

Mar 31 Weather Stations 1-4

Station 1: Fronts

Directions: We know that air masses can either be warm or cold. When two air masses collide, severe weather can occur. Click on the link below to access a model of warm and cold air masses colliding. Use the information that you obtain to answer the questions below.

[CLICK HERE](#)

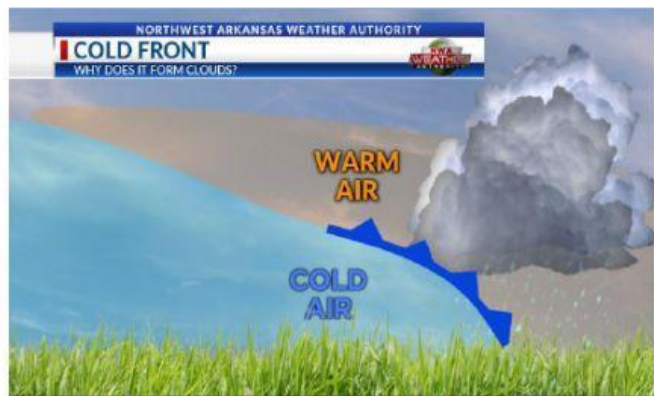
What is a front?

Cold Front

When does a cold front happen?

Describe what you see happening during a cold front.

What happens as a result of a cold front?

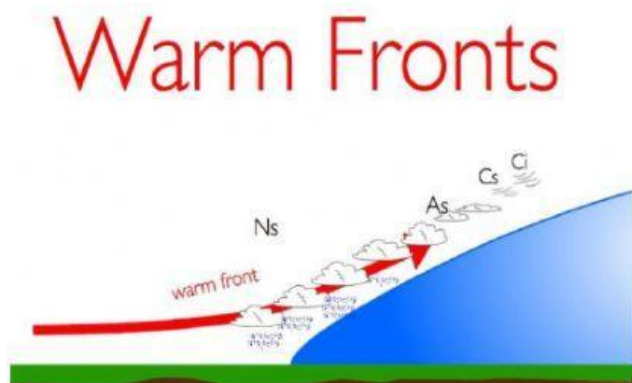


Warm Front

When does a warm front happen?

Describe what you see happening during a warm front.

What happens as a result of a warm front?

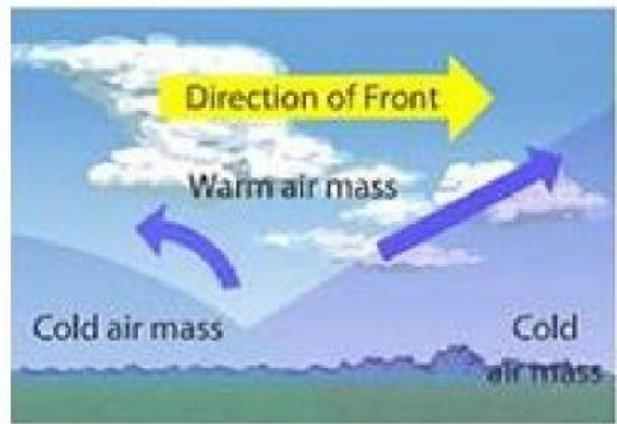


Occluded Front

When does an occluded front happen?

Describe what you see happening during an occluded front.

What happens as a result of a warm front?

