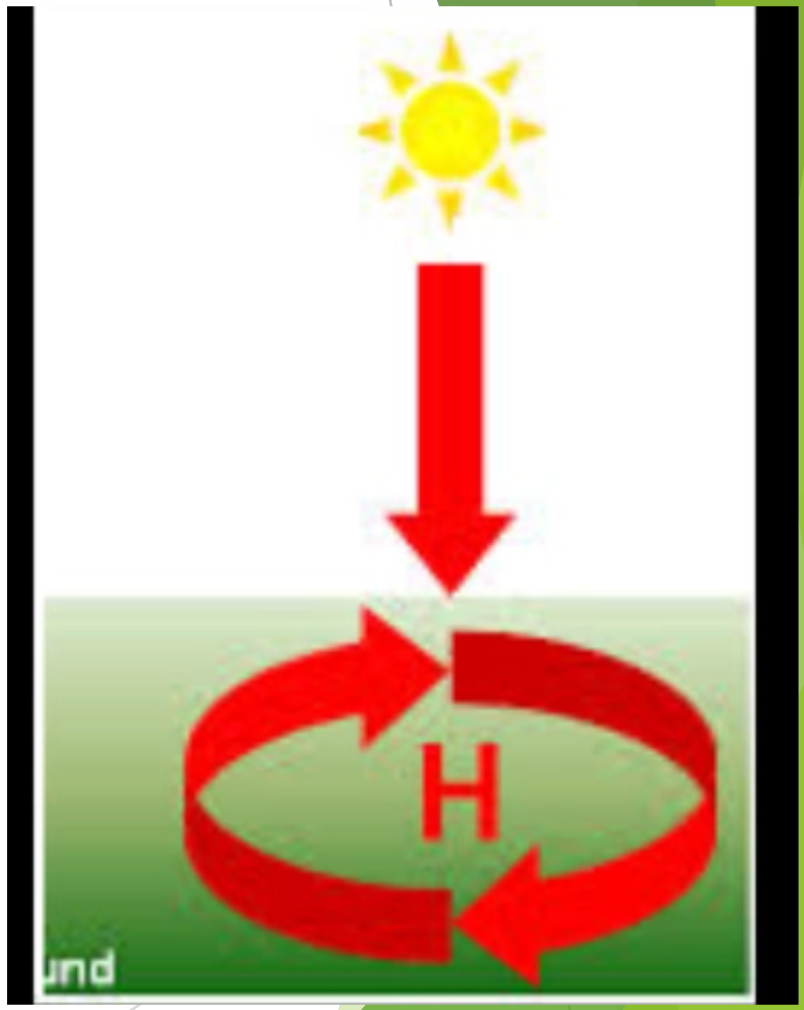
6.3 Earth's Weather Patterns and Climate

Standard 6.3.2

Investigate the interactions between air masses that cause changes in weather conditions. Collect and analyze weather data to provide evidence for how air masses flow from regions of high pressure to low pressure causing a change in weather. Examples of data collection could include field observations, laboratory experiments, weather maps, or diagrams.

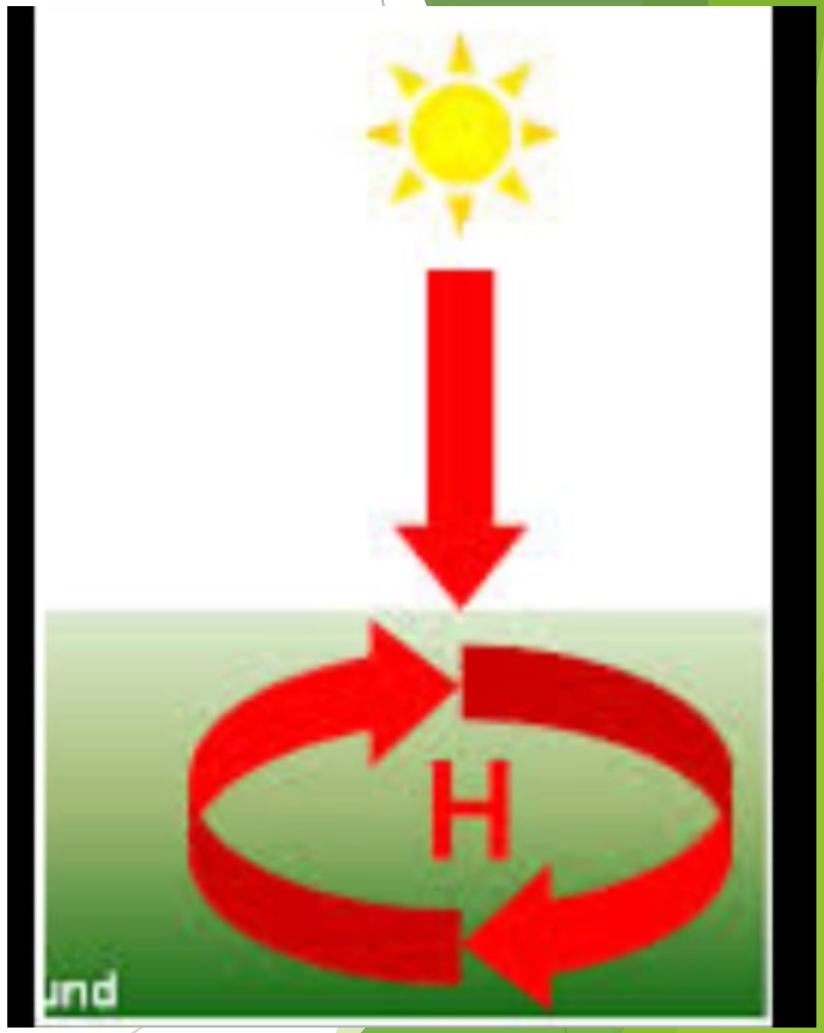
High Pressure

High-pressure system develops due to downward motion through the troposphere associated with light winds that will dry out an air mass. The air is pushing down toward the earth. The atmospheric pressure of a high pressure at the surface is greater than its surrounding areas, therefore flowing in a clockwise direction.



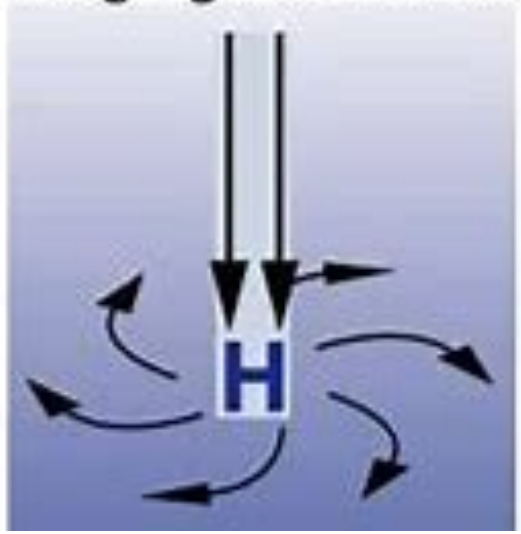
High Pressure

Because of the drying out of air masses caused by high pressure, areas of high pressure are usually associated with clear and sunny weather that generally gets seasonally warmer than the average temperatures. Winds are calm with very few clouds. Puffy cumulus clouds are signs of a strong high pressure.



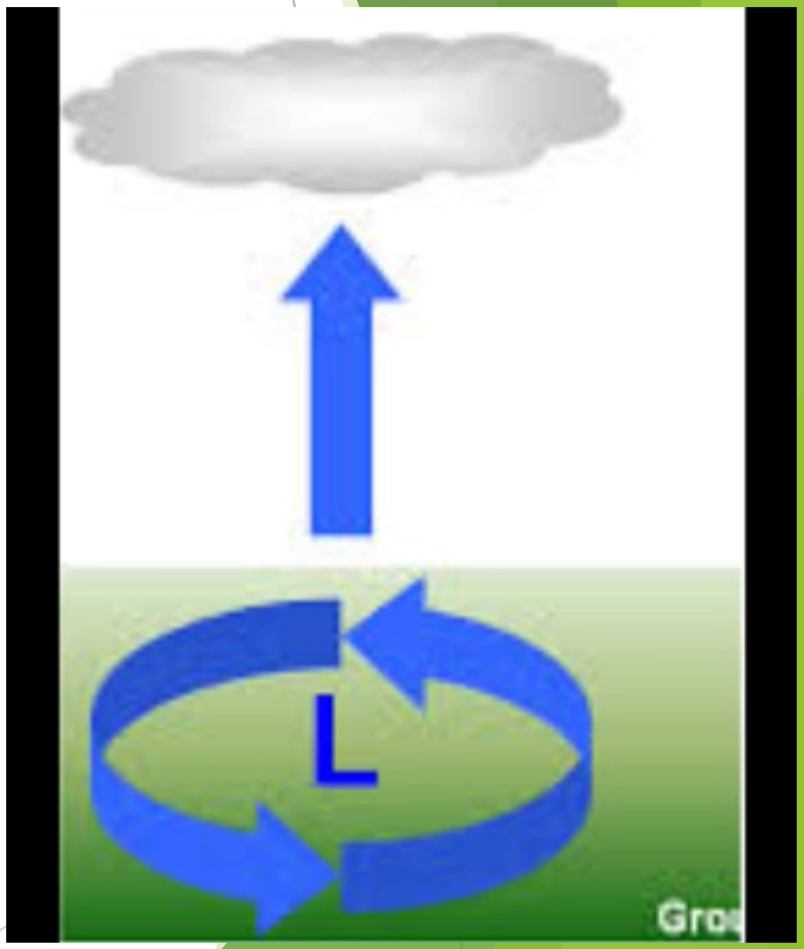
How does a high pressure system form?

- When cooler air sinks and is warmed, the air can hold more moisture
- This usually means sunny skies
- Winds tend to move clockwise around a high in the Northern hemisphere.
- Anti-cyclones
- Diverging and descending winds



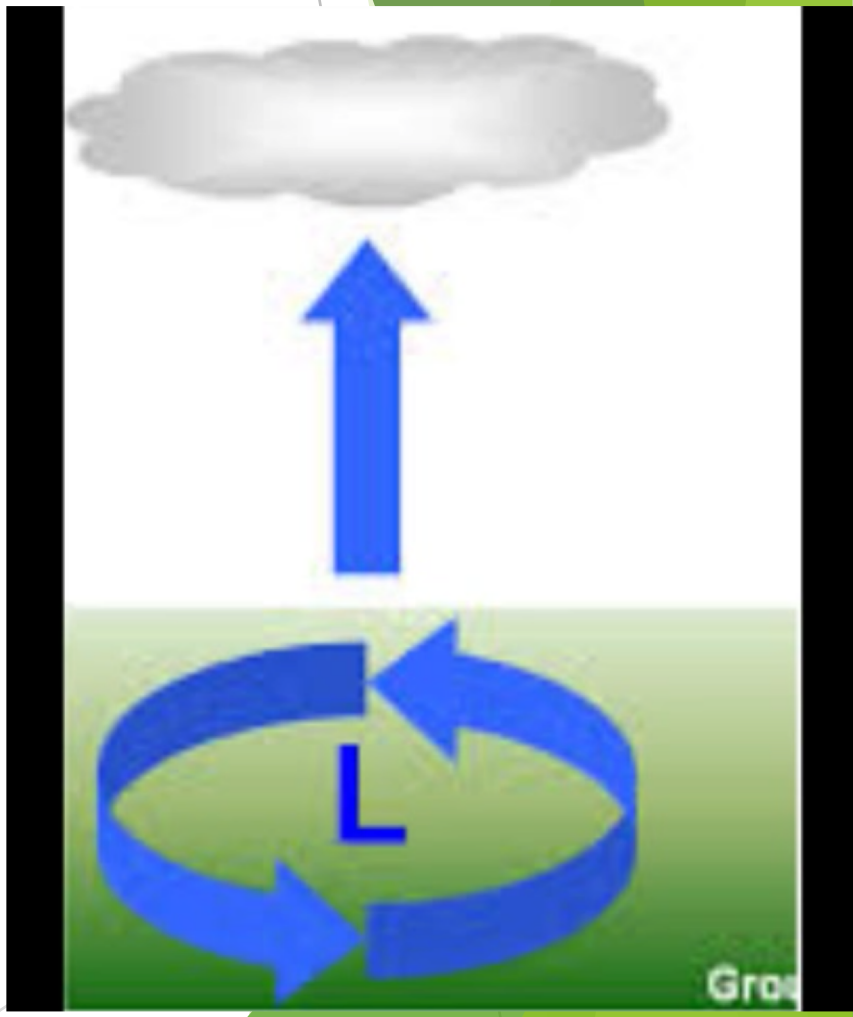
Low Pressure

A low pressure system develops when warm air rises from the Earth's surface and the air in the surrounding area rushes in to fill the empty space, thus forming a heavy inflow of wind upward. Possibly you have noticed that during the summer during mid-day a breeze forms (thermals).



