

WEATHER,
WATER CYCLE,
AND THE THREE STATES OF
MATTER



Weather Vocabulary

- *weather-the condition of the atmosphere at a particular time and place
- *climate-the pattern of weather an area experiences over a long time
- *thermometer-an instrument for measuring temperature
- *temperature-the degree of hot or cold of something (air, water, the body, ie.)

Weather Vocabulary continued...

- *Celsius-metric measure for temperature; water boils at 100 degrees Celsius and freezes at 0 degrees Celsius
- *Fahrenheit-standard unit of measure for temperature used in the USA; Water boils at 212 degrees Fahrenheit. It freezes, becoming a solid, at 32 degrees Fahrenheit.
- *anemometer-measures wind speed
- *wind vane-shows wind direction
- *barometer-measures air pressure
- *hygrometer-measures humidity (moisture in the air)

Weather Instruments

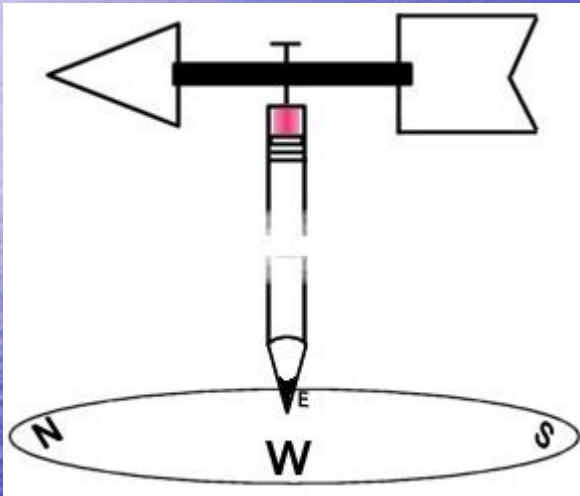
- Barometer



-Anemometer



- Wind Vane



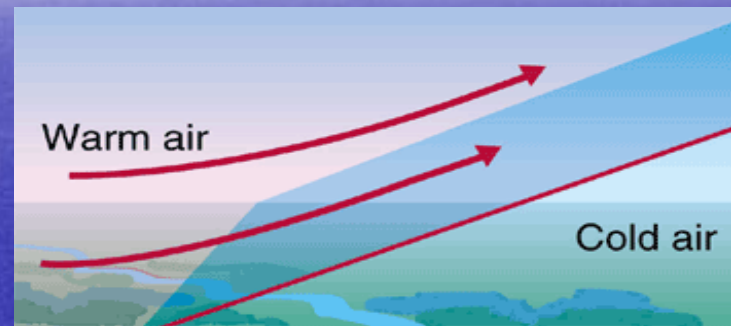
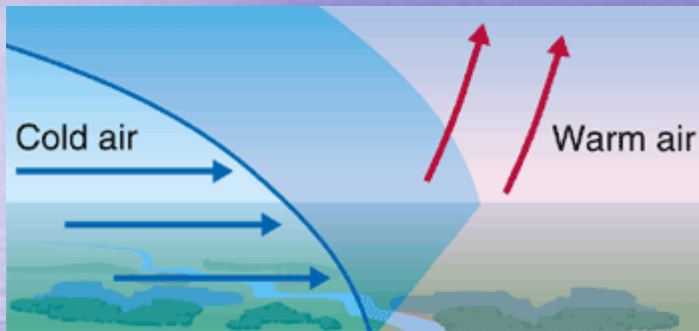
-Hygrometer



Weather Vocabulary continued..

- *rain gauge-measures the amount of rainfall in a certain area, over a time period
- *meteorology-the study of weather
- *weather map-cold fronts are indicated by a blue line with triangles; warm fronts are indicated by a red line with semi-circles
- *front-the border where two air masses meet
- *air mass-a large body of air that has the same temperature and humidity throughout
- *weather events-patterns and seasonal changes that occur

