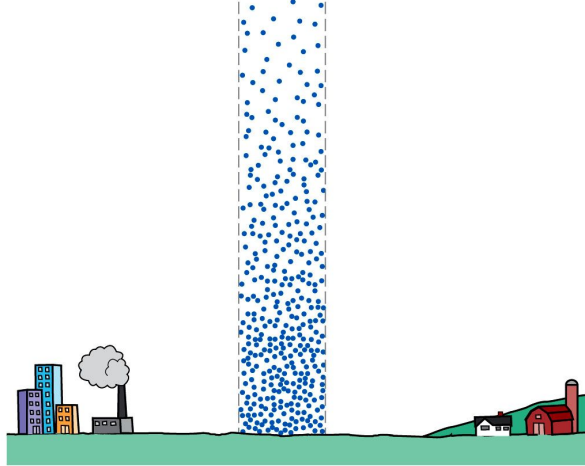


Weather Analysis and Cloud Formation

Vocabulary

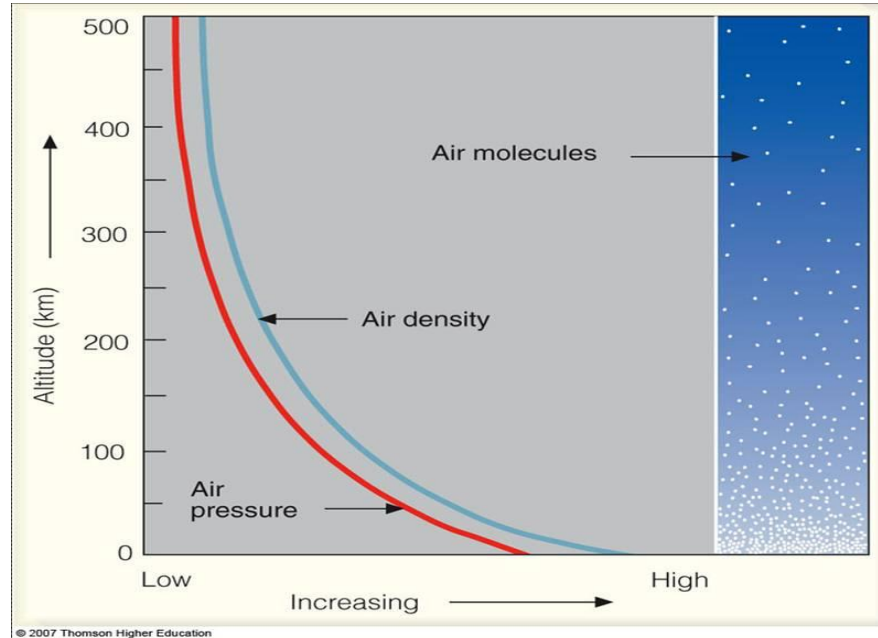
air pressure

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Vocabulary

Air density



Vocabulary

temperature



Vocabulary

severe weather



Vocabulary

thunderstorms