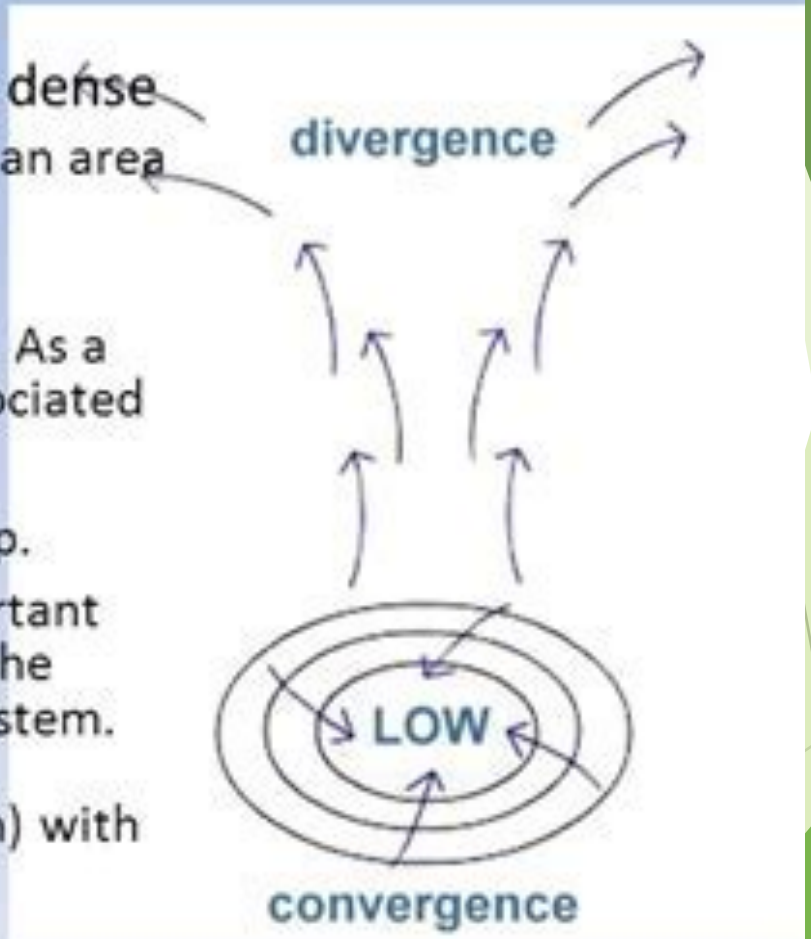
Low Pressure

In a low pressure area, winds rotate in the anti-clockwise direction around the center of the system, pushing the air up that changes the weather in terms of strong winds, clouds, precipitation, and cooler air. As the air rises, it cools quickly forming clouds because of water vapor in the air.

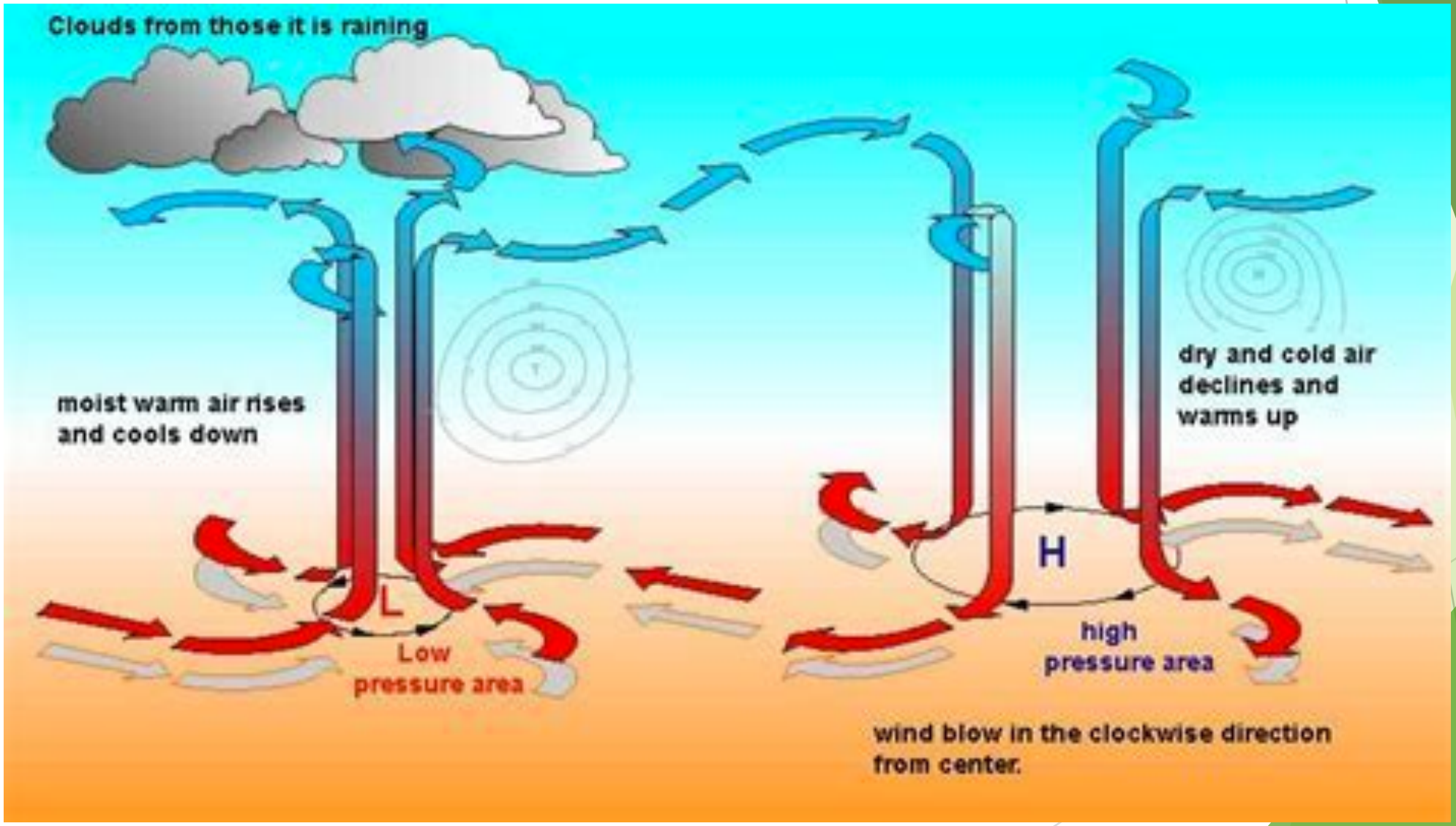


Low Pressure System

When air is heated, it becomes less dense
- Therefore, it rises, leaving behind an area where there is less air.
- Called a low pressure area
- Rising air carries moisture with it. As a result, low pressure is usually associated with clouds and rain.
- Indicated by a **L** on a weather map.
- Troughs of low pressure are important because they sometimes lead to the development of a low pressure system. Troughs are indicated by lines (sometimes purple, black or green) with no triangles or semicircles.

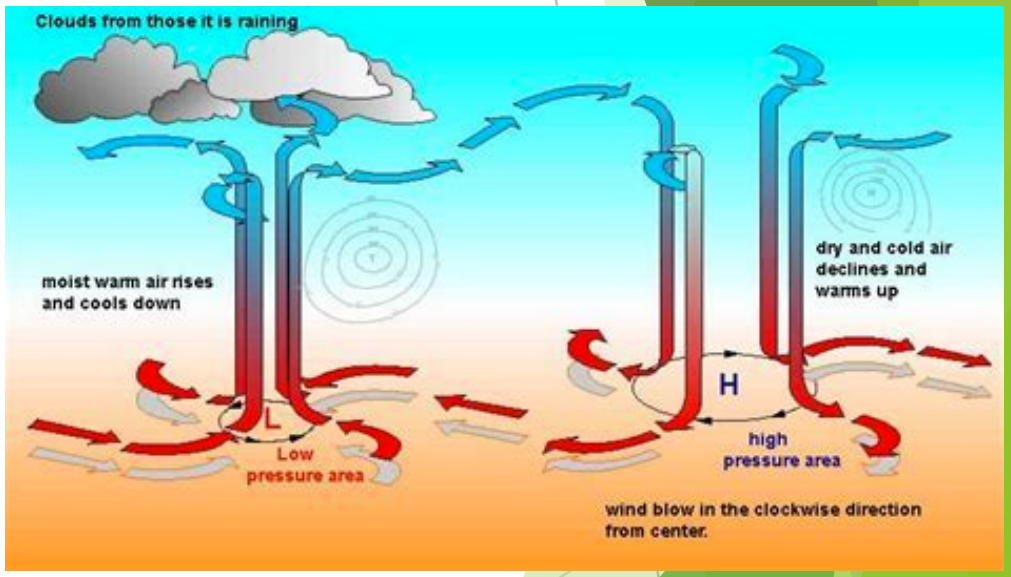


High and Low Pressures



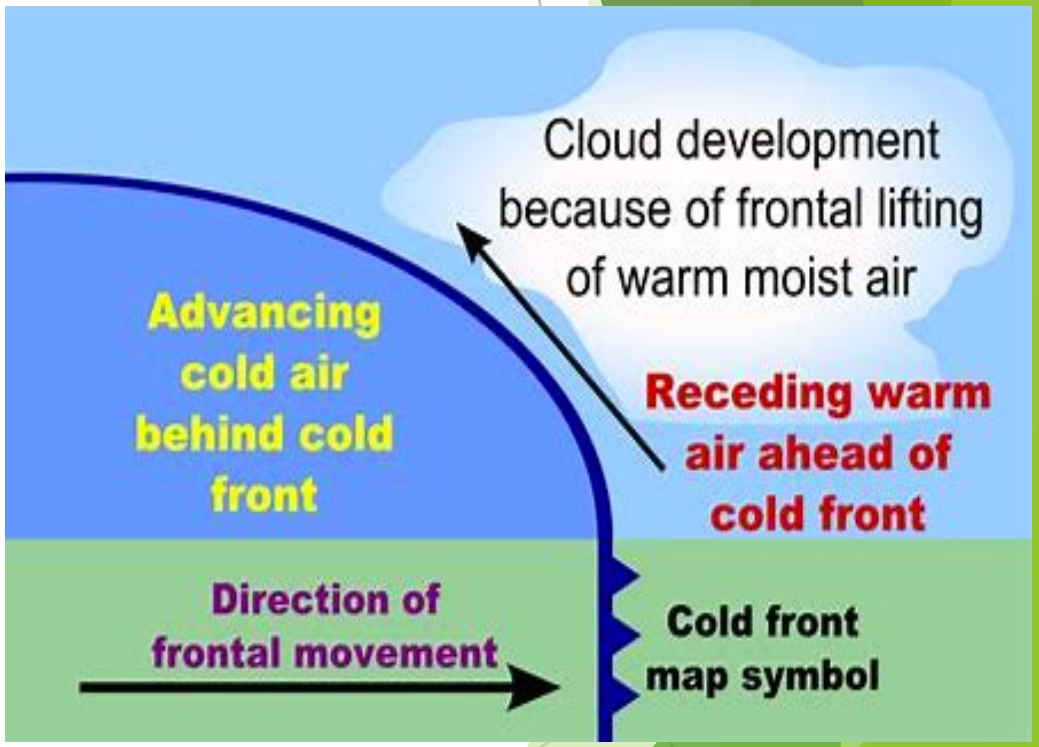
High Pressure Areas Always Flow into a Low Pressure Areas

