Chapter 18 Moisture, Clouds, and Precipitation

Pretest

1. What are the three states of matter?
   a) gas, liquid, and vapor
   b) gas, liquid, and solid
   c) vapor, liquid, and solid
   d) gas, vapor, and solid

2. *True or False*: Heat is released when water evaporates.

3. What is the change from a gas to a liquid state called?

4. What will happen if air is heated by the ground below it?

5. On what basis are clouds classified?
   a) form and thickness
   b) color and height
   c) form and height
   d) form and precipitation

6. *True or False*: Small particles of ice are called sleet.

Chapter

18.1

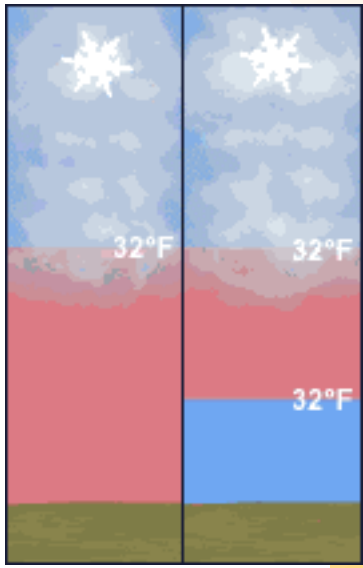
Water in the Atmosphere

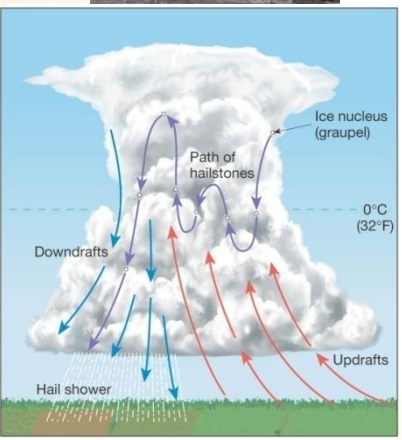
Be able to….

- *Identify the changes of state*
- *Describe what happens during a change of state.*
- *Identify ways to describe the moisture in the air.*

18.1 Types of Precipitation

- **Precipitation** is any form of water that falls from a cloud.
- Main types of precipitation:
  - Rain
  - Snow
  - Sleet - *small particles of ice*
  - Freezing rain - *rain freezes on contact*
  - Hail - *rounded pellets or irregular lumps of ice*

