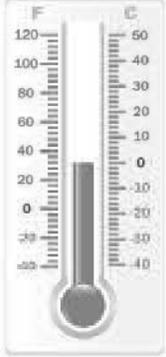# WILD WEATHER STUDY GUIDE

Meteorologists use weather data to forecast weather. The instruments below are some of the tools meteorologists use to collect data.

Thermometer	Baromometer	Rain Gauge	Anemometer
Measures the amount of heat energy in the air.	*Measures the amount of air pressure*	*Measures the amount of precipitation*	*Measures wind speed*

AIR PRESSURE

Air pressure is the force created by the weight of air molecules. It is constantly changing due to temperature and wind. Air pressure can help forecast weather.

HIGH PRESSURE

Areas of high pressure often indicate fair weather. On a weather map, high pressure areas are shown with a large blue capital **H**

LOW PRESSURE

Areas of low pressure often indicate rainy or stormy weather. On a weather map, low pressure areas are shown with a large red capital **L**
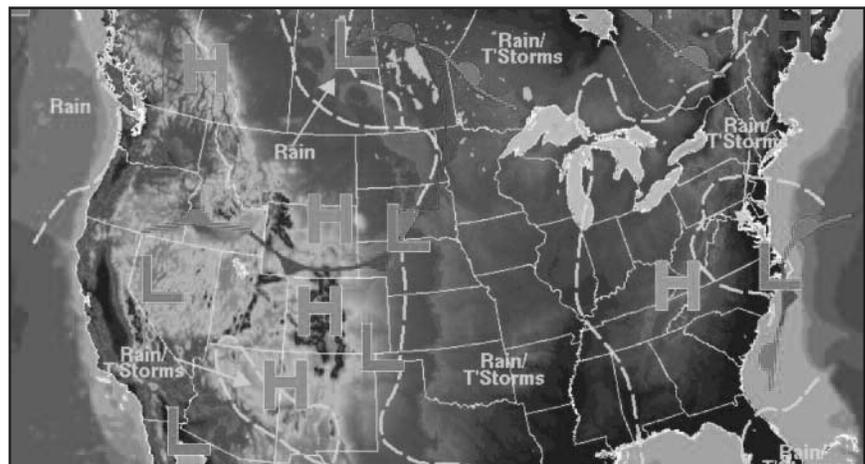
FRONTS

Fronts describe the boundaries between different masses of air.

COLD FRONT

A mass of cooler air is approaching a mass of warmer air. Cold fronts are shown on a map as a line of blue triangles. The blue triangles point in the direction the mass is moving. Cold fronts bring cooler temperatures.

WARM FRONT

A mass of warmer air is approaching a mass of cooler air. Warm fronts are shown on a map as a line of red semicircles. The side of the line that the semicircles are on is the direction the mass is moving. Warm fronts bring warmer temperatures.

Find the following on this weather map:
- *A high pressure area*
- *A low pressure area*
- *A cold front*
- *A warm front*

CLOUDS

Clouds can help forecast the weather.

Cumulus	Stratus	Cumulo-nimbus	Cirrus
• *Fluffy white clouds with flat bottoms* • *Usually indicate fair weather*	• *Smooth, gray clouds that block sunlight and cover the sky* • *Often indicate light rain or drizzle*	• *Cumulus clouds that grow in height and darken on the bottom* • *Usually indicate thunderstorms*	• *Feathery, wispy clouds* • *Indicate fair weather now but often mean that rain or snow will fall within several hours*

PRECIPITATION

Rain	Snow	Sleet	Hail
Rain happens when liquid droplets or ice crystals become larger and fall from the clouds. The air beneath the cloud must be above freezing for rain to fall.	Snow happens when ice crystals fall from clouds. The air beneath the clouds must be below freezing for snow to fall.	As ice crystals fall from clouds they pass through a layer of air that is above freezing, which causes them to melt. Then they pass through a layer of air below freezing, which causes them to freeze again and land as sleet.	When ice crystal are tossed up and down within a cloud they collect liquid droplets which freeze in layers around the ice crystal. The ice crystals grow bigger until they fall from the cloud as balls of ice.

SEVERE WEATHER

	Weather Conditions	When They Happen Most Often in Virginia
Thunderstorms	Moist air, wind, and warm temperatures cause air to rise	spring and summer
Hurricanes	Low pressure, very moist air from warm ocean water, and winds blowing in one direction	summer and fall
Tornadoes	Rotating thunderstorms that form when warm, moist air meets cold, dry air can produce funnels of air that can turn into vertical tornadoes	spring and summer