When a low pressure moves toward a high pressure, the high pressure always flows into a low pressure since they want to equalizes. This flow of air causes air (wind) to flow between the two pressure areas.

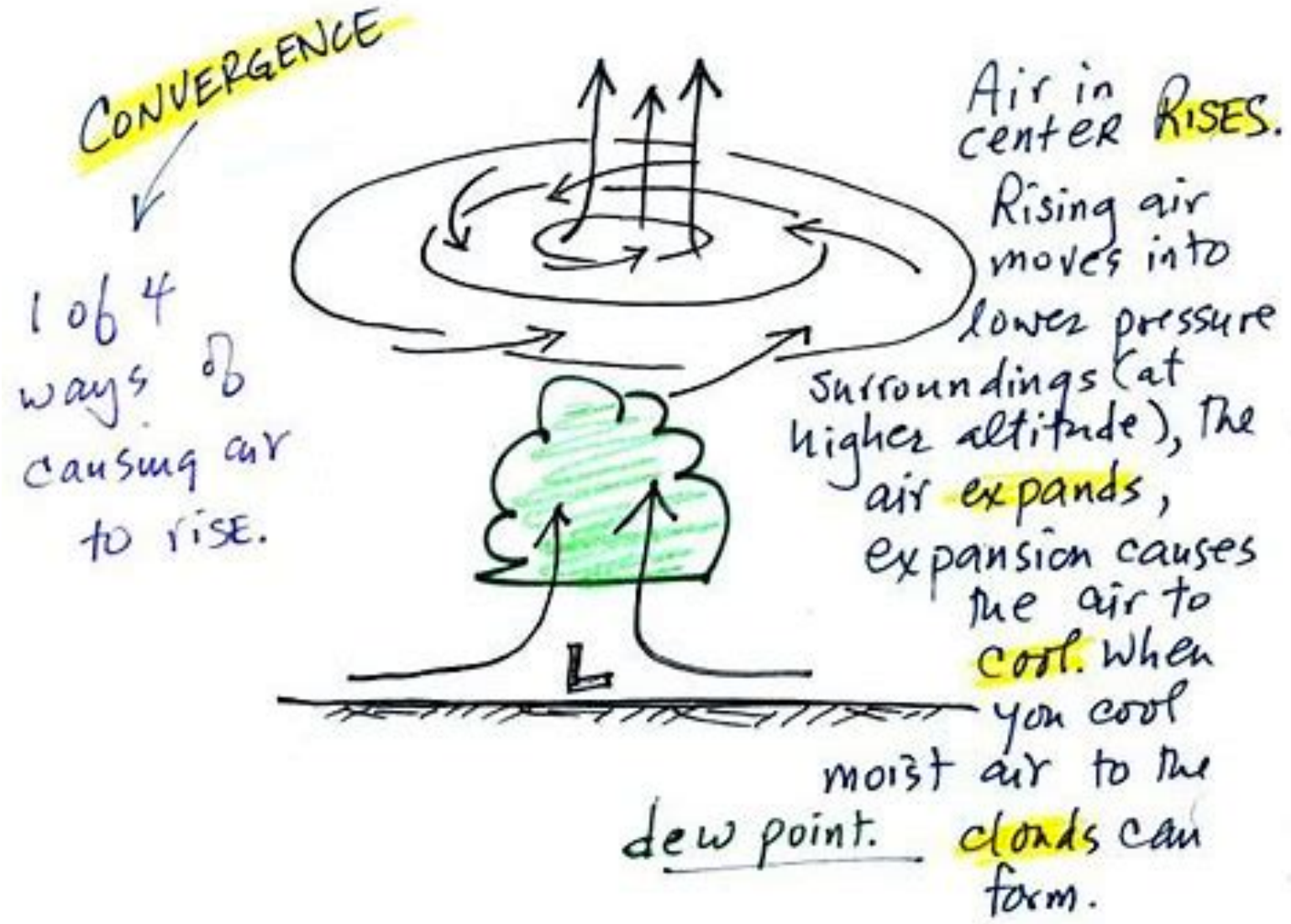


Low Pressure Meets a High Pressure

A low pressure precedes a cold air mass. When a low pressure moves toward a high pressure, the warmer air of the high pressure rises quickly (lift) causing the air molecules to separate releasing energy. This release of energy causes the air to cool condensing the water vapor into water (clouds).

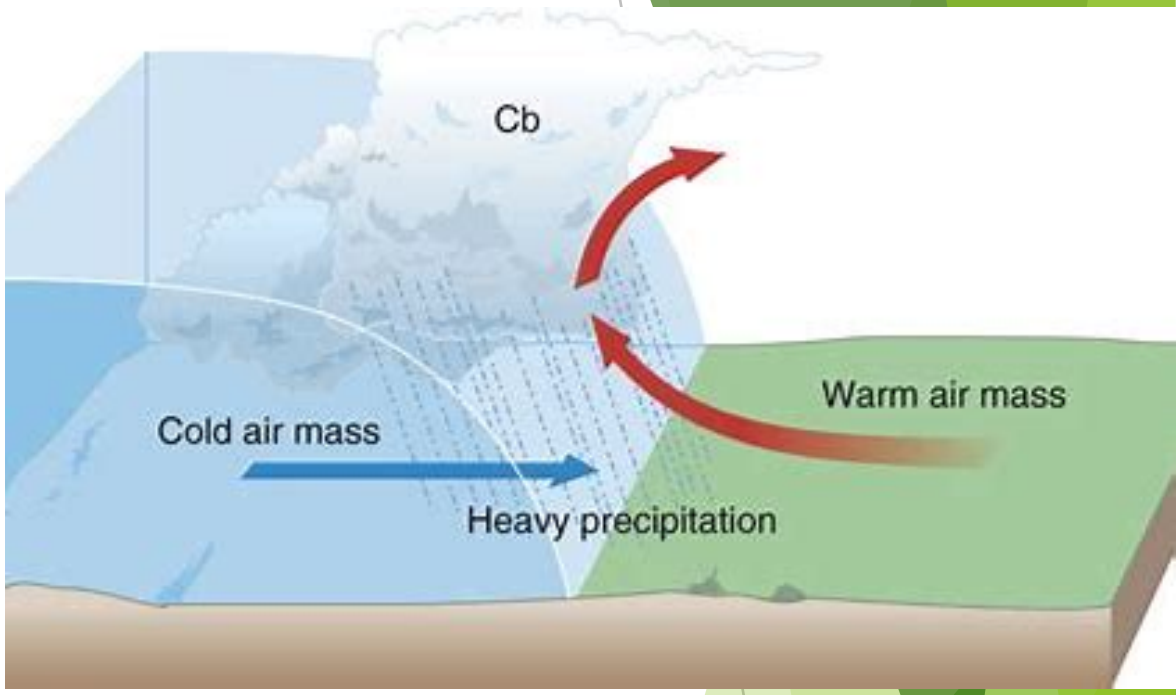


Low Pressure Meets a High Pressure



Low Pressure Meets a High Pressure

A low pressure precedes a cold air mass. When a low pressure moves toward a high pressure, the warmer air of the high pressure rises quickly (lift) causing the air molecules to separate releasing energy. This release of energy causes the air to cool, condensing the water vapor in water (clouds). The cold air mass behind it causes heavy precipitation.

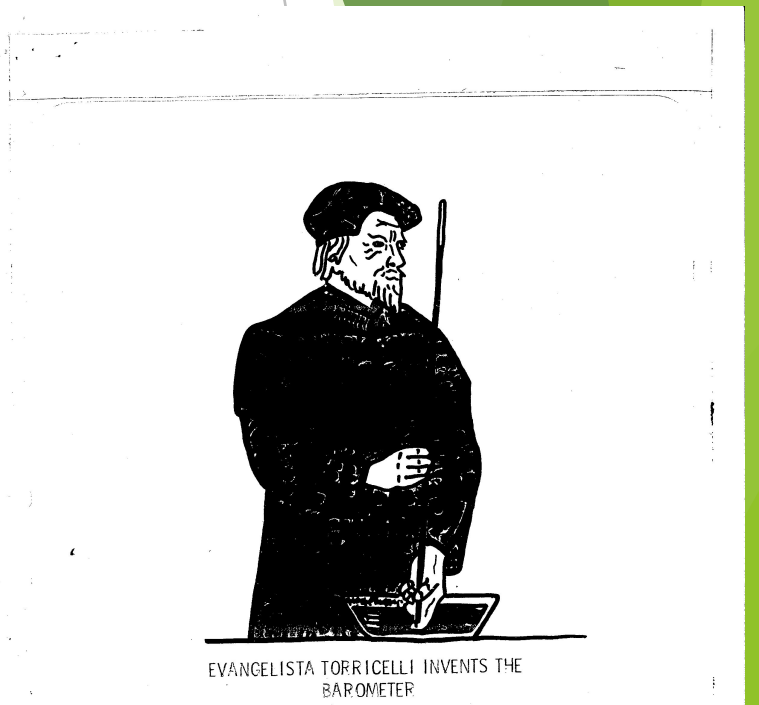


Meet Evangelisti Torricelli
The Maker of the First Barometer

- Around the time of 1643, there was a young science by the name of Evangelisti Torricelli who was very interested in air pressure. Scientists at the time knew that air pressure existed and they knew that it changed. They had an idea that when there was an air pressure change there was going to be stormy weather. But, they had no way of measuring the air pressure like they could measure the temperature with a thermometer. Torricelli was very interested in finding a way to measure air pressure so he could see air pressure changes.