Vocabulary

tornado



Vocabulary

hurricane



Vocabulary

wind



Vocabulary

thermometer



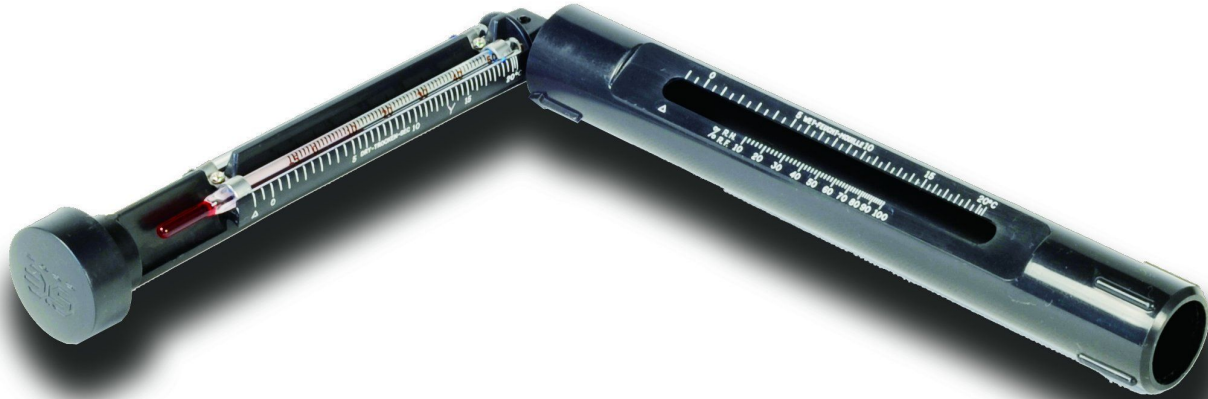
Vocabulary

barometer



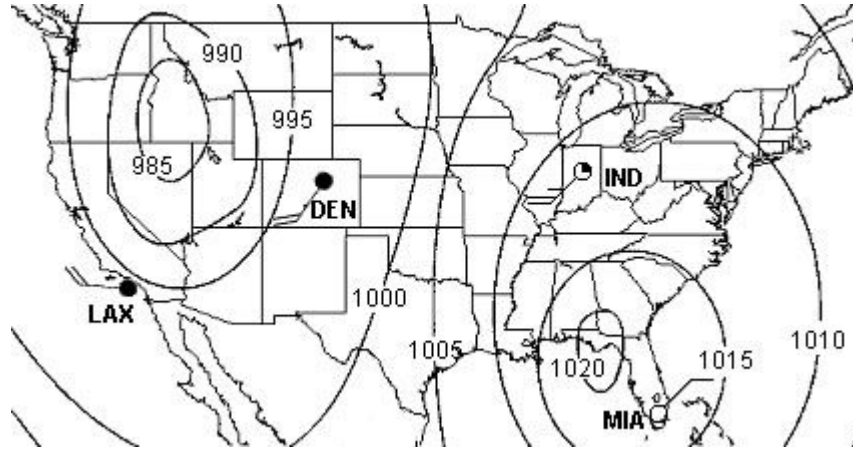
Vocabulary

psychrometer



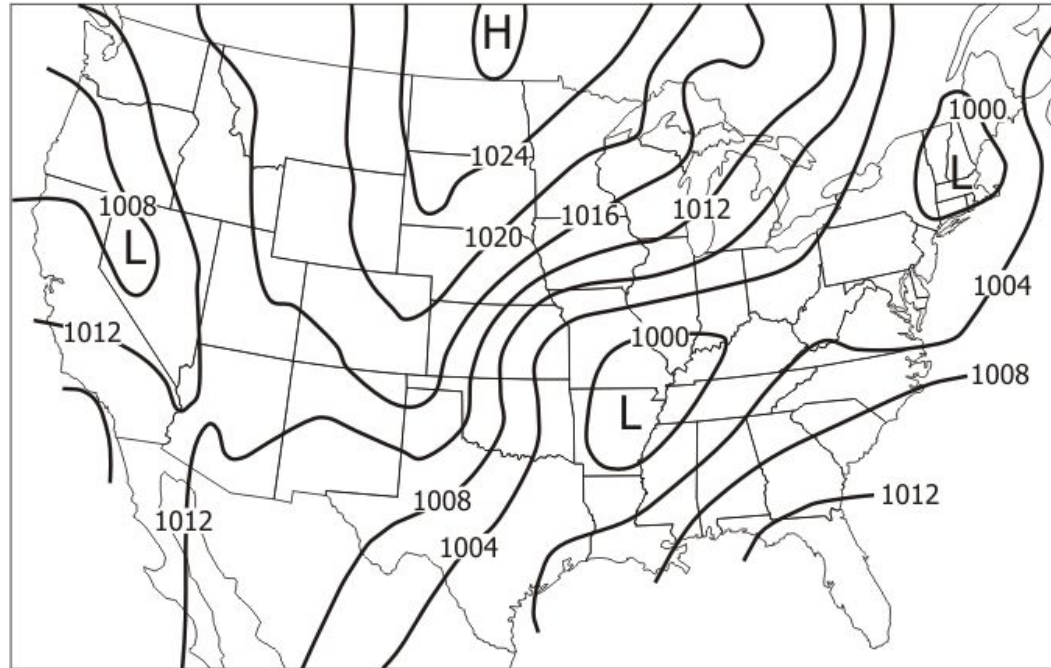
Vocabulary

isolines