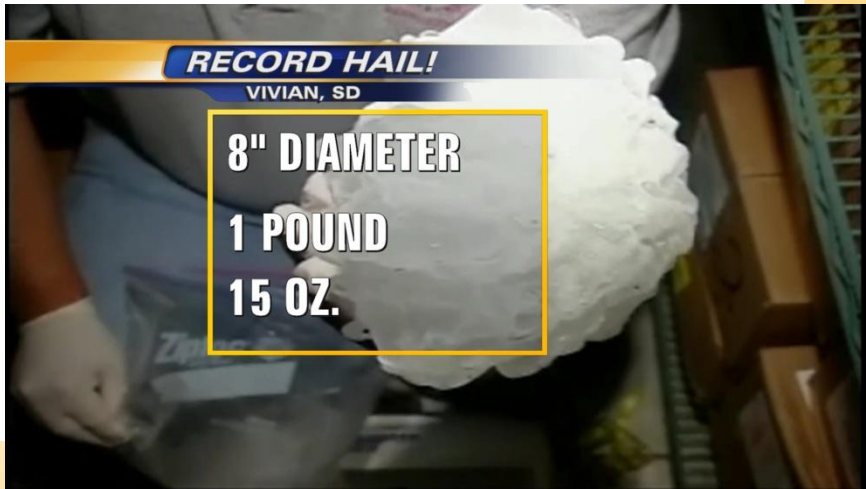




18.1 Types of Precipitation

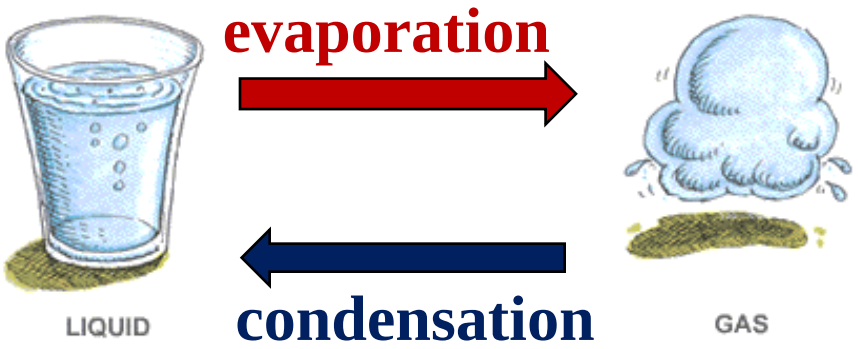
- When it comes to understanding atmospheric processes, ***water vapor*** is the most important gas in the atmosphere.

•Record Size Hail – Jul 2010
•The last record holder occured in Nebraska and had a diameter of 7 inches with a circumference of 18.75" The new world record holder has a diameter of 8 inches and a circumference of 19".



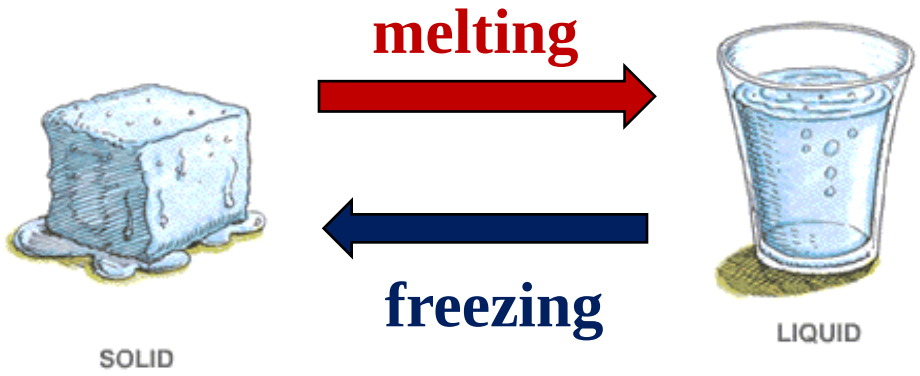
18.1 Water's Changes of State

- Liquid to Gas
  - **Evaporation** is the process of changing a liquid to a gas.
  - **Condensation** is the process where a gas, like water vapor, changes to a liquid, like water.



18.1 Water's Changes of State

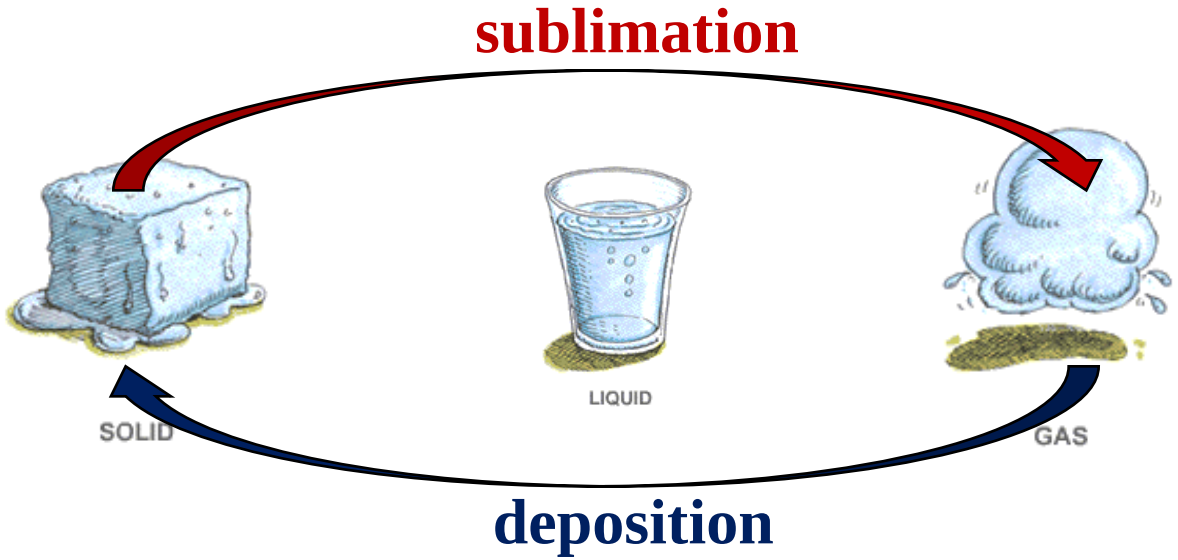
- Solid to Liquid
  - The process of changing state, such as melting ice, requires that energy be transferred in the form of heat.