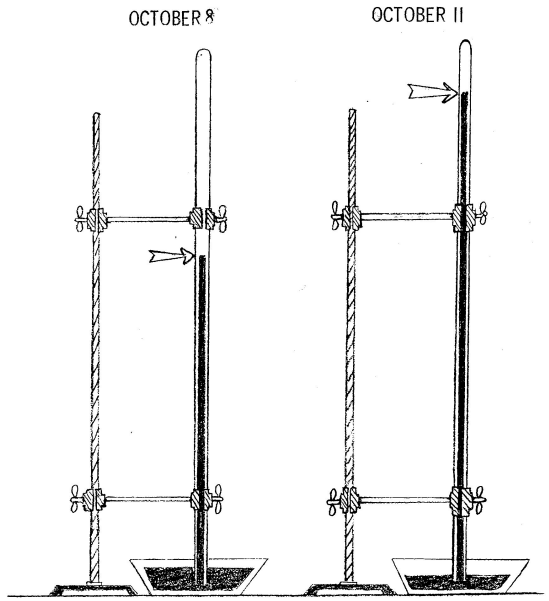
Meet Evangelisti Torricelli
The Maker of the First Barometer

- One day Torricelli got a 3-foot glass tube that was closed in at one end and open at the other. With a suggestion from his friend, Galileo, he filled the glass tube with mercury. Mercury is a liquid metal that is much heavier than water. He also had a bowl of liquid mercury. After filling the glass tube with mercury, he tipped the tube upside down, holding the open end with his finger so the mercury wouldn't run out. With his finger on the end he gently put the open end of the tube in the bowl of mercury. He then let his finger off. At his surprise the mercury dropped about 6 inches to the 30-inch mark. He marked this point as a reference point so he could notice any changes in the level of the mercury inside the tube.


EVANGELISTA TORRICELLI INVENTS THE BAROMETER

Meet Evangelisti Torricelli
The Maker of the First Barometer

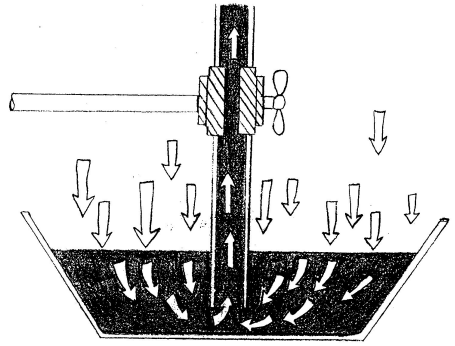
- He set his mercury instrument up in a safe place in his laboratory and observed it many times a day. He put marking on the tube so he could see if the mercury level moved inside the tube. On October 8th he noticed that the mercury dropped below the 30-inch mark. Then a day later he observed that weather had changed and became stormy. One October 11th he noticed that the mercury jumped above 30-inch mark. He observed that the weather was fair a day or two later. He kept track of the changes of the level of the mercury in the tube.



THE HEIGHT OF THE MERCURY CAN VARY FROM DAY TO DAY

Meet Evangelisti Torricelli
The Maker of the First Barometer

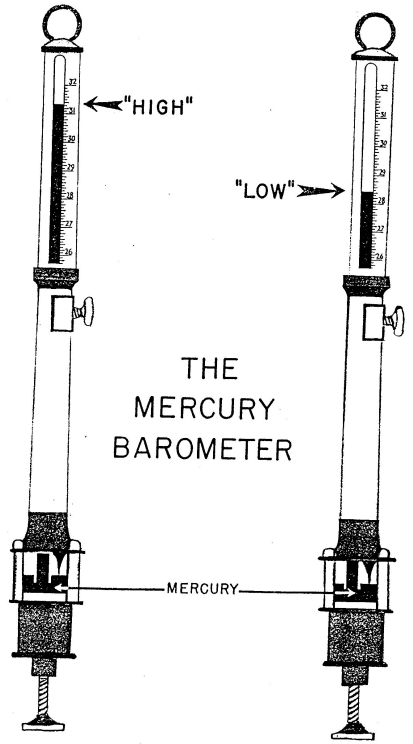
- Torricelli concluded that whenever the level of the mercury was below the 30-inch mark a storm was coming. And, the farther the mercury level was below the 30-inch mark the worse the storm. **This is why we use the word "Low" because the mercury was lower than 30 inches in the tube.** He also concluded that whenever the level of the mercury was above the 30-inch mark, fair weather was in its way. And, the farther the mercury level was above the 30-inch mark the better the weather was going to be. **This is why we use the word "High" because the mercury was higher than 30 inches in the tube.**



HEAVY AIR, PUSHING HARD ON THE MERCURY IN THE BOWL, SHOVED IT FAR UP IN THE TUBE. WHEN THE AIR WAS LIGHT, IT DIDN'T PUSH SO HARD AND SOME OF THE MERCURY RAN FROM THE TUBE DOWN INTO THE BOWL.

Meet Evangelisti Torricelli
The Maker of the First Barometer

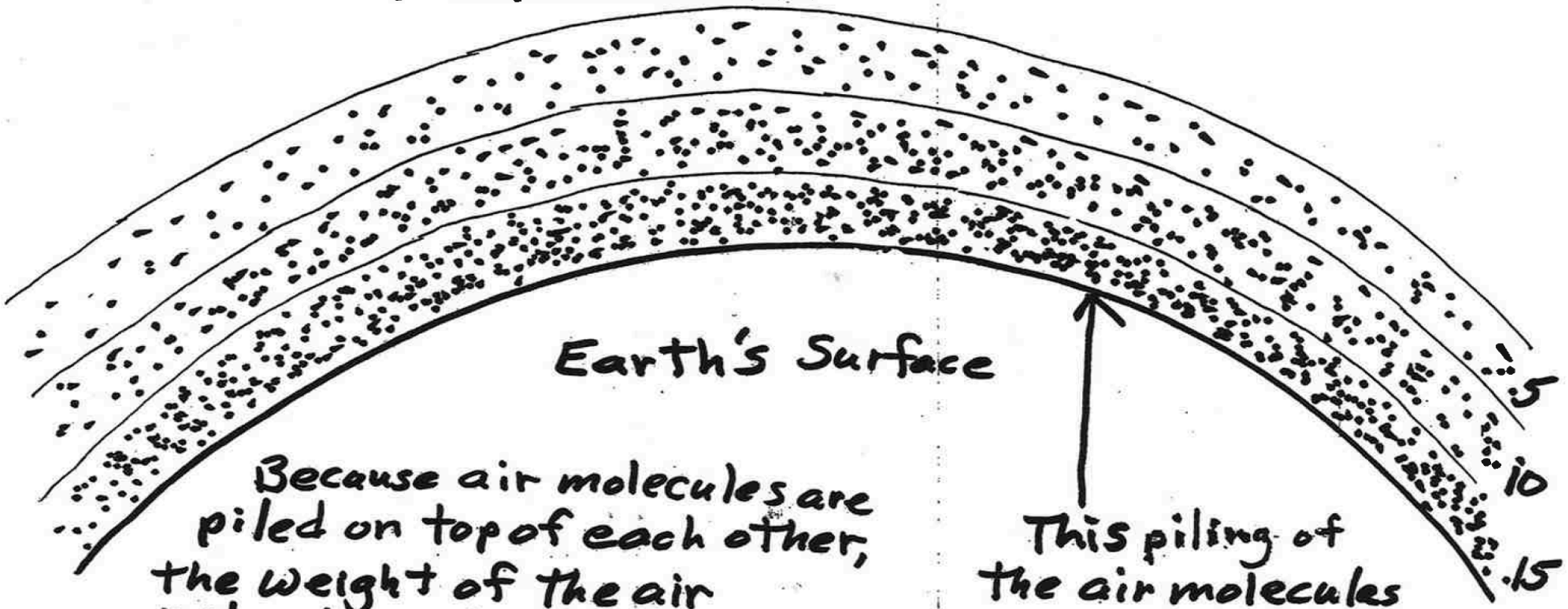
- Meteorologists still use the mercury barometer today, because it is the most accurate instrument to use to measure air pressure change.



Concept #3

The weight of air piled on each other causes air pressure 15 pounds of pressure on Earth's surface.

1. Draw a picture below of the earth showing the air that is above it.
2. Do experiment 6 "Streams of Water" showing what happens when water molecules are piled on each other and they are given an outlet to get out.
3. Continue drawing on the picture what the air molecules really look like when they are piled on each other.
4. Write where there are 15 pounds of pressure at Earth's surface.



Weather Tools For Taking Weather Data

The Barometer

There is air pressure around us all the time. The barometer measure the air pressure around us. Sometimes this air pressure changes because of changes in the atmospheric pressure. When the air pressure changes there is usually a change in the weather. This change could mean cooler temperatures, windy conditions, changing wind directions, and rainy/snowy conditions.

Weather Tools For Taking Weather Data

Anemometer

The anemometer measures how fast the air is moving around us. It may be blowing softly telling us that we will enjoy fair weather for a while, or it may be blowing hard telling us that a low pressure is near and a storm may be coming our way. The wind can be very pleasant or it can do a lot of damage. The harder it blows it may be the bigger the storm.

Weather Tools For Taking Weather Data

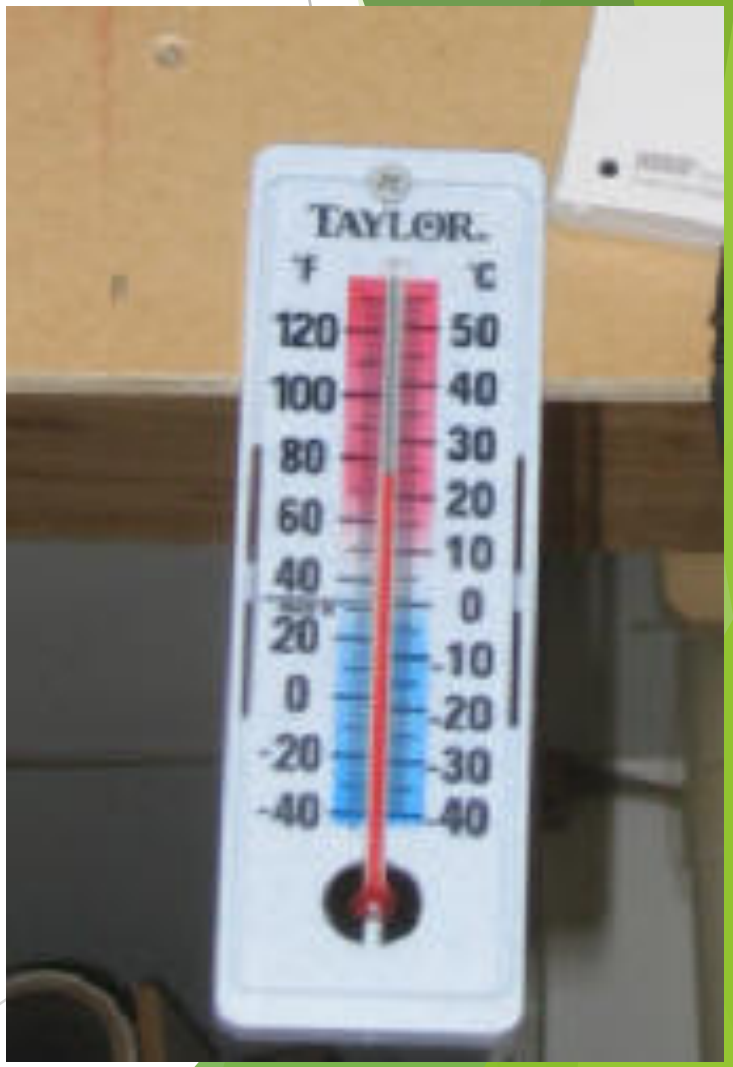
Wind (Weather) Vane

The wind/weather vane tell us from which direction the wind is coming from. It is set up so the arrow points in that direction. The wind hits the back tail and turns it so the arrow will point in the direction the wind is coming from. Many times, a strong wind coming in from the south suggests a storm is on its way.