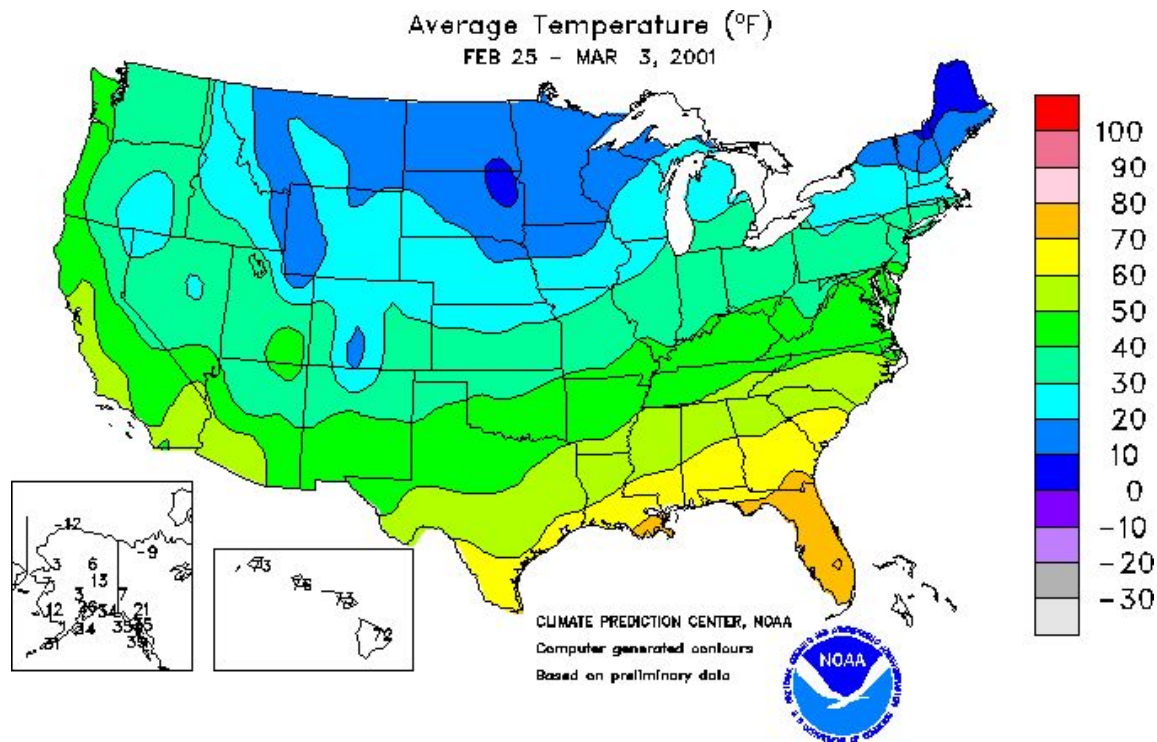
Vocabulary

isobars



Vocabulary

isotherms

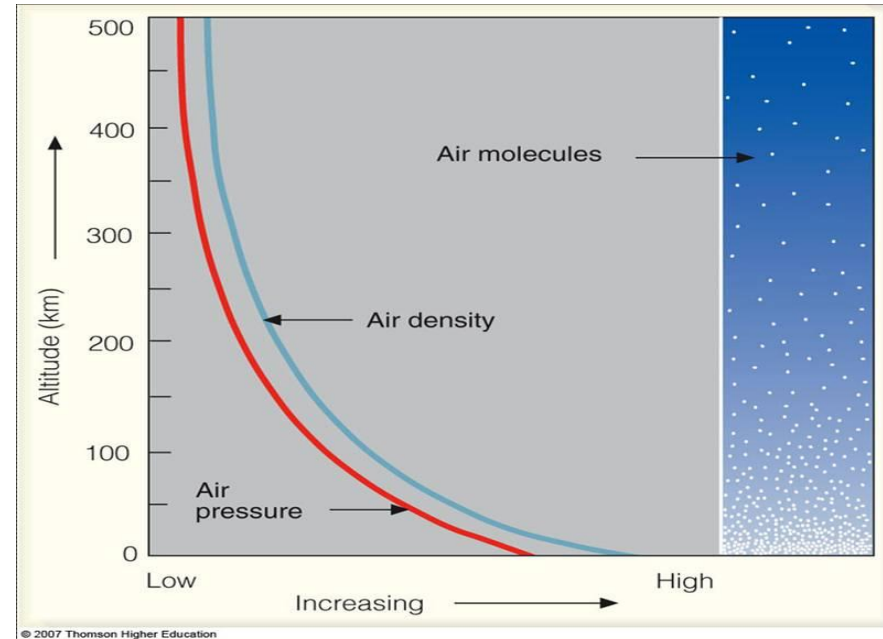




Air Masses, Fronts

Air Density

- **Air Density** is the amount of air contained in a specific volume



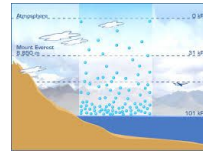
Air Density

- Factors that affect air density:

