Name Date Class

Chapter 8 Weather

■ *Section 1 Summary*

Water in the Atmosphere

Water is constantly moving between Earth's surface and the atmosphere in the **water cycle.** Water vapor enters the air by evaporation from the oceans and other bodies of water. **Evaporation** is the process by which water molecules in liquid water escape into the air as water vapor. Some of the water vapor in the atmosphere condenses to form clouds. Then rain and other forms of precipitation fall from the clouds toward Earth's surface.

Humidity is a measure of the amount of water vapor in the air. The percentage of water vapor that is actually in the air compared to the amount of water vapor the air can hold at a particular temperature is called the **relative humidity. Relative humidity can be measured with an instrument called a psychrometer. A psychrometer** has two thermometers, a wet-bulb thermometer and a dry-bulb thermometer. Air is blown over both thermometers. Because the wet-bulb thermometer is cooled by evaporation, its reading drops below that of the dry-bulb thermometer. The relative humidity can be found by comparing the temperatures of the wet-bulb and dry-bulb thermometers.

Clouds form when water vapor in the air condenses to form liquid water or ice crystals. The process by which molecules of water vapor in the air become liquid water is called **condensation.** As air cools, the amount of water vapor it can hold decreases. When the air becomes saturated, some of the water vapor in the air condenses into water or ice. The temperature at which condensation begins is called the **dew point.** If the dew point is below the freezing point, the water vapor may change directly into ice crystals. For water vapor to condense, tiny particles must be present so that the water has a surface on which to condense. Water that condenses from the air onto a cold surface, such as blades of grass, is called dew. Frost is ice that has been deposited on a surface whose temperature is below freezing.

Scientists classify clouds into three main types based on their shape: cirrus, cumulus, and stratus. Clouds are further classified by their altitude.
Wispy, feathery clouds are called **cirrus** clouds. Cirrus clouds form only at high levels, and they are made of ice crystals. Clouds that look like fluffy, rounded piles of cotton are called **cumulus** clouds. Cumulus clouds usually indicate fair weather. Towering cumulus clouds with flat tops, called cumulonimbus clouds, often produce thunderstorms. Clouds that form in flat layers are called **stratus** clouds. Stratus clouds that produce rain or snow are called nimbostratus clouds. Clouds that form at or near the ground are called fog. Altocumulus and altostratus clouds are middle-level clouds that form 2-6 kilometers above Earth's surface. Fog often forms when the ground cools at night after a warm, humid day.

■ *Section 2 Summary*

Precipitation

Precipitation is any form of water that falls from clouds and reaches Earth's surface. For precipitation to occur, cloud droplets or ice crystals must grow heavy enough to fall through the air. One way that cloud droplets grow is by colliding and combining with other cloud droplets. When the droplets become heavy enough, they fall out of the cloud as raindrops.

Common types of precipitation include rain, hail, snow, sleet, and freezing rain. The most common kind of precipitation is rain. Drops of water are called rain if they are at least 0.5 millimeter in diameter. Precipitation made up of smaller drops of water is called mist or drizzle. Round pellets of ice larger than 5 millimeters in diameter are called hailstones.

Hail forms only inside cumulonimbus clouds during thunderstorms. Strong updrafts in the cloud carry the hailstone up and down through the cold region many times, each time adding a new layer of ice to the hailstone. Eventually, the hailstone becomes heavy enough to fall to the ground.

Snow forms when water vapor in a cloud is converted directly into ice crystals called snowflakes. Each snowflake has six sides or branches. Dry air produces powdery snow. Humid air produces wet

clumps of snow.

Sleet forms when raindrops fall through a layer of freezing air and turn into solid ice particles. Ice particles smaller than 5 millimeters in diameter are called sleet.

Freezing rain forms when raindrops freeze on a cold surface. As the rain continues to freeze on surfaces, a thick layer of ice may build up, which can break tree branches and power lines.

■ *Section 3 Summary*

Air Masses and Fronts

A huge body of air that has similar temperature, humidity, and air pressure at any given height is called an **air mass.** Scientists classify air masses according to temperature and humidity. **Four major types of air masses influence the weather in North America: maritime tropical, continental tropical, maritime polar, and continental polar. Tropical,** or warm, air masses form in the tropics and have low air pressure. **Polar,** or cold, air masses form north of 50° north latitude and south of 50° south latitude and have high air pressure. **Maritime** air masses form over oceans and are humid. **Continental** air masses form over land and are dry.