Cold and Warm Fronts

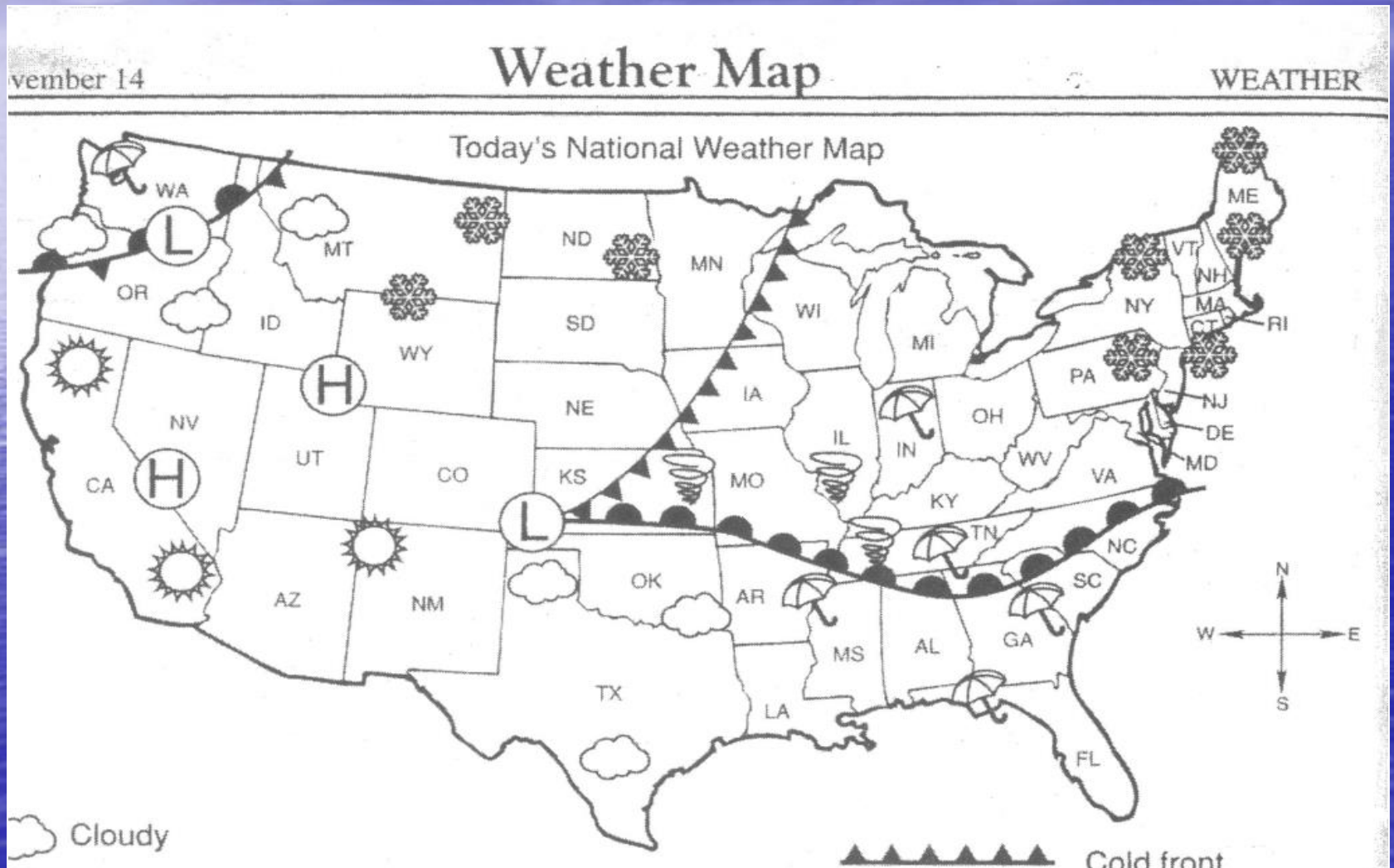


Squall line-
where a cold
front and
warm front
meet



Shelf cloud

Weather Fronts



Weather Vocabulary continued..

- *collection-the water that is gathered in a certain area
- *evaporation-the process by which a liquid changes into a gas; when water “disappears” after the sun comes out
- *precipitation-it is what falls from the sky in the form of: rain, snow, sleet, hail
- *condensation-the process by which a gas changes to a liquid

Types of Clouds

- *cirrus-form high in the atmosphere where the air is very cold, made of ice crystals; has a feathery, horsetail look
- *stratus-form low in the atmosphere, usually covering the sky; like a blanket
- *fog-a stratus-like cloud, that is near ground level
- *cumulus-puffy like a cotton ball, indicate fair weather, but as they grow, rain can develop
- *cumulonimbus-It's a precipitation maker. It's also called the thunderhead. They look like very big, fluffy, puffy, dark clouds.