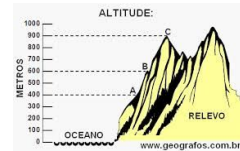
a. **Temperature** -As temperature increases, air density decreases



b. **Air Pressure** - As pressure increases, air density increases



c. **Altitude** - As altitude increases, air pressure and density decreases



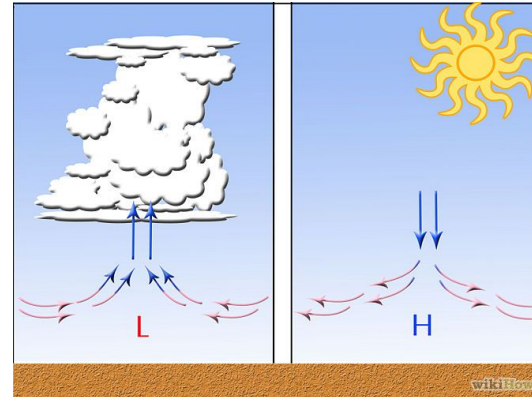
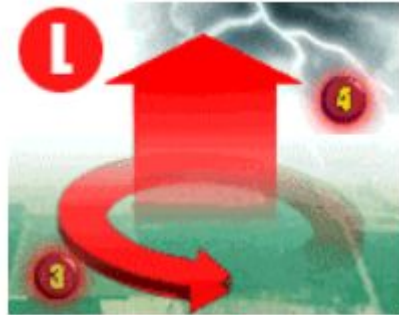
d. **Humidity** - As humidity (moisture in the air) increases, air density decreases



Air Pressure

Unequal heating of the Earth's surface creates large areas of warm, rising air

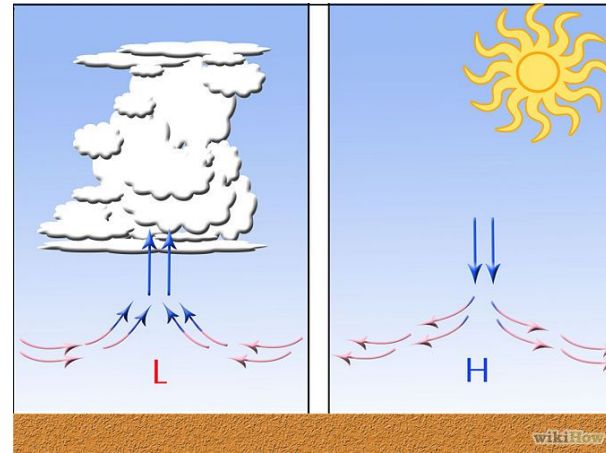
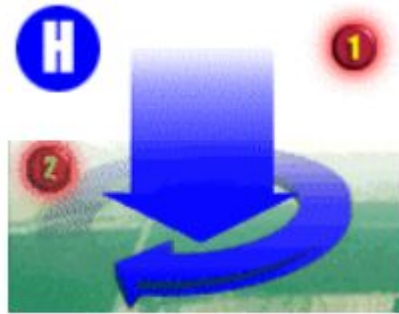
- This creates areas of **low pressure**
- **Leads to clouds and stormy weather**



Air Pressure

Areas where there is cooler, sinking air creates areas of **high pressure**

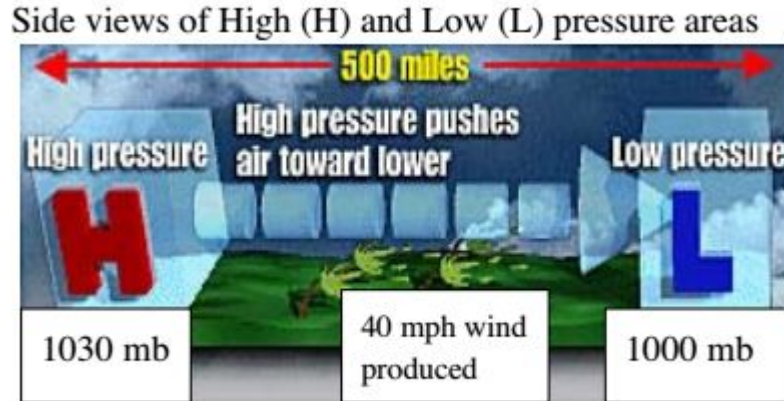
- Leads to air drying out, leaves sunny skies



Wind

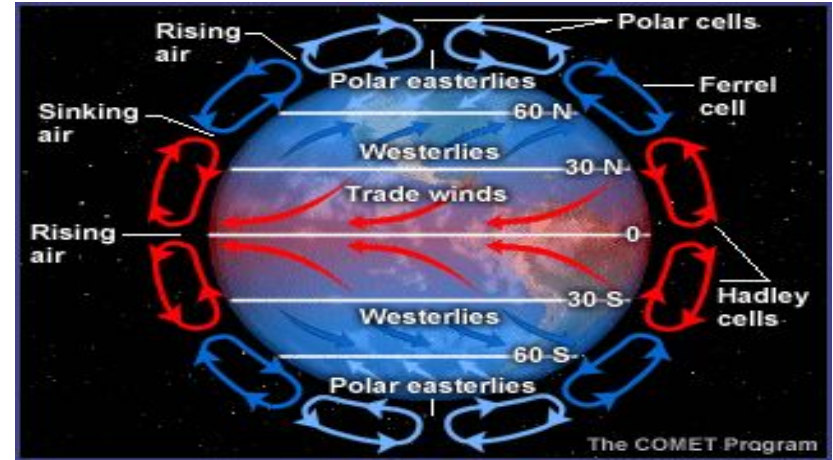
Due to surface pressure differences, air is forced from areas of **high pressure** to areas of **low pressure**.