Maritime tropical air masses from the Pacific Ocean bring warm, humid air to the West Coast. Maritime polar air masses from the Pacific Ocean bring cool, humid air to the West Coast. Continental tropical air masses from the Southwest bring hot, dry air to the southern Great Plains. Continental polar air masses from central and northern Canada bring cold air to the central and eastern United States.

In the continental United States, air masses are commonly moved by the prevailing westerlies and jet streams. The prevailing westerlies generally push air masses from west to east in the United States. As air masses move across the land and the oceans, they collide with each other. However, if they have different temperatures and densities, they do not mix. The boundary where the air masses meet becomes a **front.** When air masses meet at a front, the collision often causes storms and changeable weather.

Colliding air masses can form four types of fronts: cold fronts, warm fronts, stationary fronts, and occluded fronts. A cold front forms when cold air moves underneath warm air, forcing the warm air to rise. Cold fronts move quickly and bring cold, dry air. A warm front forms when warm air moves over cold air. Warm fronts move slowly and bring warm, humid air. A stationary front forms when cold and warm air masses meet but neither one has enough force to move the other. It may bring many days of clouds and precipitation. An occluded front forms when a warm air mass is caught between two cooler air masses. The warm air mass is cut off, or **occluded,** from the ground. The occluded warm front may cause clouds and precipitation.

A swirling center of low air pressure is called a **cyclone.** Cyclones are also called "lows." **Cyclones and decreasing air pressure are associated with clouds, winds, and precipitation. Anticyclones** are high-pressure centers. They are also called "highs." **The descending air in an anticyclone generally causes dry, clear weather.** Because of the Coriolis effect, in the Northern Hemisphere winds spin in a counterclockwise direction in a cyclone and in a clockwise direction in an anticyclone.

■ *Section 4 Summary*

Storms

A **storm** is a violent disturbance in the atmosphere. A **thunderstorm** is a small storm often accompanied by heavy precipitation and frequent thunder and lightning. **Thunderstorms form in large cumulonimbus clouds, also known as thunderheads.** During a thunderstorm, areas of positive and negative electrical charges build up in the storm clouds. **Lightning** is a sudden spark, or electrical discharge, between parts of a cloud, between nearby clouds, or between a cloud and the ground. A lightning bolt heats the air near it, and the rapidly heated air expands suddenly and explosively. Thunder is the sound of the explosion. Because light travels faster than sound, you see lightning before you hear thunder. **During thunderstorms, avoid places where lightning may strike. Also avoid objects that can**

conduct electricity, such as metal objects and bodies of water.

A tornado is a rapidly whirling, funnel-shaped cloud that reaches down from a storm cloud to touch Earth's surface. **Tornadoes most commonly develop in thick cumulonimbus clouds—the same clouds that bring thunderstorms.** Tornadoes occur most often in the Great Plains, but they can and do occur in nearly every part of the United States. If you hear a tornado warning, move to a safe area as soon as you can. **The safest place to be during a tornado is in a storm shelter or the basement of a well-built building.**

All year round, most precipitation begins in clouds as snow. If the air is colder than 0°C all the way to the ground, the precipitation falls as snow.
Snow falls in California only at high elevation. The snowmelt in the spring is useful as a source of fresh water for a variety of needs, including irrigation and electricity production. **If you are caught in a snowstorm, try to find shelter from the wind.**

A hurricane is a tropical cyclone that has winds of 119 kilometers per hour or higher. **A hurricane begins over warm ocean water as a low-pressure area, or tropical disturbance.** If the tropical disturbance grows in size and strength, it becomes a tropical storm, which may then become a hurricane. The center of a hurricane is a ring of clouds surrounding a quiet "eye." The low pressure and high winds of the hurricane over the ocean raise the level of the water up to six meters above normal sea level. The result is a **storm surge,** a "dome" of water that sweeps across the coast where the hurricane lands. A "hurricane warning" means that hurricane conditions are expected within 24 hours. **If you hear a hurricane warning and are told to evacuate, leave the area immediately.**

■ *Section 5 Summary*

Predicting the Weather

Meteorologists are scientists who study the causes of weather and try to predict it. **Meteorologists use maps, charts, and computers to analyze weather data and to prepare weather forecasts.**

Instruments carried by balloons, satellites, and weather stations provide the data necessary to forecast the weather. Radar can be used to track rain clouds or tornadoes. The National Weather Service provides most of the weather data used by meteorologists.

