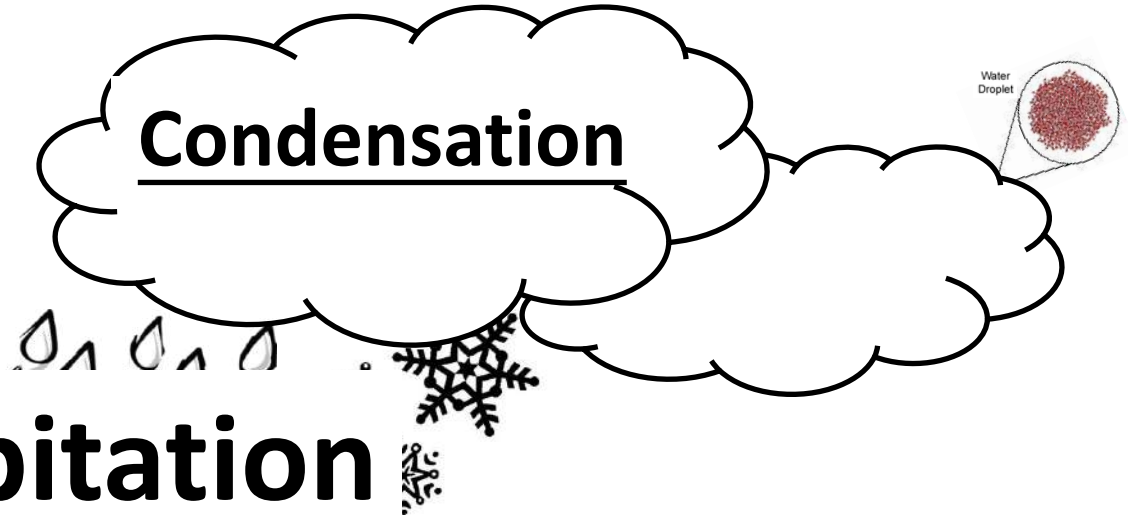
Using your knowledge, explain why condensation occurs on the glass shown below.



Precipitation

When liquid water droplets combine and grow too large for the atmosphere to support their weight, the droplets fall.