- The effect is called **wind**!
- The more difference in air pressure, the stronger the wind.



Wind Systems

Due to the **Coriolis Effect**, wind turns **clockwise** in the Northern Hemisphere and **counterclockwise** in the Southern Hemisphere.



Weather Analysis

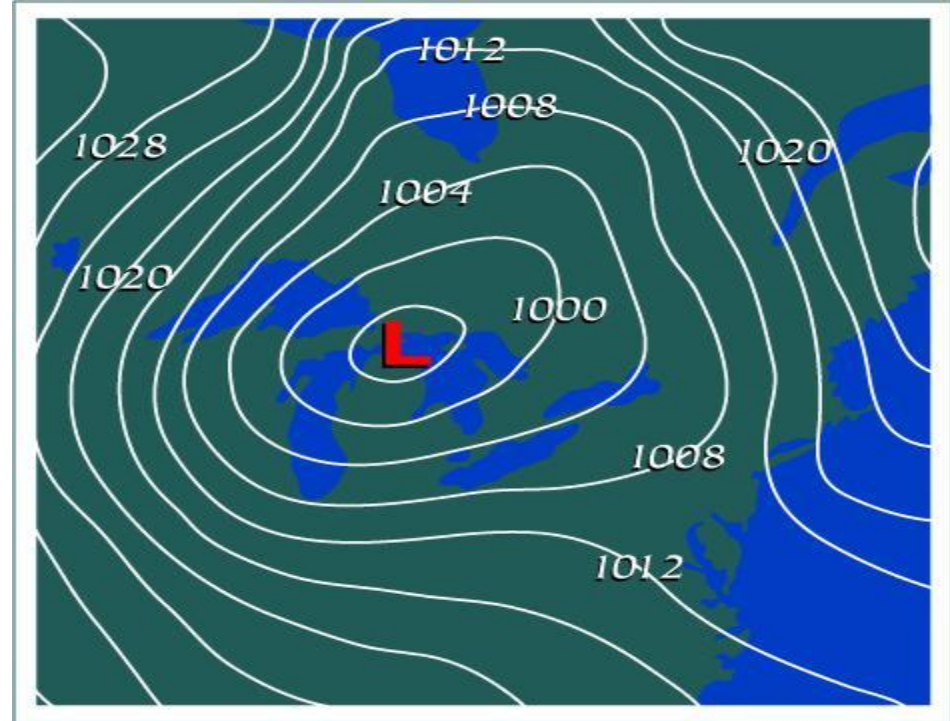


Gathering Weather Data

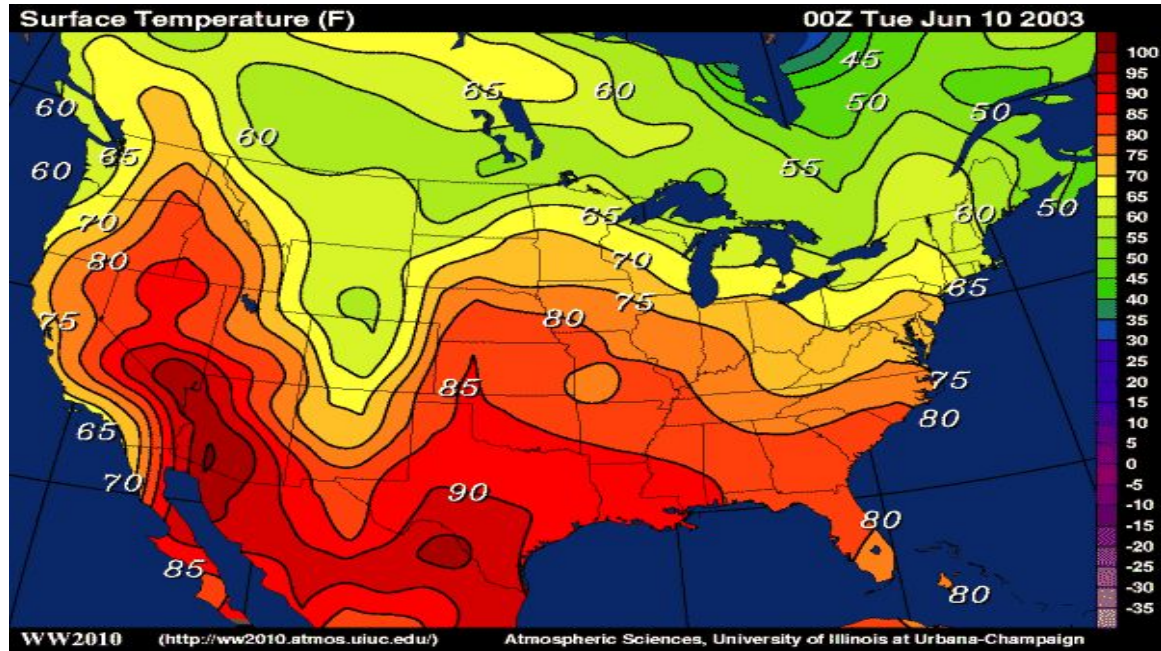
- Meteorologists use the following tools to **gather information about weather conditions**
 - **Thermometer** - Measures **temperature**
 - **Barometer** - Measures **air pressure**
 - **Storms** generally form in **low pressure systems**