A weather map is a "snapshot" of conditions at a particular time over a large area. There are many different types of weather maps. Data from weather stations all over the country are assembled into weather maps at the National Weather Service.

Maps in newspapers are simplified versions of maps produced by the National Weather Service. On some weather maps, curved lines connect places with the same air pressure or temperature. **Isobars** are lines joining places on a map that have the same air pressure. **Isotherms** are lines joining places that have the same temperature. **Standard symbols on weather maps show fronts, areas of high and low pressure, types of precipitation, and temperatures.**

A small change in the weather today can mean a larger change in the weather a week later! This is the so-called "butterfly effect."

Earth Science
Chap 8 – Lecture Notes: Supplement
Weather

I. Section 1 – Water in the Atmosphere

A. **Water Cycle**: **Evaporation → Condensation → Precipitation**

B. **Humidity**; a measure of the amount of water in the atmosphere

1. **Relative humidity**- the % of water vapor in the air compared to the total water vapor that could be held in the air at that particular temperature.

a. Measured w/ **psychometer** – device w/ two thermometers, one w/ a wet bulb the other w/ a dry bulb. The wet bulb is cooled by evaporation there its temperature is lower. The difference between these two temps can be converted into relative humidity.

2. Warm air holds more water vapor than cold air.

C. How Clouds Form

1.Clouds form when water vapor cools and reaches the dew point and condenses into water or ice.

2. **Dew Point** – we know the dew point on ground (sometimes the grass is wet in the morning, sometimes its dry)

3. Condensation of water vapors requires tiny particles for vapor to condense on (ie dust, smoke, salt etc.)

D. Types of Clouds

1. Three main types of clouds classified by **SHAPE**. Then further classified by height.

a. **Cirrus** – High wispy feathery clouds made of ice crystals.

b. **Cumulus** – Cotton Balls, Fluffy rounded heap/ mass of clouds.

c. **Stratus** – long flat layers usually covering ,ost of the sky

2. Descriptive cloud terms

a. **Nimbus** – rain/snow producing. Cumulonimbus, nimbostratus,

b. **Alto** – mid level clouds – (2-6 km high)Altostratus, altocumulus,

c. combination of cloud types – cirrocumulus, cumulostratus

d. **Fog** – clouds forming at or near ground level.

II. Section 2 - Precipitation

A. **Types of precipitation** – rain, hail, snow, sleet & freezing rain

a. **Rain** – most common type of precipitation, > .5 mm in diameter. Smaller droplets are drizzle or mist.

b. **Hail** – forms only in cumulonimbus clouds during thunderstorms. Strong updrafts lift the ice particle up into the cloud adding layers of ice. Makes it heavier, updraft lifts it until it's too heavy and falls thru the cloud.

c. **Snow** – water vapor converted directly into ice crystals, all are six sided and unique in shape.

i. Dry air produces powdery snow

ii. Humid air produces moist clumps of snow (good for snowballs and snow men!)

d. **Sleet** – as rain falls to the ground it sometimes hits layers of cold air below freezing. The water freezes on its way to the ground. These are usually < 5mm in diameter.

e. **Freezing rain** – rain (water) that hits very cold ground structures on the surface freezes. Thick layers of ice can form, breaking branches, power lines, etc.