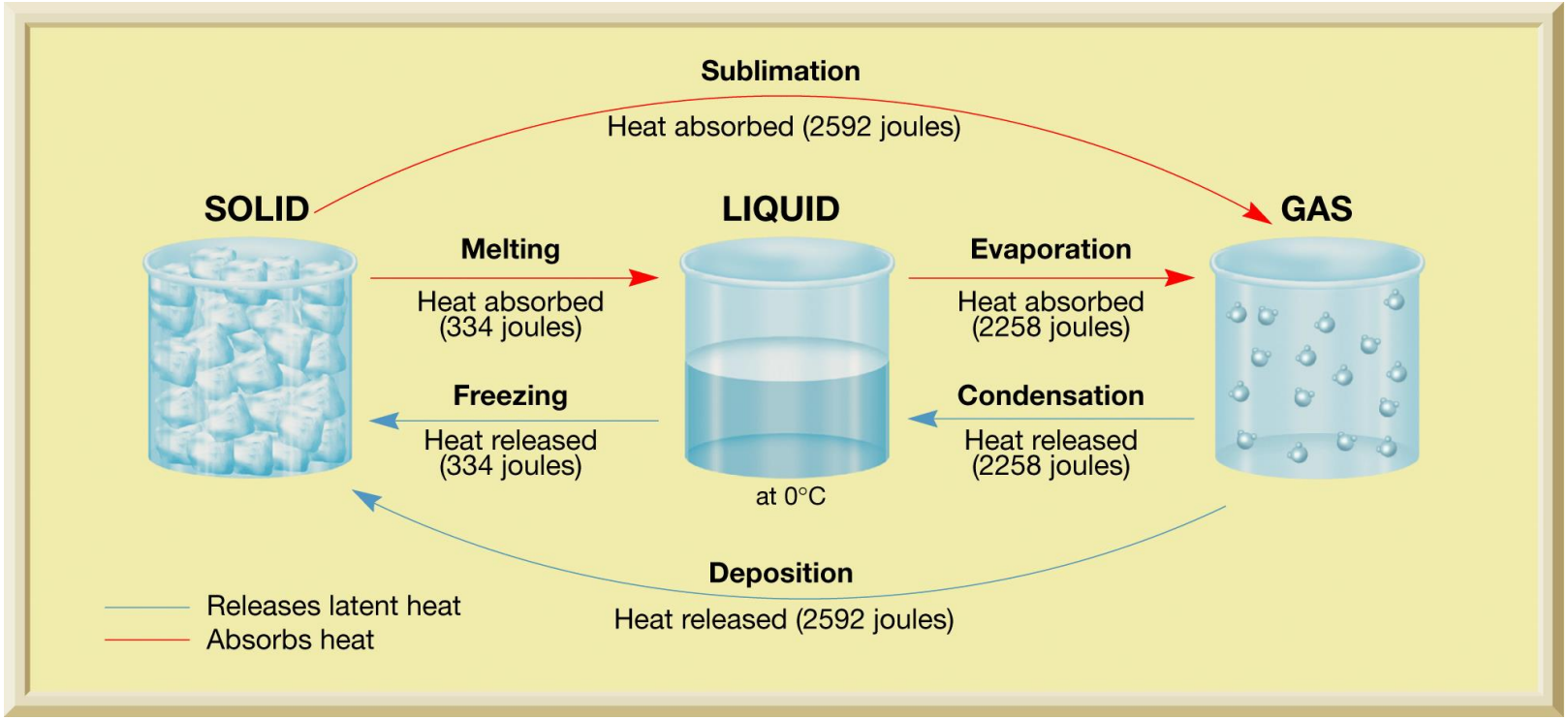
18.1 Water's Changes of State

- Solid to Gas

- **Sublimation** is the conversion of a solid directly to a gas without passing through the liquid state.
- **Deposition** is the conversion of a vapor directly to a solid.