Weather Tools For Taking Weather Data

Thermometer

The Thermometer measures the temperature of the air around us. The air temperature outside changes constantly. It changes because the sun changes its position in the sky, when the sun goes down at night, ore when the sun goes behind a cloud. It can also change when a high pressure is present or a low pressure is on its way.



Weather Tools For Taking Weather Data

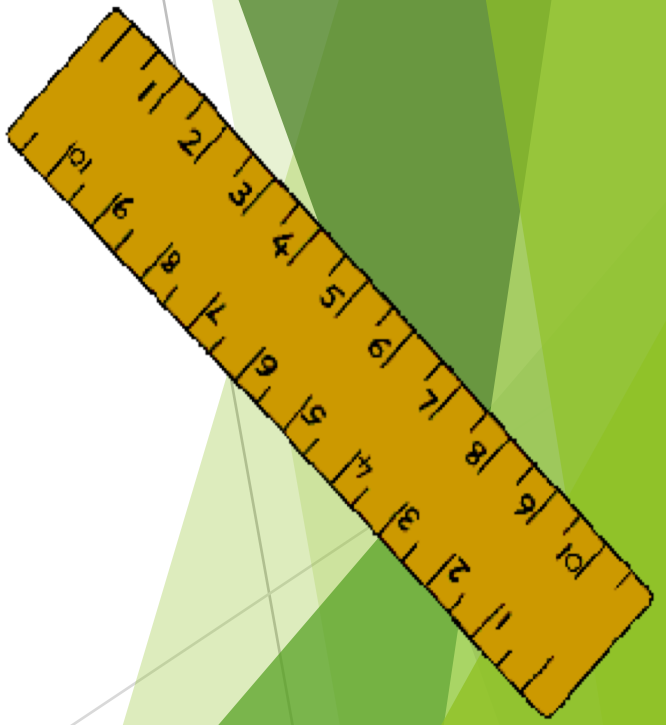
- **Rain Gauge**

The ruler measures the depth of the snow after a snowstorm. After the snow depth is measured, meteorologists will look at the other weather instruments to see what the conditions were like right

Weather Tools For Taking Weather Data

- **Ruler**

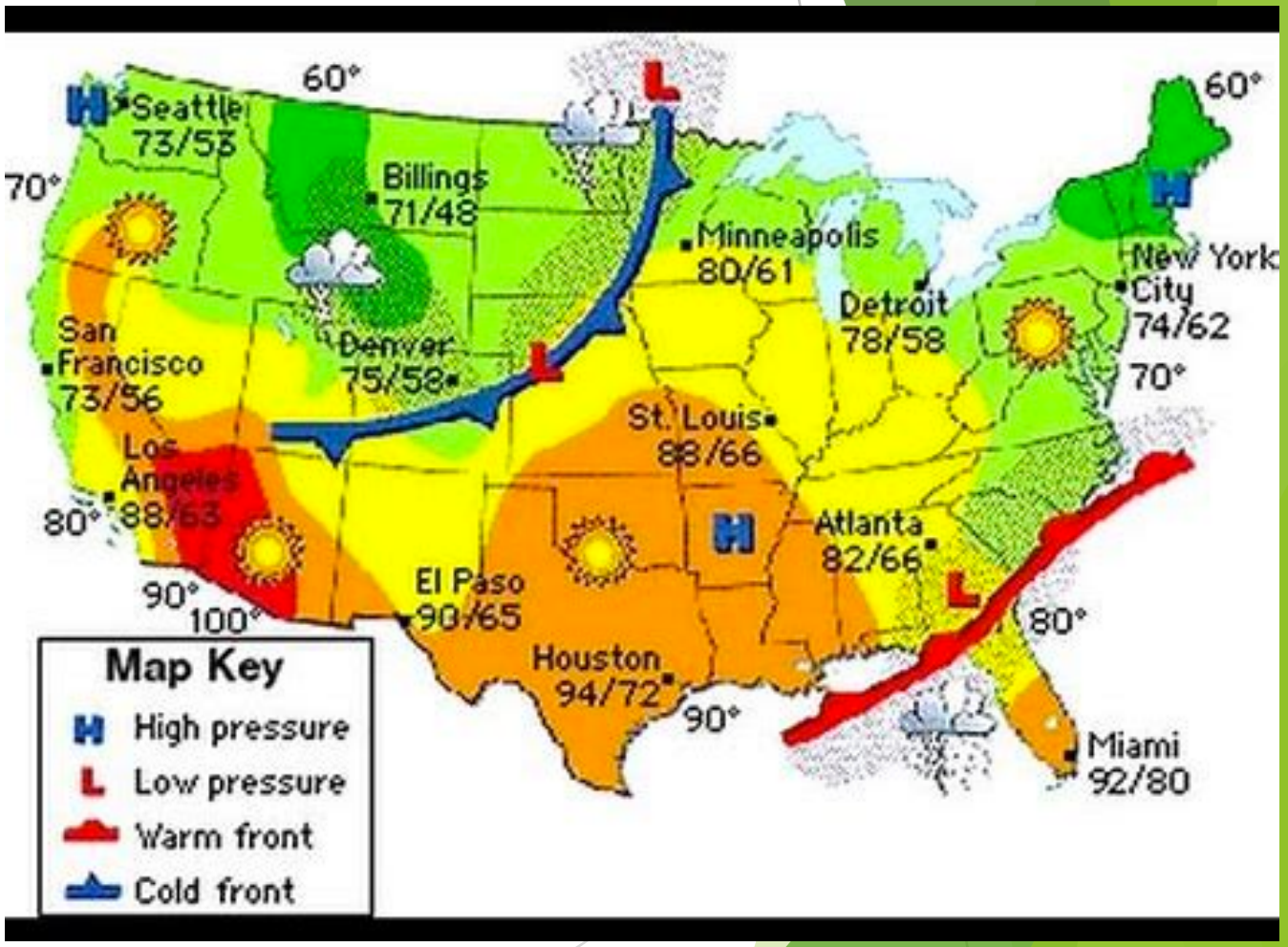
The ruler measures the depth of the snow after a snowstorm.



Forecasting the Weather

- **Predictions:**

After the the rain quantity or snow depth has been measured, meteorologists will look at the data of these weather instruments to see they were reading simultaneously. Doing so helps them predict the weather when they see the same data simultaneously again.



Reading Weather Data

January 5th

Barometric Pressure	29.9
Temperature	40 degrees F
Wind Speed	30 mph
Wind Direction	South
Cloud Types	Cirrus
Cloud Cover	25%
Precipitation	None

January 6th

Barometric Pressure	29.7
Temperature	45 degrees F
Wind Speed	35 mph
Wind Direction	South
Cloud Types	Cirrus and Stratus
Cloud Cover	50%
Precipitation	None

January 7th

Barometric Pressure	29.6
Temperature	50 degrees F
Wind Speed	40 mph
Wind Direction	South
Cloud Types	Mostly Stratus
Cloud Cover	75%
Precipitation	None

January 8th

Barometric Pressure	29.5
Temperature	30 degrees F
Wind Speed	30 mph
Wind Direction	North
Cloud Types	Stratus
Cloud Cover	100%
Precipitation	Snow

January 9th

Barometric Pressure	29.6
Temperature	28 degrees F
Wind Speed	25 mph
Wind Direction	North
Cloud Types	Stratus
Cloud Cover	100%
Precipitation	Snow

January 10th

Barometric Pressure	29.8
Temperature	25 degrees F
Wind Speed	20 mph
Wind Direction	North
Cloud Types	Stratus and Cumulus
Cloud Cover	75%
Precipitation	Light Snow on and off

January 11th

Barometric Pressure	30.3
Temperature	28 degrees F
Wind Speed	10 mph
Wind Direction	East
Cloud Types	Cumulus
Cloud Cover	10%
Precipitation	None

Winter Storms

Typically, winter storms come from the north. The storms that we are having right now are coming from the north and have a lot of cold air behind them. Down in the four corners area, even though the storms are coming in from the north, sometimes the storms will wrap around and blow in from the south sort of like a backlash, but the origin is from the north. I think this is what we have to remember--where the origin of the storm came from. Because of mountain ranges and other physical terrain landscapes it can twist the winds around and so they seem to come in from another direction in other places in Utah. But when there is cold air behind the storm and it gets really cold, it is a storm from the north.

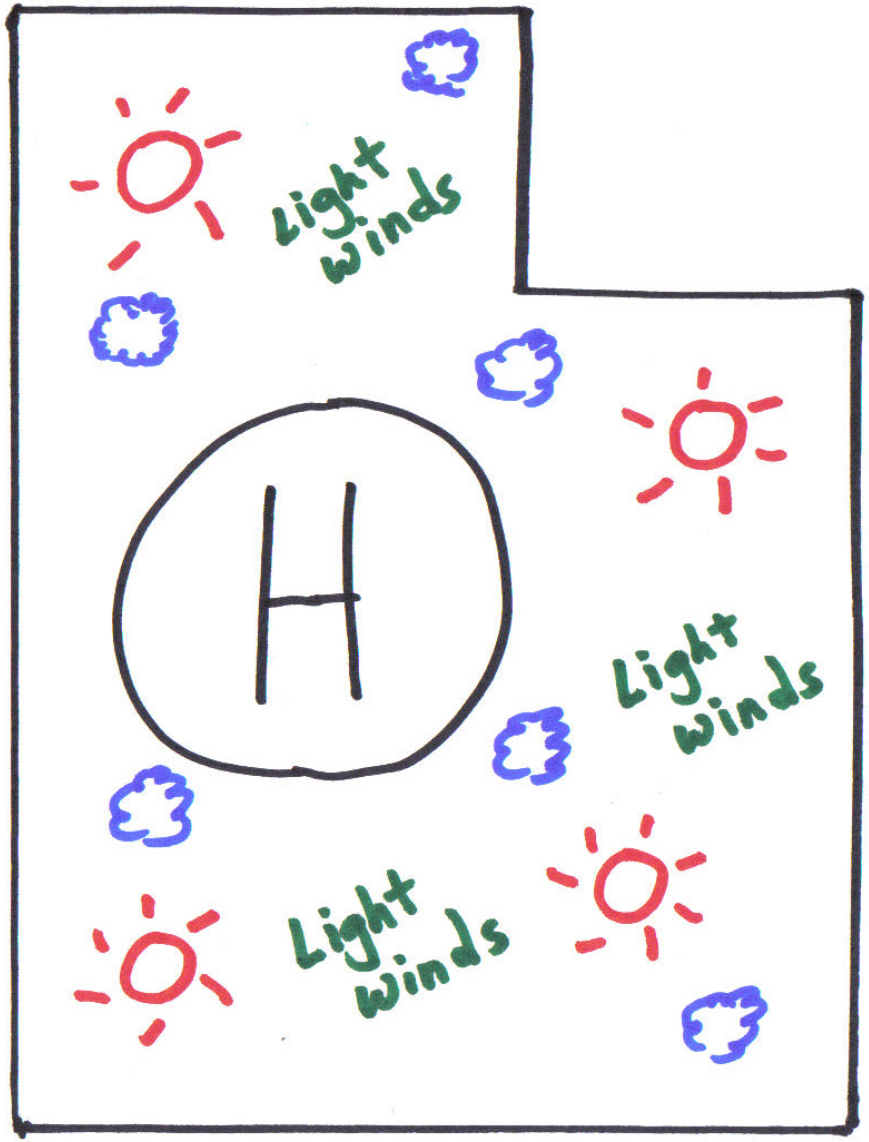
Winter Scenario Pattern of a Traditional Winter Storm*