III. Section 3 - Air Masses and Fronts Types of Air Masses – 4 major types affect air in North America:

Maritime Tropical, Continental Tropical, Maritime Polar, Continental Polar

A. **Air Mass** – A huge body of air that has similar temperature, humidity and air pressure.
B. Characteristics of Air Masses
    a. **Tropical** – warm air masses & lower pressure
    b. **Polar** – cold air masses & higher pressure
    c. **Maritime** – form over the oceans therefore are high humidity
    d. **Continental** – form over land therefore are low in humidity, dry air
    e. **Maritime Trop**ical – forms over the Pacific and Caribbean/Atlantic Oceans. They come up from the equatorial regions, are warm air masses, high in humidity and low in pressure. They bring in heavy rains and showers.
    f. **Maritime Polar** – Cool humid air masses form over the North Pacific and North Atlantic Oceans. They bring high pressure & precipitation
    g. **Continental Tropical** – Hot dry air masses coming up from Mexico to the southern plain states. Usually are smaller in size and low in pressure.
    h. **Continental Polar** – Form over Canada & Alaska, air masses are cold and dry.
C. How Air Masses move
    a. Prevailing Westerlies and the Tradewinds
    b. Jet Stream – high speed winds blowing from West to the East about 10 km high.
    c. **Fronts** – the boundary where two air masses meet. **They do not mix easily**. Less dense air masses push over top of heavier more dense fronts. Storms and weather changes occur at fronts
D. Types of Fronts – Cold Front, Warm Front, Stationary Front & Occluded Fronts
    a. **Warm Front** – warm front moving faster than a cold front, over takes it and pushes up over the cold front. (Warm air less dense than cold air and "floats" on the cold air mass).
        i. If warm air is humid, light rain or snow fall.
        ii. If warm air is dry, scattered clouds form
        iii. After warm front passes, the weather will be warm & humid.
    b. **Cold Front** – When Rapidly moving Cold Mass collides w/ slow moving warm air mass, the more dense cold air slides under the warmer air mass.
        i. As warm air is pushed up higher, the air begins to cool & holds less water vapor – precipitation occurs.
            1. if warm air mass has high humidity – heavy rain & snow.
            2. If warm air is less humid, then just cloudy hih clouds form.
            3. Cold fronts move quickly – bring w/ them abrupt weather changes.
    c. **Stationary Front** – when warm & cold air masses meet and neither is moving fast enough to over power the other. If there is high humidity then there can be several days of rain until the stationary front slowly breaks up and moves away.
    d. **Occluded Front** – occlude means "to be cutoff from". These fronts occur when a warm air mass is caught between to cold air masses. These are the most complex of the weather systems. Weather may be cloudy w/ rain or snow.
E. Cyclones & Anticyclones.
    a. **Cyclone** – associated w/ Low pressure systems. Warm winds at the center rise & spin upward in a counterclockwise direction (looking from above) associated w/ decreasing air pressure, clouds, wind & precipitation
    b. **Anticyclone** – the opposite of cyclones. High Pressure spiral down ward and are dry air. The move in a clockwise direction (when looking from above). Associated w/ clear dry sometimes windy weather.

IV. Section 4 - Storms

A. **Storm** – a violent disturbance in the atmosphere

B. **Thunderstorm** – a small storm w/ heavy precipitation & Thunder and lightning.

a. Form in Cumulonimbus clouds called thunderheads.

b. **Lightning** – Static electricity build up w/ electrical discharge jumping between clouds or the clouds & the ground.

c. **Thunder** – caused from the rapid expansion of air after lightning bolt (30,000 degrees C) cuts thru the atmosphere rapidly heating the air

C. **Tornadoes** – rapidly swirling funnel shaped cloud reaching down from a cumulonimbus cloud to the ground. Usually occur in the Great Plains – Tornado Alley. Occur as a result of Cold dry Polar Continental Air Mass collides w/ Warm & Humid Tropical Maritime air mass off the Caribbean.

D. **Hurricanes** – a huge tropical cyclone that has winds in excess of 75 mph or 119 kmph or higher.

a. They are found in the Atlantic, Pacific and Indian Oceans. (in the western Pacific they are called typhoons)

b. They begin over warm water areas as a low pressure system or depression. As it obtains energy from the warm water it becomes stronger and turns into a tropical storm, as winds speeds increase it can turn into a hurricane.

i. Warm moist air rises around the eye in spiraling bands of clouds.

ii. Air flows outward near the top of the hurricane

iii. Cool dry air sinks in the **eye, the center of the hurricane**

c. They are pushed along by the trade winds and build up strength as long as they are above warm water. Once they hit land or cold water they start to breakdown.

V. Predicting the Weather

A. Weather Forecasting

1. **Meteorologist** – a scientist who studies the causes of weather.

2. To predict weather, a meteorologist must collect data – balloons, charts, maps, computers, satellite data etc.

Look at the sample weather maps on the website – be able to interpret the data.