Cirrus Clouds



Stratus Clouds



Cumulus Clouds



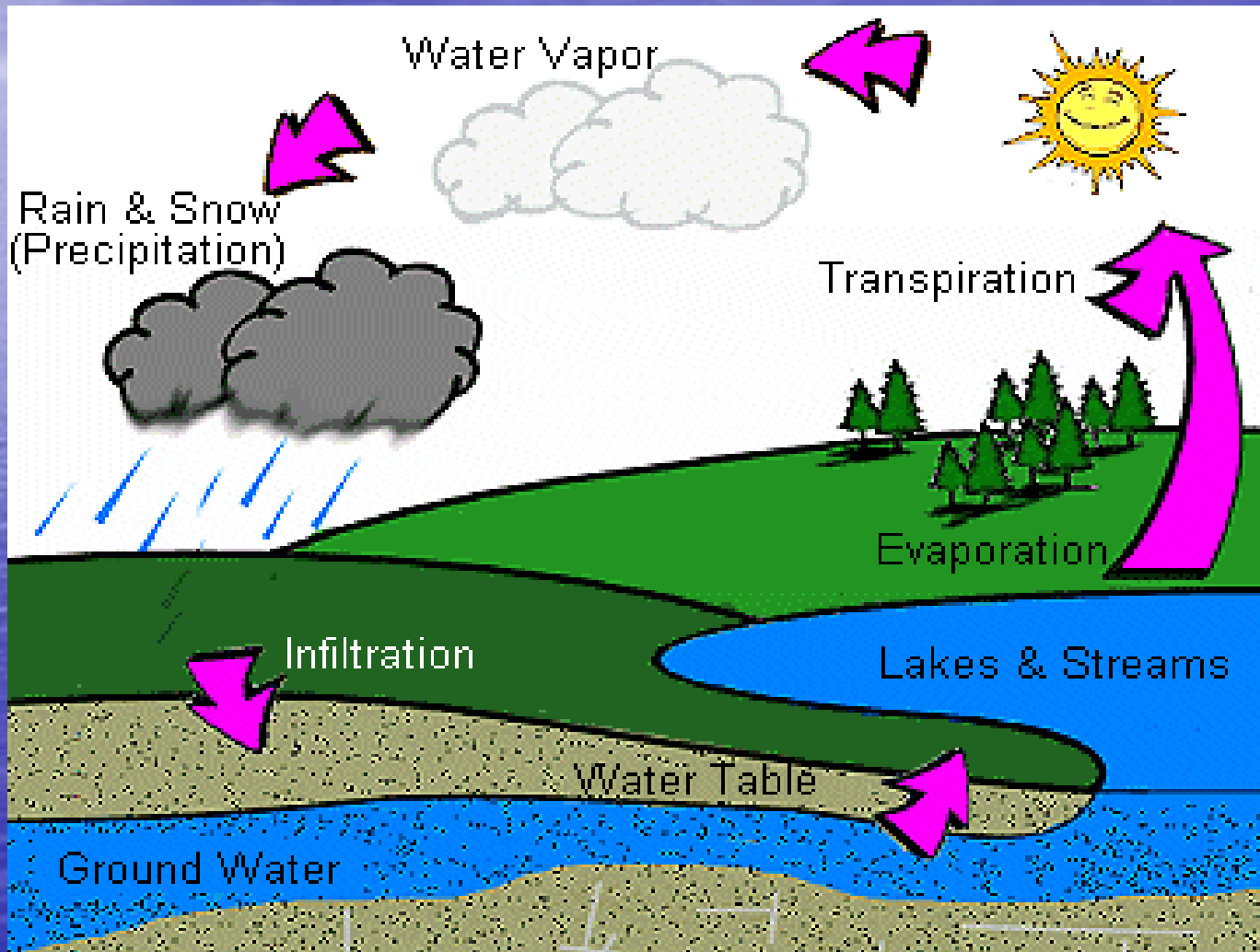
Cumulonimbus Clouds



The Water Cycle

- *collection-the water that is gathered in a certain area
- *evaporation-the process by which a liquid changes into a gas; when water “disappears” after the sun comes out
- *precipitation-it is what falls from the sky in the form of: rain, snow, sleet, hail
- *condensation-the process by which a gas changes to a liquid

The Water Cycle



How the Water Cycle Works

- The water in the collection form (liquid state of matter) is evaporated (gas state of matter) by the sun's heat. This water comes from creeks, rivers, streams, lakes, and over time, oceans.
- Then, the water condenses (liquid state of matter) within clouds.
- As clouds begin to collect the water droplets within them, they begin to get heavier, until the moisture falls from the clouds.

Continued...

- When clouds begin to release moisture, it is called precipitation.
- Precipitation may fall in one of 4 forms: rain, snow, (liquid state of matter), sleet, frozen rain, ice, or hail (solid state of matter).
- Once the precipitation occurs, it falls back into collection-the ground, creeks, rivers, streams, lakes, and oceans, causing the water cycle to begin again.

The Three States of Matter

- Solid-a substance that keeps its size and shape
- Liquid-a wet substance, with no fixed shape or size but takes the shape or size of the item it is in
- Gas-a fluid (as hydrogen or air) that has no fixed shape and tends to expand without limit

The Three States of Matter continued...

- When water freezes, it changes from a liquid to a solid.
- When ice melts, it changes from a solid to a liquid.
- When liquid water evaporates, it becomes a gas.
- When a gas changes into condensation, it becomes a form of precipitation...rain.