Weather Maps

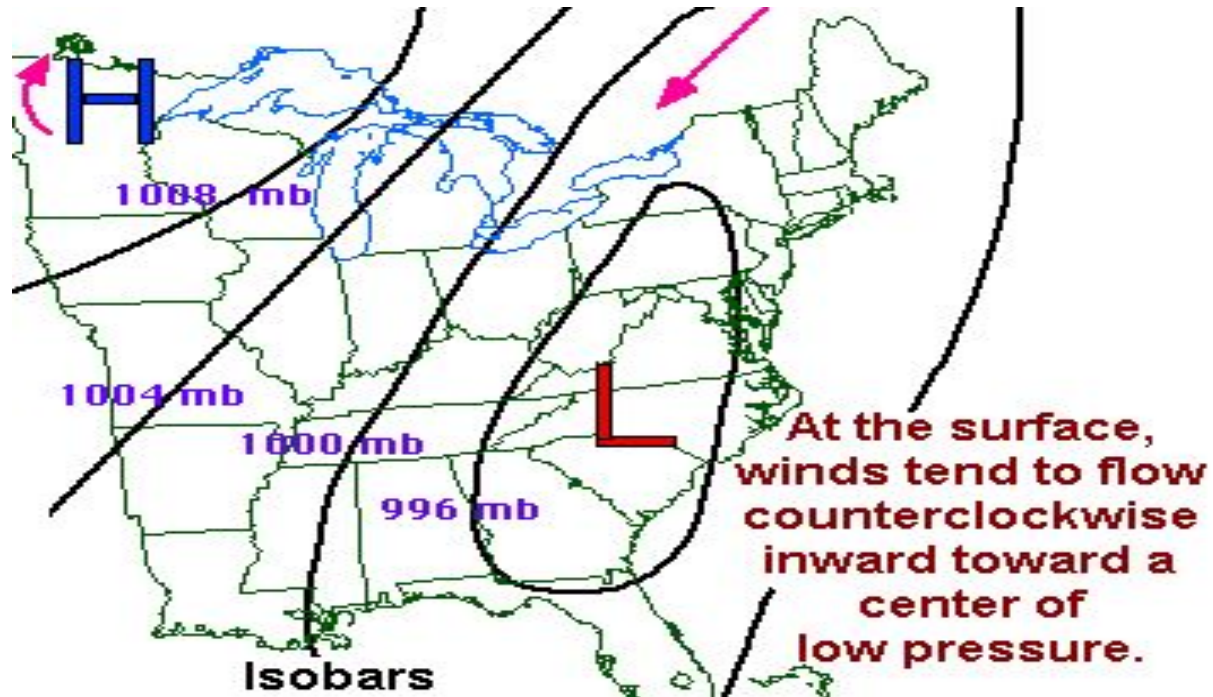
- Meteorologists use **isolines** on weather maps to show **areas of similar conditions**
- **Isolines** - Connect points of the same quantity
 - **Isobars** - Connect points of equal **pressure**
 - **Isotherms** - Connect points of equal **temperature**



Isotherms



Isobars



Vocabulary Puzzles

1. I am going to pass out vocabulary words and definitions.
2. You have 3 minutes and 25 seconds to find the person who has either the matching WORD or matching DEFINITION to yours.
3. When you find that person, read the word and definition out loud to one another.
4. Sit down together.
5. Be ready to share your word and definition out loud.