B. Reading Weather Maps

a. **Isobars** – (same as contour lines) – except they mark areas of same atmospheric pressure. Barometric pressure is measured in "inches of Mercury" or "millibars". This is measured w/ a barometer

i. **mercury barometer** – measures the level of mercury in "inches of mercury"

ii. **aneroid barometer** – "w/out liquid" barometer measures the pressure in an air tight thin walled metal chamber. Chamber connected to a dial which records the change in pressure. Measured in units called "millibars"

iii. 1" of Mercury = 33.87 millibars

b. **Isotherms** – lines joining w/ the same temperature

c. Maps typically show – fronts, type of precipitation, hi & low pressure areas, wind speed and direction, cloud cover and temperature.

Earth Science
Chap 8 – Lecture Notes: Supplement
Weather

I. Section 1 – Water in the Atmosphere

A. **Water Cycle**: **Evaporation → Condensation → Precipitation**

B. **Humidity**; a measure of the amount of water in the atmosphere

1. **Relative humidity**- the % of water vapor in the air compared to the total water vapor that could be held in the air at that particular temperature.

a. Measured w/ **psychometer** – device w/ two thermometers, one w/ a wet bulb the other w/ a dry bulb. The wet bulb is cooled by evaporation there its temperature is lower. The difference between these two temps can be converted into relative humidity.

2. Warm air holds more water vapor than cold air.

C. How Clouds Form

1.Clouds form when water vapor cools and reaches the dew point and condenses into water or ice.

2. **Dew Point** – we know the dew point on ground (sometimes the grass is wet in the morning, sometimes its dry)

3. Condensation of water vapors requires tiny particles for vapor to condense on (ie dust, smoke, salt etc.)

D. Types of Clouds

1. Three main types of clouds classified by **SHAPE**. Then further classified by height.

a. **Cirrus** – High wispy feathery clouds made of ice crystals.

b. **Cumulus** – Cotton Balls, Fluffy rounded heap/ mass of clouds.

c. **Stratus** – long flat layers usually covering ,ost of the sky

2. Descriptive cloud terms

a. **Nimbus** – rain/snow producing. Cumulonimbus, nimbostratus,

b. **Alto** – mid level clouds – (2-6 km high)Altostratus, altocumulus,

c. combination of cloud types – cirrocumulus, cumulostratus

d. **Fog** – clouds forming at or near ground level.

II. Section 2 - Precipitation

A. **Types of precipitation** – rain, hail, snow, sleet & freezing rain

a. **Rain** – most common type of precipitation, > .5 mm in diameter. Smaller droplets are drizzle or mist.

b. **Hail** – forms only in cumulonimbus clouds during thunderstorms. Strong updrafts lift the ice particle up into the cloud adding layers of ice. Makes it heavier, updraft lifts it until it's too heavy and falls thru the cloud.

c. **Snow** – water vapor converted directly into ice crystals, all are six sided and unique in shape.

i. Dry air produces powdery snow

ii. Humid air produces moist clumps of snow (good for snowballs and snow men!)

d. **Sleet** – as rain falls to the ground it sometimes hits layers of cold air below freezing. The water freezes on its way to the ground. These are usually < 5mm in diameter.

e. **Freezing rain** – rain (water) that hits very cold ground structures on the surface freezes. Thick layers of ice can form, breaking branches, power lines, etc.