Changes of State



18.1 Humidity

- **Humidity** is a general term for the amount of water vapor in air.
- Saturation
  - Air is **saturated** when it contains the maximum quantity of water vapor that it can hold.
    - Humidity = 100%
    - Temperature = moisture level
  - Warm air can contain more water vapor than cold air.

18.1 Humidity

Dew Point

- **Dew point** is the temperature to which a parcel of air would need to be cooled to reach saturation
  - *When temperature = dew point you get dew, fog, or clouds.*

Measuring Humidity

- A **hygrometer** is an instrument to measure humidity.
  - One type of hygrometer is called a psychrometer.

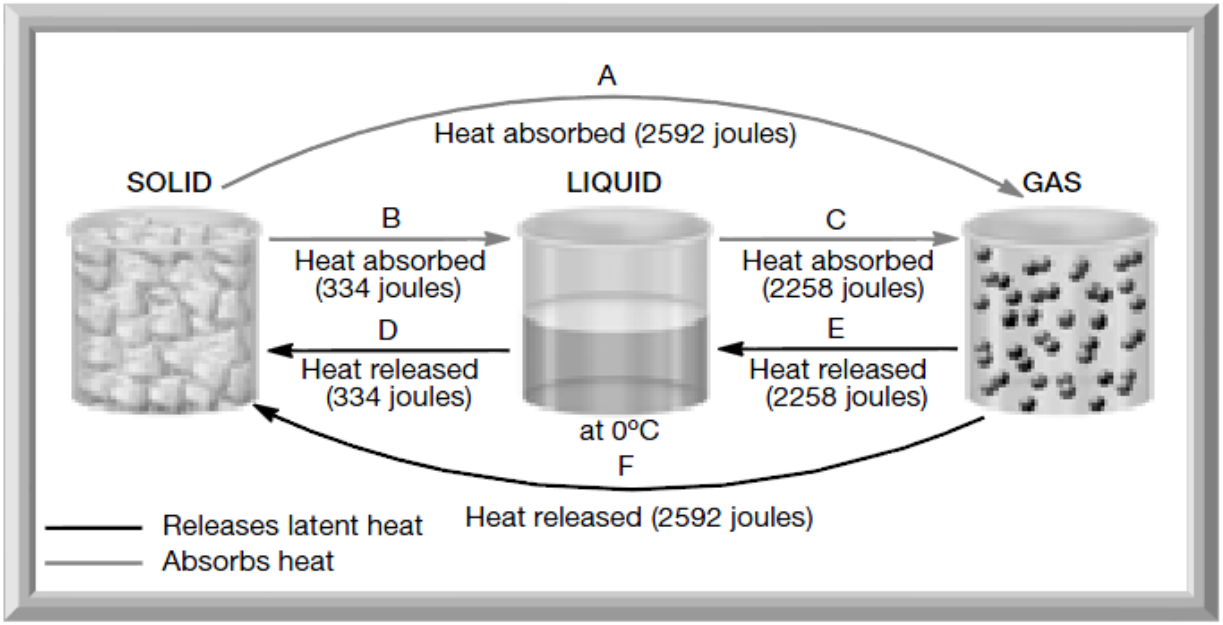
1. Circle the letter of the most important gas in atmospheric processes.

a. oxygen
b. nitrogen
c. water vapor
d. carbon dioxide

Water's Changes of State

2. Select the appropriate letter in the figure that identifies each of the following changes of state.

_____ sublimation
_____ freezing
_____ deposition
_____ evaporation
_____ condensation
_____ melting



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