Vocabulary

Dew point



Vocabulary

humidity



Vocabulary

nimbus



Vocabulary

Stratus



Vocabulary

Cumulus



Vocabulary

Cirrus



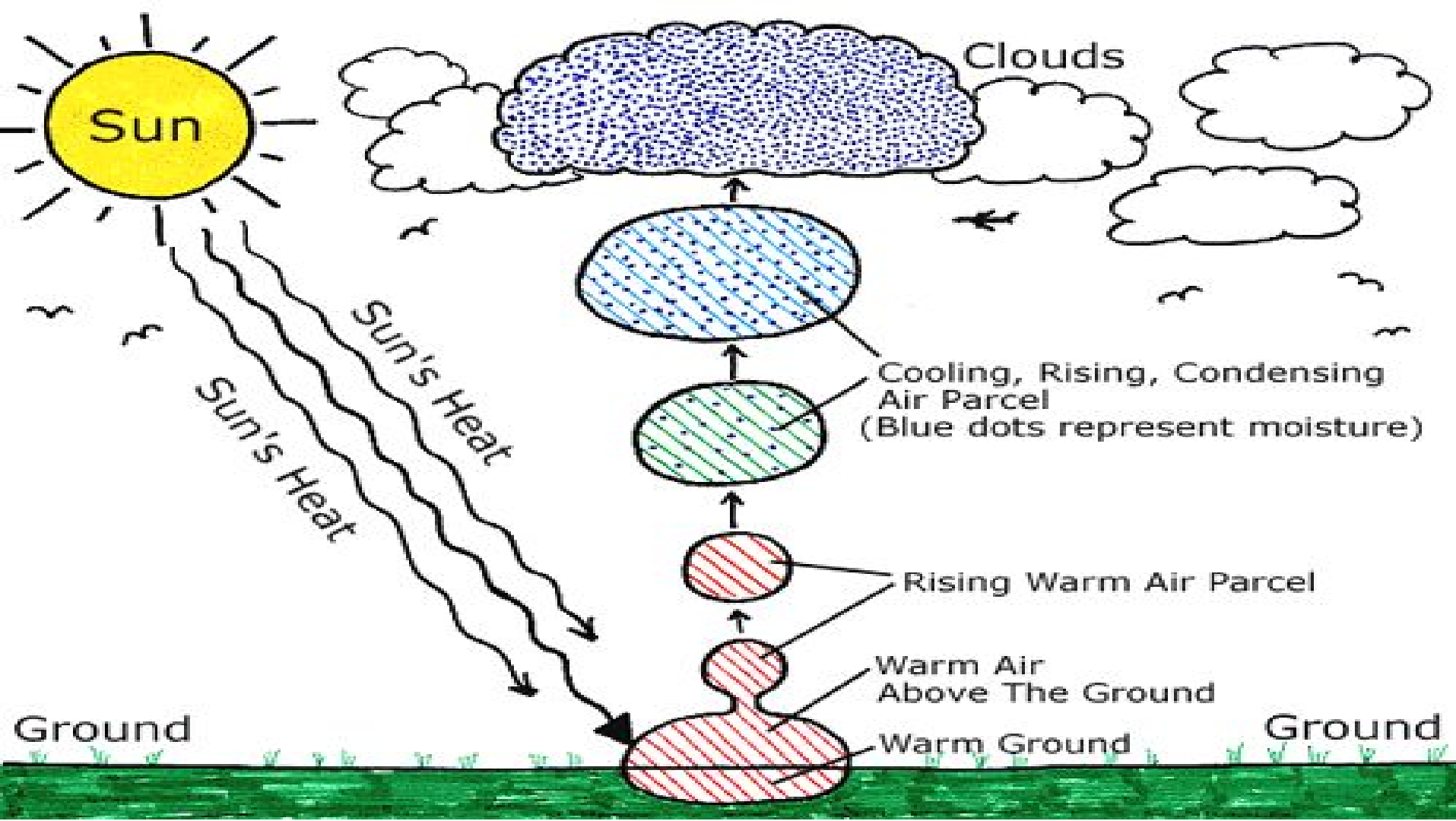
A photograph of a bright blue sky filled with various cloud formations. The clouds range from small, wispy white clouds to larger, more dense grey clouds. The text 'Cloud Formation' is overlaid in the center-left of the image.