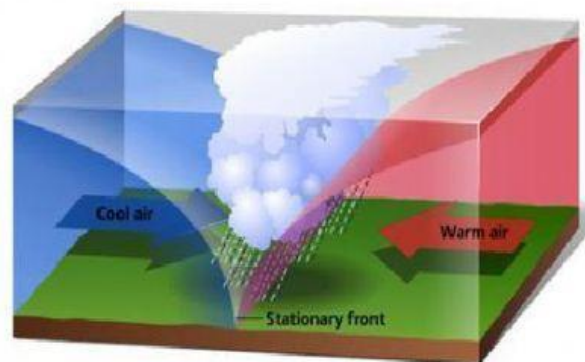


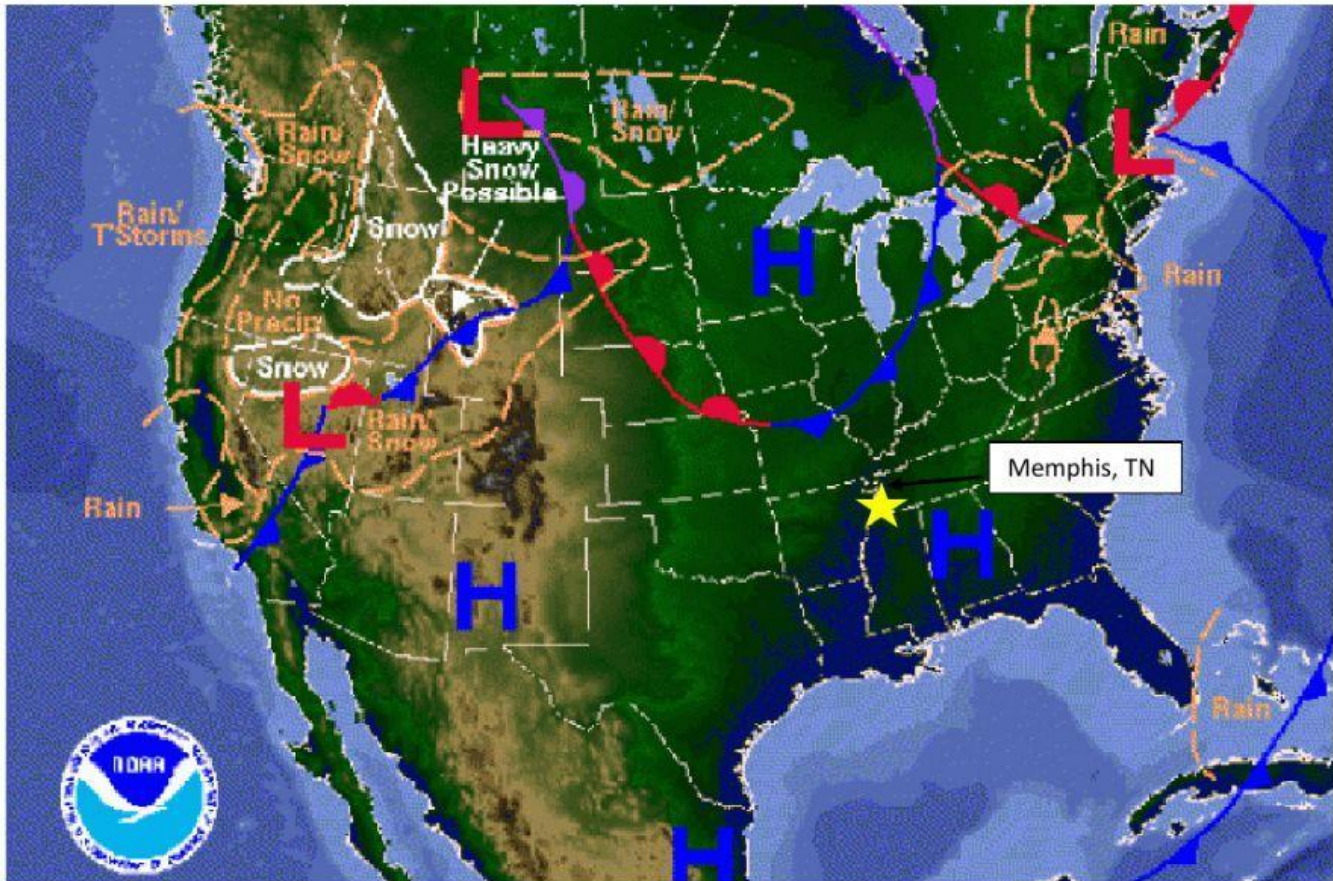
Stationary Front

When does a stationary front happen?

Describe what you see happening during a stationary front.

What happens as a result of a stationary front?





Which fronts do you see present in this weather forecast? Choose all that apply.

- ☐ Cold Front
- ☐ Warm Front
- ☐ Occluded Front
- ☐ Stationary Front

Predict: What front is moving towards Memphis in this weather forecast?

- ☐ Cold Front
- ☐ Warm Front
- ☐ Occluded Front
- ☐ Stationary Front

Station 2: Jet Stream

Directions: Jet streams are bands of strong wind that generally blow from west to east all across the globe. They impact weather, air travel and many other things that take place in our atmosphere. Gather more information about jet streams by watching the video and reading the text, then answer the follow up questions.

How do jet streams affect weather?

Long-distance winds that travel above global winds for thousands of kilometers are called **jet streams**. Air moves in jet streams with speeds that are at least 92 kilometers per hour and are often greater than 180 kilometers per hour. Like global and local winds, jet streams form because Earth's surface is heated unevenly. They flow in a wavy pattern from west to east.