Basic Weather Elements	Dropping Barometer	Low Barometer	Rising Barometer	High Barometer
Clouds	Cirrus clouds are spotted days earlier in the sky. As the barometer drops, high clouds will form.	Stratus clouds will move in and will stay as long as the barometer stays low.	Stratus clouds will break up then gather continually until the barometer is high.	Skies will clear. Occasional cumulus clouds will appear and disappear.
Wind Direction	The wind usually comes from the south.	The wind will come from the north.	The slight wind could continue to come from the north.	No wind at all or a northwesterly breeze will dominate.
Wind Speed	Wind speed will get stronger and stronger as the barometer keeps dropping.	Strong winds will prevail for a while but will turn light to moderate after the front passes.	The wind speed could be light to moderate.	The wind will be calm or light.
Temperature	The temperature will get warmer because of the south winds.	Temperature will be cooler or cold as long as the barometer is low.	The temperature will still be cooler or cold for a while more.	Will be a gradual warming trend as long as the high pressure is present.
Precipitation	None.	Rain or snow usually will come according to the air temperature.	Rain or snow will be off and on for a while.	None

Remember the barometer predicts what is going to happen in a day or two.
This is what you would expect to happen a day or two later at each of the barometer readings.

Existing High Pressure

- Air pressure above 30.00". (30.23")
- No wind or light winds.
- Progressively getting warmer.
- No clouds or cumulus clouds.
- No precipitation.

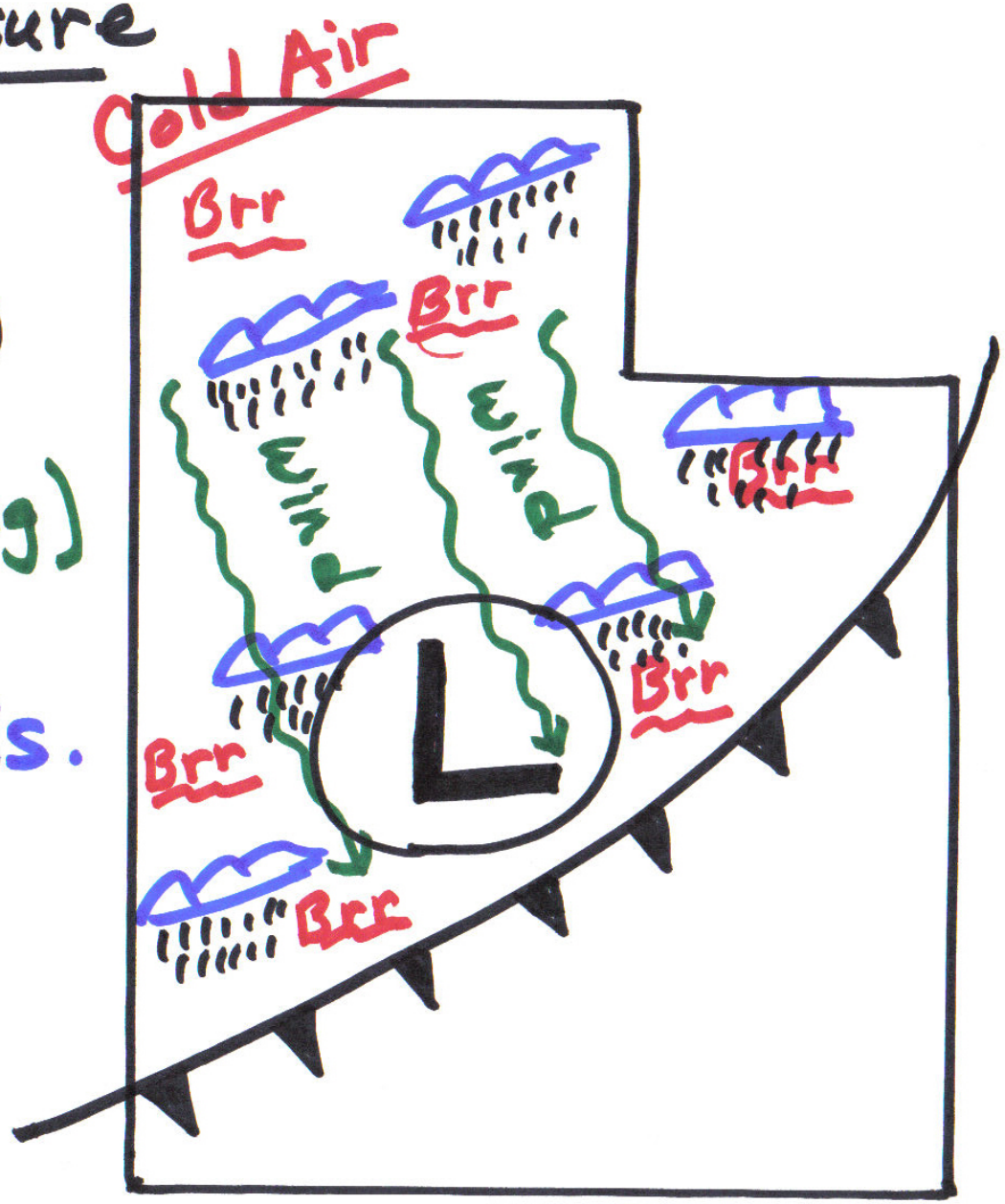


Dropping Pressure

- Air pressure below 30.00", (29.85") ↓ and dropping.
- Strong South winds
- Rising temperature caused by South Wind.
- Cirrus clouds followed by high thin clouds.
- No precipitation.

Existing Low Pressure

- Air pressure reaches lowest point. (29.50")
- North wind. (sometimes strong)
- Cold.
- Stratus Clouds.
- Rain or Snow

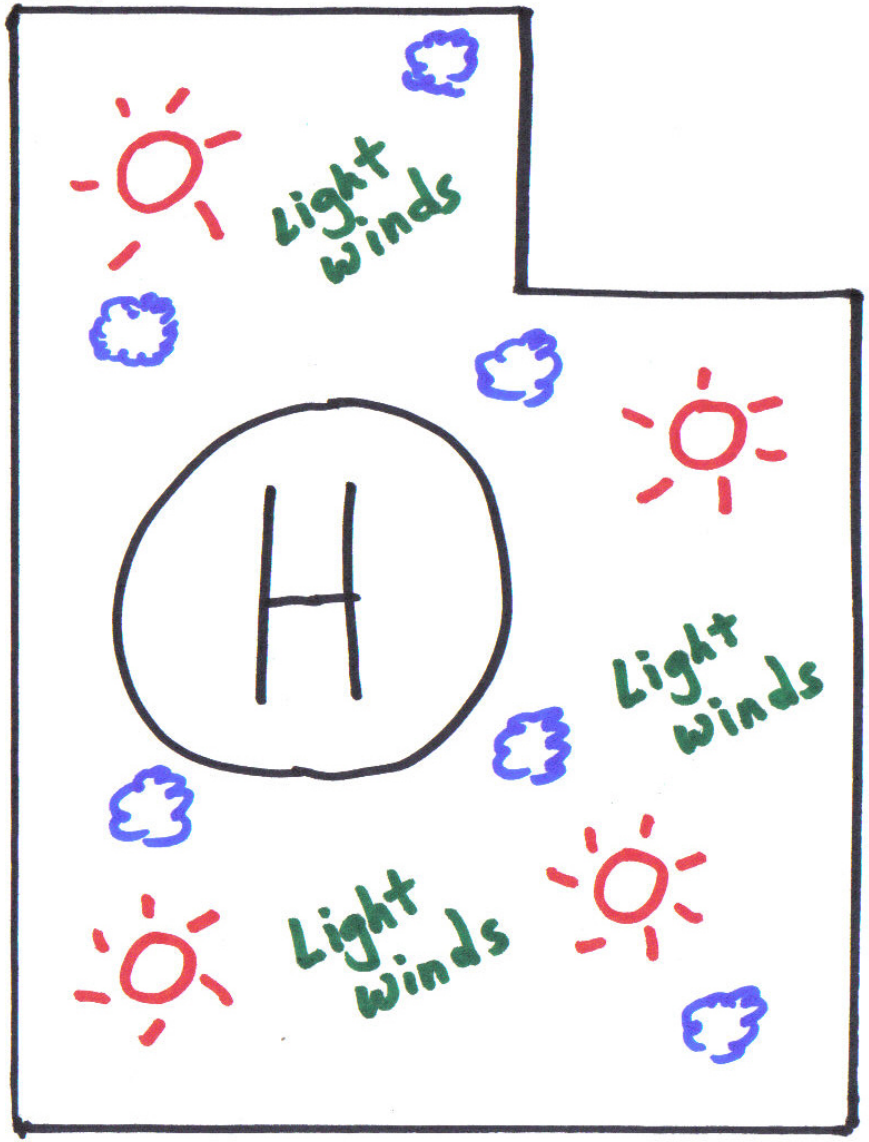


Rising Pressure

- Air pressure below 30.00" but rising (29.75")↑
- North winds weak or stopped.
- Cold temperatures, but slowly on the rise.
- Lingering stratus clouds - breaking up; Partly cloudy skies; Camulus Clouds.
- Rain/snow off and on.

Existing High Pressure

- Air pressure above 30.00". (30.23")
- No wind or light winds.
- Progressively getting warmer.
- No clouds or cumulus clouds.
- No precipitation.