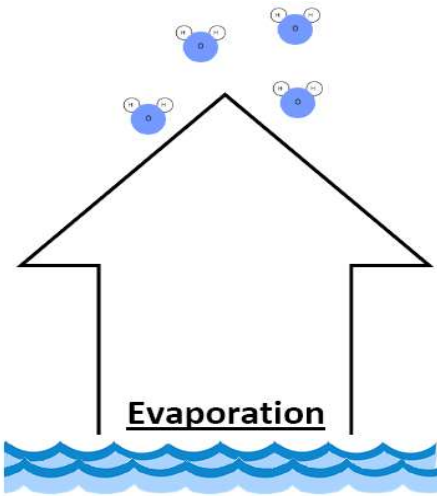




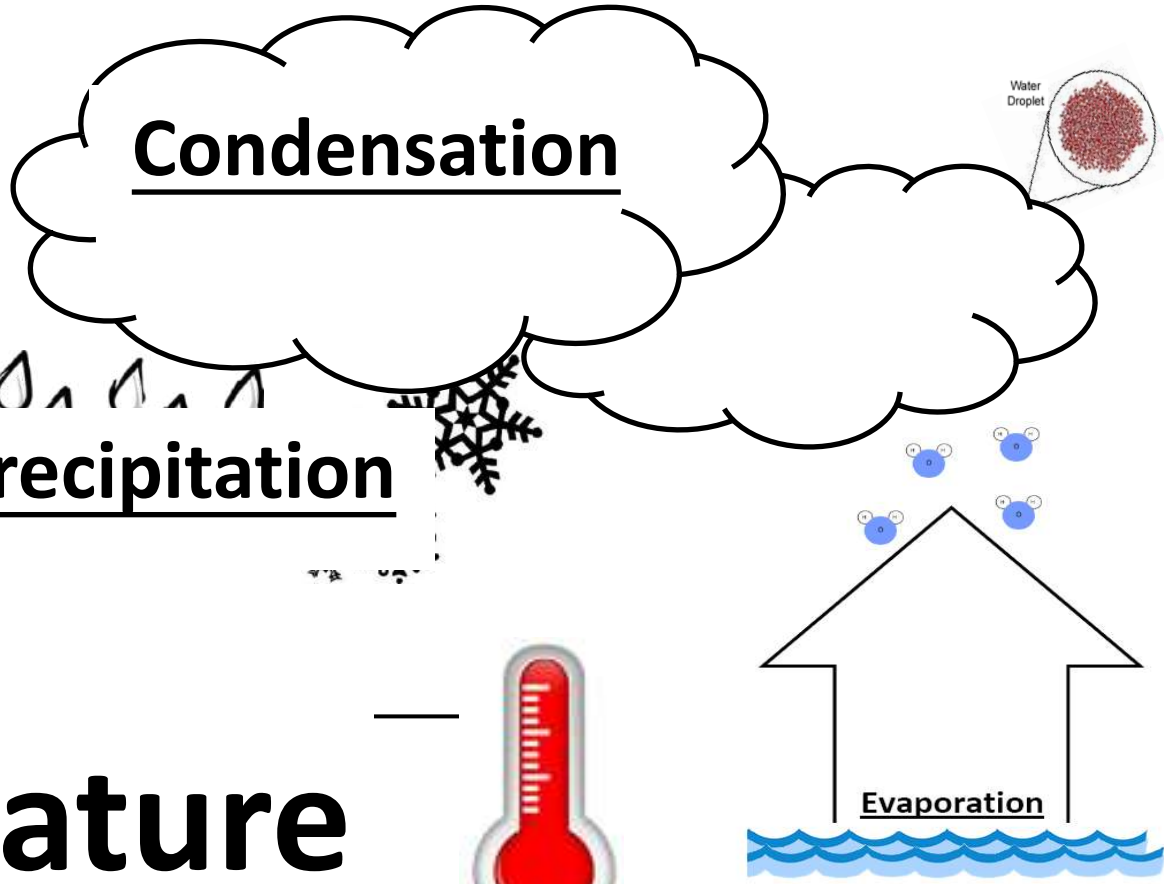
Precipitation

Air temperature determines which form of Precipitation occurs

Rain	Sleet	Snow	Hail
Water falling in temperatures above freezing	Falling water passes through a layer of freezing air near earth's surface	Water falling in air temperature so cold that water vapor changes to a solid	Water freezes inside a cloud before it falls



http://www.atmosedu.com/meteor/Animations/51_Sleet/51.html



Temperature

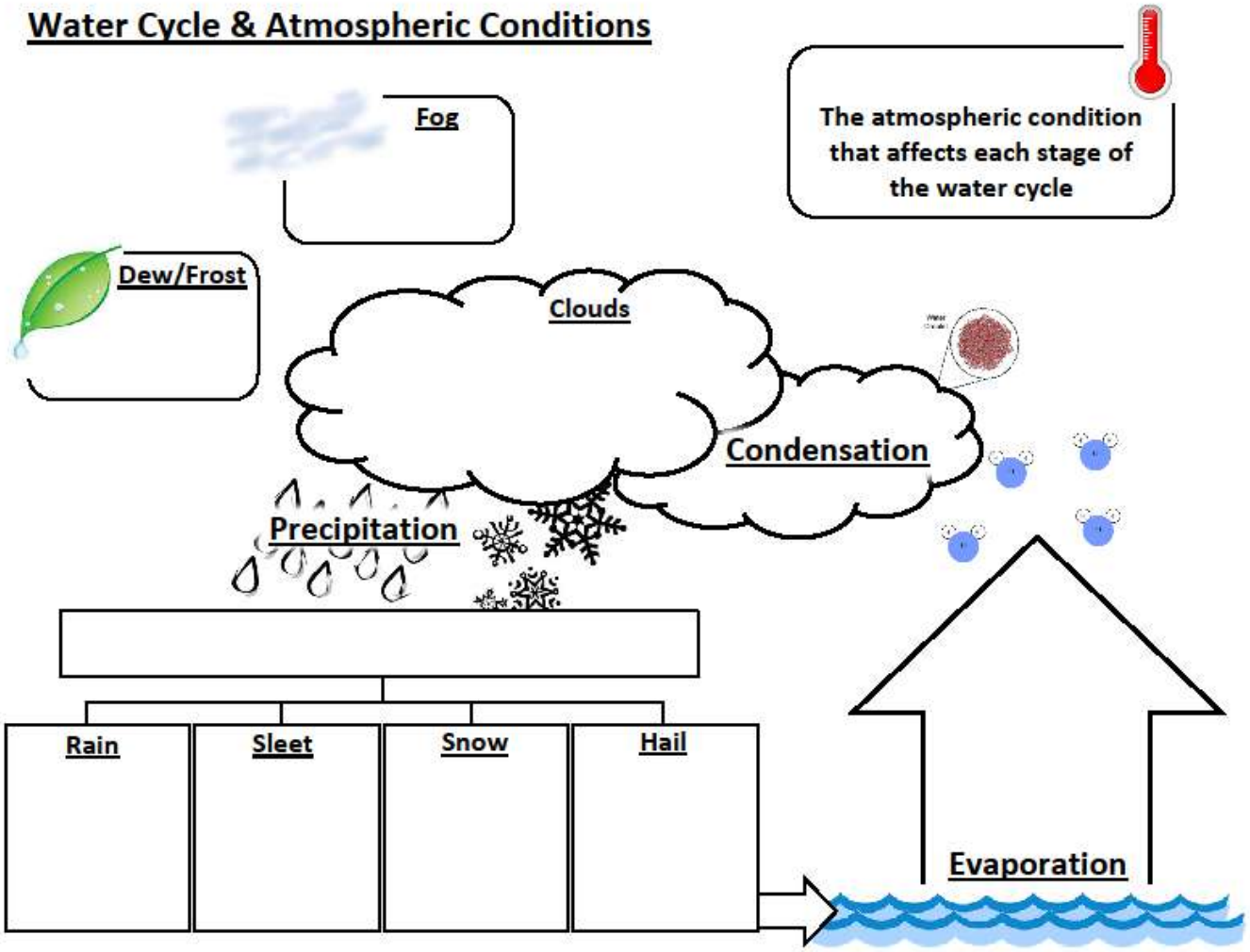
The atmospheric condition that affects each stage of the water cycle

Turn to an elbow partner and discuss how temperature affects each stage of the water cycle.

Temperature

The atmospheric condition that affects each stage of the water cycle

http://commons.wikimedia.org/w/index.php?title=File%3AThe_Water_Cycle_Watering_the_Land.ogv



Summarizer

Water Cycle and Atmospheric Conditions

Name _____ Date _____ Period ___

1. Draw and label the stages of the water cycle on the diagram to the right.

2. Identify an atmospheric condition(s) that occurs for each of the following stages of the water cycle.

Evaporation: _____
_____
_____

Condensation: _____
_____
_____

Precipitation: _____
_____
_____

3. Describe how temperature affects each of the three water cycle stages listed above.
_____
_____
_____
_____
_____
_____
_____