III. Section 3 - Air Masses and Fronts Types of Air Masses – 4 major types affect air in North America:

Maritime Tropical, Continental Tropical, Maritime Polar, Continental Polar

A. **Air Mass** – A huge body of air that has similar temperature, humidity and air pressure.
B. Characteristics of Air Masses
    a. **Tropical** – warm air masses & lower pressure
    b. **Polar** – cold air masses & higher pressure
    c. **Maritime** – form over the oceans therefore are high humidity
    d. **Continental** – form over land therefore are low in humidity, dry air
    e. **Maritime Trop**ical – forms over the Pacific and Caribbean/Atlantic Oceans. They come up from the equatorial regions, are warm air masses, high in humidity and low in pressure. They bring in heavy rains and showers.
    f. **Maritime Polar** – Cool humid air masses form over the North Pacific and North Atlantic Oceans. They bring high pressure & precipitation
    g. **Continental Tropical** – Hot dry air masses coming up from Mexico to the southern plain states. Usually are smaller in size and low in pressure.
    h. **Continental Polar** – Form over Canada & Alaska, air masses are cold and dry.
C. How Air Masses move
    a. Prevailing Westerlies and the Tradewinds
    b. Jet Stream – high speed winds blowing from West to the East about 10 km high.
    c. **Fronts** – the boundary where two air masses meet. **They do not mix easily**. Less dense air masses push over top of heavier more dense fronts. Storms and weather changes occur at fronts
D. Types of Fronts – Cold Front, Warm Front, Stationary Front & Occluded Fronts
    a. **Warm Front** – warm front moving faster than a cold front, over takes it and pushes up over the cold front. (Warm air less dense than cold air and "floats" on the cold air mass).
        i. If warm air is humid, light rain or snow fall.
        ii. If warm air is dry, scattered clouds form
        iii. After warm front passes, the weather will be warm & humid.
    b. **Cold Front** – When Rapidly moving Cold Mass collides w/ slow moving warm air mass, the more dense cold air slides under the warmer air mass.
        i. As warm air is pushed up higher, the air begins to cool & holds less water vapor – precipitation occurs.
            1. if warm air mass has high humidity – heavy rain & snow.
            2. If warm air is less humid, then just cloudy hih clouds form.
            3. Cold fronts move quickly – bring w/ them abrupt weather changes.
    c. **Stationary Front** – when warm & cold air masses meet and neither is moving fast enough to over power the other. If there is high humidity then there can be several days of rain until the stationary front slowly breaks up and moves away.
    d. **Occluded Front** – occlude means "to be cutoff from". These fronts occur when a warm air mass is caught between to cold air masses. These are the most complex of the weather systems. Weather may be cloudy w/ rain or snow.
E. Cyclones & Anticyclones.
    a. **Cyclone** – associated w/ Low pressure systems. Warm winds at the center rise & spin upward in a counterclockwise direction (looking from above) associated w/ decreasing air pressure, clouds, wind & precipitation
    b. **Anticyclone** – the opposite of cyclones. High Pressure spiral down ward and are dry air. The move in a clockwise direction (when looking from above). Associated w/ clear dry sometimes windy weather.

IV. Section 4 - Storms

A. **Storm** – a violent disturbance in the atmosphere

B. **Thunderstorm** – a small storm w/ heavy precipitation & Thunder and lightning.

a. Form in Cumulonimbus clouds called thunderheads.

b. **Lightning** – Static electricity build up w/ electrical discharge jumping between clouds or the clouds & the ground.

c. **Thunder** – caused from the rapid expansion of air after lightning bolt (30,000 degrees C) cuts thru the atmosphere rapidly heating the air

C. **Tornadoes** – rapidly swirling funnel shaped cloud reaching down from a cumulonimbus cloud to the ground. Usually occur in the Great Plains – Tornado Alley. Occur as a result of Cold dry Polar Continental Air Mass collides w/ Warm & Humid Tropical Maritime air mass off the Caribbean.

D. **Hurricanes** – a huge tropical cyclone that has winds in excess of 75 mph or 119 kmph or higher.

a. They are found in the Atlantic, Pacific and Indian Oceans. (in the western Pacific they are called typhoons)

b. They begin over warm water areas as a low pressure system or depression. As it obtains energy from the warm water it becomes stronger and turns into a tropical storm, as winds speeds increase it can turn into a hurricane.

i. Warm moist air rises around the eye in spiraling bands of clouds.

ii. Air flows outward near the top of the hurricane

iii. Cool dry air sinks in the **eye, the center of the hurricane**

c. They are pushed along by the trade winds and build up strength as long as they are above warm water. Once they hit land or cold water they start to breakdown.

V. Predicting the Weather

A. Weather Forecasting

1. **Meteorologist** – a scientist who studies the causes of weather.

2. To predict weather, a meteorologist must collect data – balloons, charts, maps, computers, satellite data etc.

Look at the sample weather maps on the website – be able to interpret the data.

B. Reading Weather Maps

a. **Isobars** – (same as contour lines) – except they mark areas of same atmospheric pressure. Barometric pressure is measured in "inches of Mercury" or "millibars". This is measured w/ a barometer

i. **mercury barometer** – measures the level of mercury in "inches of mercury"

ii. **aneroid barometer** – "w/out liquid" barometer measures the pressure in an air tight thin walled metal chamber. Chamber connected to a dial which records the change in pressure. Measured in units called "millibars"

iii. 1" of Mercury = 33.87 millibars

b. **Isotherms** – lines joining w/ the same temperature

c. Maps typically show – fronts, type of precipitation, hi & low pressure areas, wind speed and direction, cloud cover and temperature.