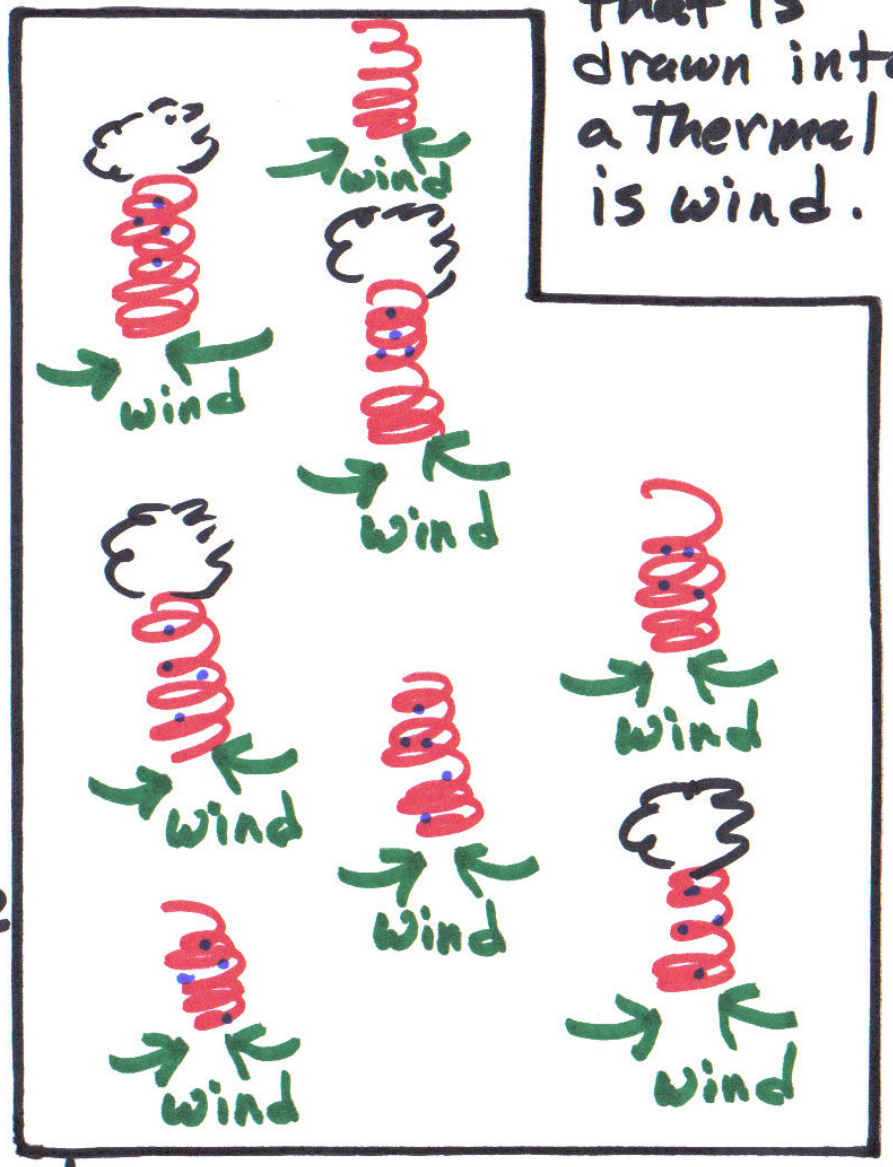


Summer Storms

Usually, summer storms come from the south because the south winds bring in moisture from the Baja/San Diego areas. Then huge puffy cumulonimbus clouds form because of the heat rising. When the air rises the air molecules separate and separate causing a low pressure and causes the air to cool quickly. With moisture in the air and the air rising quickly, and the air molecules separating causing cold air, the moisture in the air turns to clouds. The faster it rises the more huge the clouds will become causing hail, heavy rain, thunder, and lightning. But when the storm is over, it will be cooler outside, but not cold and generally the area won't take long to heat up again. But when a cold front comes in it gets quite cold and the cold air stays around a while until the high pressure that has moved in begins to generate more heat.

Summer Thermals

During the summer the ground gets really warm. The warm ground heats the air. The hot air rises and causes a thermal. A thermal draws in air and sends it upward. If there is any moisture in the thermal it can create a cumulus cloud.



The air that is drawn into a thermal is wind.

Summer Storms

Summer storms are caused by huge cumulo-nimbus clouds. As hot air rises creating a thermal a lot of moisture coming in from the south, west, or east goes up into the thermal. The moisture cools and makes huge rain clouds. The dominating high pressure spins clockwise and brings in this moisture and feeds it into the thermal.

Wherever the high pressure is located that is the area that gets the storms. There is usually strong winds, thunder/lightning, hail or rain with summer storms.

They leave as quickly as the come.

Air Pressure Change and Its Influence on Weather

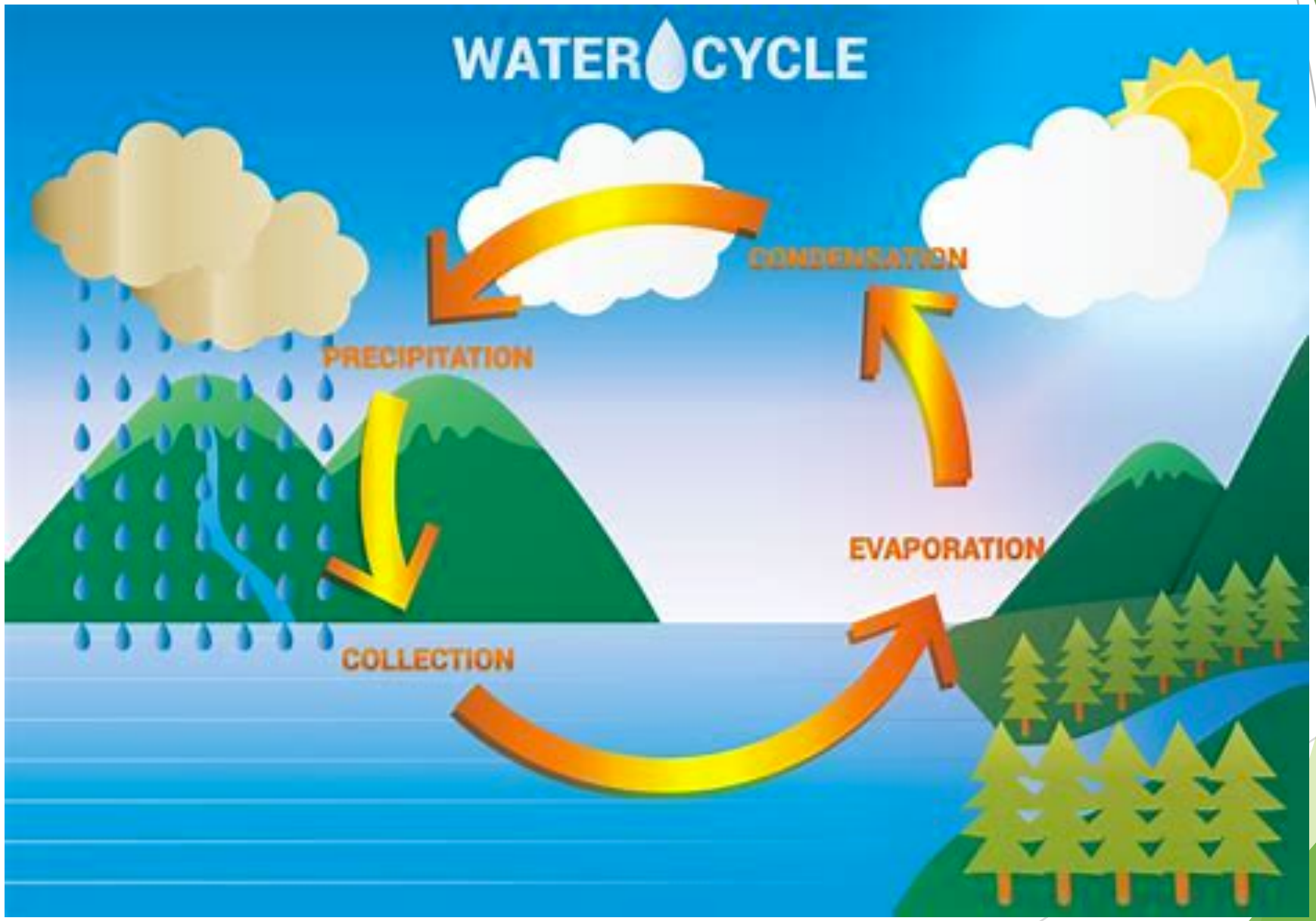
- If we didn't have air and water, we wouldn't have any weather. Water reacting to heat and cold causes the water cycle to happen. Air reacting to heat and cold causes a change in air pressure. This change in air pressure is what makes the water cycle work and can cause all kinds of weather.

- The experiments in this booklet will help you understand the properties of air and its influence on the water cycle and how it creates all kinds of weather.

Air Pressure Change and Its Influence on Weather

1. Air is a substance and therefore it takes up space.
2. Since air is a substance, it also has weight.
3. Air molecules piled on each other cause air pressure.
4. When air is heated it rises.
5. When air is cold it sinks.
6. Air pressure can change to a high or low pressure.
7. High pressure always flows into a low pressure area.
8. A sudden air pressure change in the air causes a change in the weather causing cooler air, wind to blow, and clouds to form.

The Water Cycle



Concept #1
Air is a substance. It takes up space.

Experiment #1 Magic Air

(student experiment)

1. Fill an ice cream bucket with water.

2. Put a small piece of wood on the water.

3. With a glass put the mouth of the bottle over the piece of wood and push the glass all the way down to the bottom of the bucket.

4. Explain what happened. (The phenomenon)

_____

_____

5. Why did the wood do what it did?

_____

_____

6. Draw a picture of what happened and label it.

Concept #1
Air is a substance. It takes up space.

Experiment #2 Staying Dry

(student experiment)

1. Crumple up a piece of paper and place it at the bottom of a drinking glass.

2. Turn the glass upside down (making sure the paper doesn't fall out) and put it open-mouth down into an ice cream bucket.

3. Go all the way to the bottom move it around and then bring it up.

4. Explain what happened? (The phenomenon)

_____

_____

5. Explain why this happened?

_____

_____

6. Draw a picture of what happened and label it.

Concept #1
Air is a substance. It takes up space.

Experiment #3 Air Power

(teacher demonstration)

1. Get a pop bottle and put a funnel in its opening.
2. Seal up the sides with clay so that no air can leak out.
3. With a drinking glass, pour water into the funnel so that water is always in the funnel.
4. After a few seconds what do you observe? (The phenomenon)

_____

_____

5.Explain why this is happening.

_____

_____

6. Draw a picture of what happened and label it.

Concept #2
Air Has Weight

Experiment #4 Tipping the Scale

(student experiment)

1. Put a deflated balloon on one side of a balance.
2. Weigh the balloon with something that is light like corn kernels or macaroni.
3. After it is weighed, blow up the balloon and put it back on the scale.
4. What do you notice about the scale? (The phenomenon)

_____

_____

5. Explain why the scale did this.

_____

_____

6. Draw a picture of what happened and label it.

Concept #2
Air Has Weight

Experiment #5 Air Down Draft

(teacher demonstration)

1. Put a paint stick on a table so that it hangs over the side of it.
2. Hit it with a book.
3. What happened?

_____

4. Put the stick back in the same spot, but this time, put one piece of butcher paper over the stick. Make sure the paper is flat.
5. Hit the stick again with a book.
6. Explain what happened? (The phenomenon)

_____

_____

7. Explain why the stick did this.

_____

_____

8. Draw a picture of what happened and label it.

Concept #3
Air Molecules Piled on Each Other Cause Air Pressure

Experiment #6 Streams of Pressure

(student experiment)

1. In a 2-liter bottle, put four holes evenly apart down the side of the bottle.
2. Put tape over each of the holes. Fill up the bottle up with water to the top.
3. Take the piece of tape off the holes, one at a time, starting from the top.
4. Explain what you see happening. (The phenomenon)

_____

_____

5. Explain why the streams of water did this.

_____

_____

6. Draw a picture of what happened and label it.

Concept #3
Air Molecules Piled on Each Other Cause Air Pressure

The weight of air molecules piled on each other causes 15 pounds of air pressure on Earth's surface.