Cloud Formation

Cloud Formation

- Clouds form when warm moist air **rises**, **expands** and then **cools**





Dew Point

- **Dew point** is the temperature to which air must cool to reach condensation



Humidity

- **Humidity** is the amount of water vapor in the air
- **Relative Humidity** is the ratio of water vapor in air relative to how much water vapor the air can hold



Gathering Weather Data

Scientists use a **psychrometer** to measure differences in reading between two thermometers

- Measure **relative humidity**



Cloud Classification

- Clouds are classified based on their height



Cloud Classification

- **Nimbus** - Describes low, gray rain clouds



- **Stratus** - Describes featureless sheets of clouds



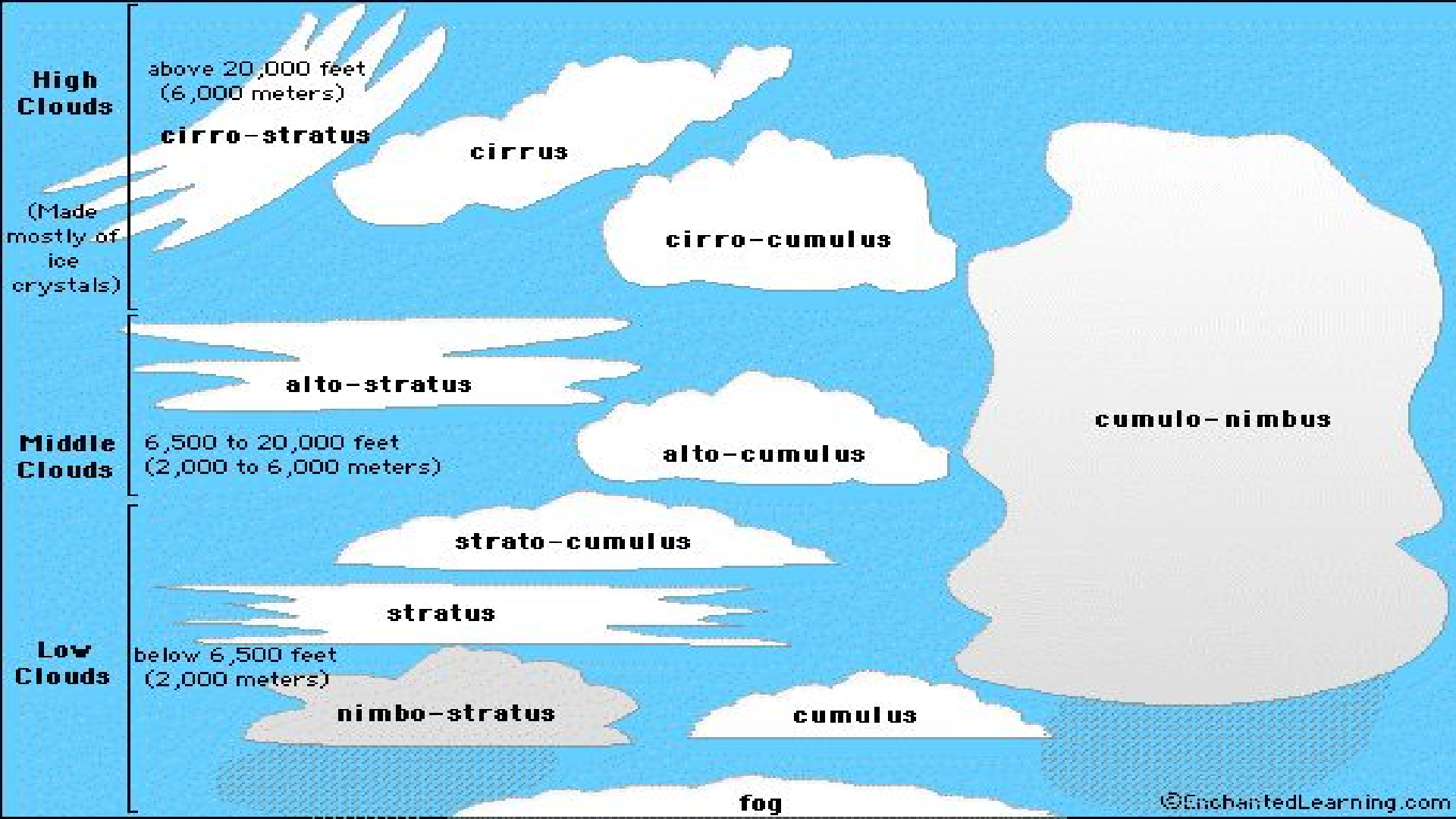
Cloud Classification

- **Cumulus** - Describes puffy, lumpy looking clouds



- **Cirrus** - Describes wispy, stringy clouds





High Clouds

(Made mostly of ice crystals)

above 20,000 feet
(6,000 meters)

cirro-stratus

cirrus

cirro-cumulus

Middle Clouds

6,500 to 20,000 feet
(2,000 to 6,000 meters)

alto-stratus

alto-cumulus

strato-cumulus

Low Clouds

below 6,500 feet
(2,000 meters)

stratus

nimbo-stratus

cumulus

fog

cumulo-nimbus

Precipitation

- **Precipitation** occurs when enough water droplets have accumulated inside a cloud due to **condensation**

- Rain



- Snow



- Sleet



- Hail