1. The picture below demonstrates how the air particles are piled on each other about 75 miles up into the air.

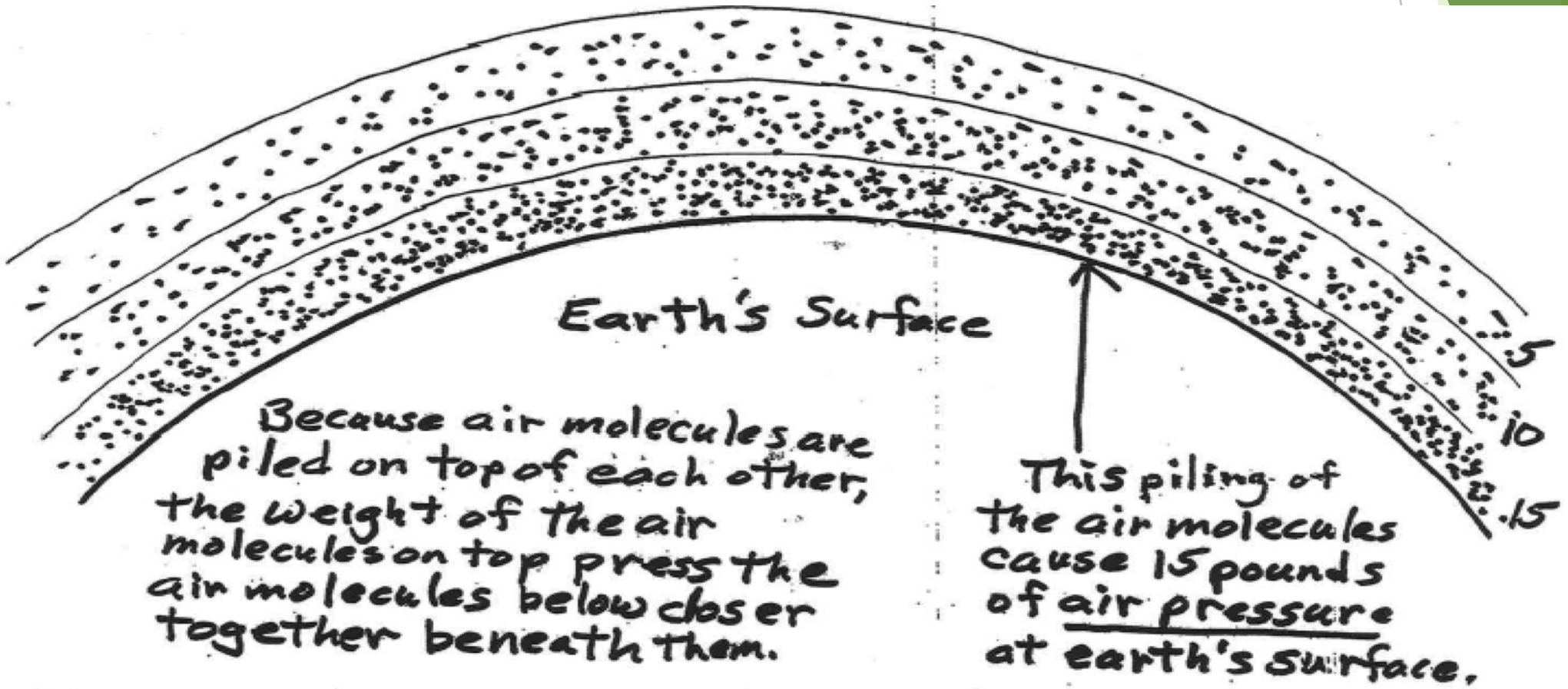
2. Notice that the air particles near the earth are closer together because of the weight of the air particles on top of them.

3. This causes 15 pounds of air pressure at the earth's surface since all the weight is on the air right next to the earth.

4. Notice the farther the air goes up the farther apart the air particles are since there is less weight above them less pressure on them. So as the air goes up, there is less air pressure until there is none at all.

5. Do experiment 6 "Streams of Water" to show what happens when water molecules are piled on each other from bottom to top

Concept #3
Air Molecules Piled on Each Other Cause Air Pressure



Concept #3
Air Molecules Piled on Each Other Cause Air Pressure

Experiment #7 And the Winner is…

(student experiment)

1. Fill up a glass of water to the top. Put a piece of cardstock on the open end of the glass.
2. With the glass over a big bowl carefully turn the glass upside down with your hand on the cardboard.
3. Let go of the cardboard.
4. Explained what happened? (The phenomenon)

_____

_____

5. Why did this happen?

_____

_____

6. Draw a picture of what happened and label it.

Concept #3
Air Molecules Piled on Each Other Cause Air Pressure

Experiment #8 The Case of the Leaky Can

(student experiment)

1. Get a V-8 size can and, with a nail, put a hole near the bottom of the can. Put tape over the hole and then put water in the can to the near of the top.

2. Cut the mouthpiece off of a balloon. Now stretch the balloon over the top of the can.

3. Take the tape off.

4. What do you see happening to the balloon and the water? (The phenomenon)

_____

_____

5. Explain why this happened?

_____

_____

6. Draw a picture of what happened and label it.

Concepts #4 and #5
Air Separates and Rises when Heated.
Air Gathers and Sinks When Cooled.

Experiment #9 Air Outlet—Air Inlet

(student experiment)

1. Put a plastic bottle in very cold water (with ice) and place a balloon over the top of a plastic bottle.

2. Put the plastic bottle in hot water. Wait a couple of minutes.

3. Explain what happened to the balloon? (The phenomenon)

_____

_____

4. Why did this happen to the balloon?

_____

_____

5. What can you say about air that gets hot?

_____

_____

6. **Take the bottle out of the hot water and it put in the cold water.**

7. Explain what happened to the balloon this time. (phenomenon)

_____

_____

8. Why did this happen to the balloon?

_____

_____

9. What can you say about air that gets cold?

_____

_____

10. Draw a picture of what happened and label it.

Concepts #4 and #5
Air Separates and Rises when Heated.
Air Gathers and Sinks When Cooled.

Experiment #10 Too Much Hot Air

(teacher demonstration)

1. Tie a string around the middle of a stick so that the stick is balanced when the string is held. Tape two sacks with strings at each end of the stick. Open the sacks.

2. While holding the sack, put a barbeque lighter under one of the sacks.

3. What do you observe? (The phenomenon)

_____

_____

4. Take the lighter away from the sack. What do you observe now?

_____

_____

5. Explain why the sacks did what they did.

_____

_____

_____

_____

6. Draw a picture of what happened and label it.

Concepts #6
Air Pressure Can Change to a High Pressure Or to a Low Pressure

Experiment #11 Squeeze and Release

(student experiment)

1. Squeeze a plastic bottle (like a 12 oz pop bottle) until the two sides are really about an inch away from each other.

2. At this point have your partner put a balloon over the opening of the bottle. The balloon should just be hanging down the side of the bottle.

3. Let go of the bottle.

4. Explain what happened to the balloon. (The phenomenon)

_____

_____

5. Explain why you think the balloon did this.

_____

_____

6. Push on the plastic bottle again until the two sides almost touch. Explain what happened to the balloon.

_____

_____

7. Explain why you think the balloon did this.

_____

_____

8. Draw a picture of this and label it.

Concepts #7
High Air Pressure Always Flows Into a Low Pressure Area

Experiment #12 Message in a Bottle

(teacher demonstration)

1. Get a hardboiled egg and a bottle with an opening that a shelled-egg could barely fit through.

2. Lubricate the egg with light cooking oil or water.

3. Put a lit match into the glass bottle.

4. Quickly place the tapered end of the egg in the mouth of the bottle.

5. Explain what happened? (The phenomenon)

_____

_____

6. Explain why this happened.

_____

_____

7. Draw a picture of what happened and label it.

Concepts #7
High Air Pressure Always Flows Into a Low Pressure Area

Experiment #13 Popping the Lid

(teacher demonstration)

1. Get a pint-sized canning jar with a lid.

2. Put some birthday candles in some clay and place the clay at the bottom of the jar.

3. Light the candles and quickly screw the lid on the jar. Watch and listen to what happens.

4. Explain what you heard and saw. (The phenomenon)

_____

_____

5. Explain why this happened.

_____

_____

6. . Draw a picture of what happened and label it.

Concepts #7
High Air Pressure Always Flows Into a Low Pressure Area

Experiment #14 Rising to the Occasion

(teacher demonstration)

1. Get a flat low-rimmed container like a cake pan. Put some water in it about an inch deep. Put some food coloring in the water. (This is so you can see the water.)

2. Put some clay in the middle of the pan.

3. Put some birthday candles in the clay making sure the water is not higher than the candles.

4. Light the candles.

5. Put a wide-mouthed bottle over the candles into the water.

6. What is happening in the jar? (The phenomenon)

_____

_____

7. Explain why this happened.

_____

_____

8. Draw a picture of this and label it.

Concepts #7
High Air Pressure Always Flows Into a Low Pressure Area

Experiment #15 The Bottle Crush

(teacher demonstration)

1. Get a two-liter bottle with a lid.
2. Put a cup of hot water in the bottle.
3. Pour the water out.
4. Put the lid on it.
5. Explain what happened to the bottle. (The phenomenon)

_____

_____

6. Explain why you think this happened to the bottle.

_____

_____

7. Draw a picture of this.

Concepts #8
Sudden Change in Air Pressure Causes Clouds to Form

Experiment #16 Making a Cloud in a Bottle

(student experiment)

1. Get a two-liter bottle and put two inches of luke-warm water into the bottle for evaporation.

2. Put some baby power in the bottle for dust.

3. Put a cork on the bottle with an inflation needle in it.

4. Put a ball pump on bottle opening..

5. With one student holding the cork, another student will put about five pumps of air into the bottle to create a high pressure.

6. Turn out the lights and turn the flashlights on and aim the light directly into the bottle keeping it there the whole time during the experiment.

7. Quickly pull the cork off the bottle.

8. Explain what you see in the bottle. (The phenomenon)

_____

_____

Concepts #8
Sudden Change in Air Pressure Causes Clouds to Form

Experiment #16 Making a Cloud in a Bottle

(Continued)

(student experiment)

9. Explain why this happened.

_____

_____

_____

_____

_____

_____

10. Put the cork back on and put five more pumps of air into the bottle. (But don't pull the cork off.)

11. Explain what happened in the bottle. (The phenomenon)

_____

12. Explain why this happened.

_____

_____

_____

_____

13. Predict what will happen when you take the cork off the bottle again when there is high pressure inside the bottle.

_____

14. Draw a picture below of what happened and label it.

Winter Scenario Pattern of a Traditional Winter Storm*

Basic Weather Elements	Dropping Barometer	Low Barometer	Rising Barometer	High Barometer
Clouds	Cirrus clouds are spotted days earlier in the sky. As the barometer drops, high clouds will form.	Stratus clouds will move in and will stay as long as the barometer stays low.	Stratus clouds will break up then gather continually until the barometer is high.	Skies will clear. Occasional cumulus clouds will appear and disappear.
Wind Direction	The wind usually comes from the south.	The wind will come from the north.	The slight wind could continue to come from the north.	No wind at all or a northwesterly breeze will dominate.
Wind Speed	Wind speed will get stronger and stronger as the barometer keeps dropping.	Strong winds will prevail for a while but will turn light to moderate after the front passes.	The wind speed could be light to moderate.	The wind will be calm or light.
Temperature	The temperature will get warmer because of the south winds.	Temperature will be cooler or cold as long as the barometer is low.	The temperature will still be cooler or cold for a while more.	Will be a gradual warming trend as long as the high pressure is present.
Precipitation	None.	Rain or snow usually will come according to the air temperature.	Rain or snow will be off and on for a while.	None

Remember the barometer predicts what is going to happen in a day or two.
This is what you would expect to happen a day or two later at each of the barometer readings.

The Water Cycle