Each hemisphere usually has two main jet streams, a polar jet stream and a subtropical jet stream. The polar jet streams flow closer to the poles in summer than in winter. Jet streams can affect temperatures. For example, a polar jet stream can pull cold air down from Canada into the United States and pull warm air up toward Canada. Jet streams also affect precipitation patterns. Strong storms tend to form along jet streams. Scientists must know where a jet stream is flowing to make accurate weather predictions.

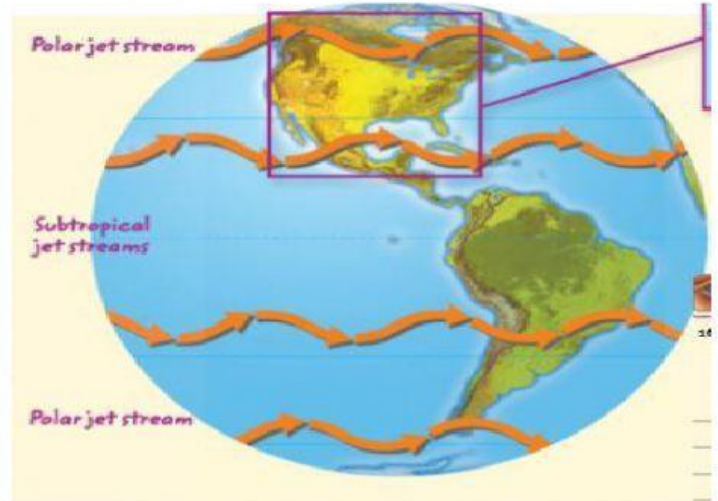
Follow Up Questions:

What are two ways that jet streams affect weather?

What types of weather does the polar jet stream bring?

Click this link to watch a video about the Great Flood of 1993: [Click Here](#)

How did the jet stream effect the weather and cause the Great Flood of 1993?



BONUS: Click this link to see global jet streams in real life: [Click Here](#)

Station 3: Thunderstorms

Directions:

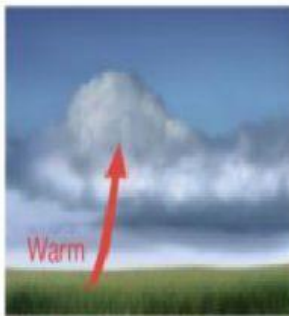
What's a thunderstorm?

SPLAAAAAT! BOOOOM! The loud, sharp noise of thunder might surprise you, and maybe even make you jump. The thunder may have been joined by lightning, wind, and rain. A

thunderstorm is an intense local storm that forms strong winds, heavy rain, lightning, thunder, and sometimes hail. A thunderstorm is an example of severe weather. Severe weather is weather that can cause property damage and sometimes death.

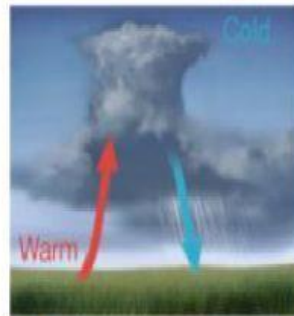
How are thunderstorms made?

Thunderstorms get their energy from humid air. When warm, humid air near the ground mixes with cooler air above, the warm air creates an updraft that can build a thunderstorm quickly. Cold downdrafts bring precipitation and eventually end the storm by preventing more warm air from rising.



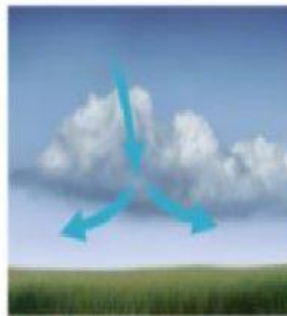
Step 1

In the first stage, warm air rises and forms a cumulus cloud. The water vapor releases energy when it condenses into cloud droplets. This energy increases the air motion. The cloud continues building up.



Step 2

Ice particles may form in the low temperatures near the top of the cloud. As the ice particles grow large, they begin to fall and pull cold air down with them. This strong downdraft brings heavy rain or hail.



Step 3

During the final stage, the downdraft can spread out and block more warm air from moving upward into the cloud. The storm slows down and ends.

Follow Up Questions:

What role does warm air play in the formation of a thunderstorm?

Which picture in the diagram to the left shows the most severe and dangerous stage of a thunderstorm?

Compare the first two stages. Why does the cloud become taller?

Station 4: Tornadoes

What is a tornado?

A **tornado** is a destructive, rotating column of air that has very high wind speeds and that is sometimes visible as a funnel-shaped cloud.

How does a tornado form?

A tornado forms when a thunderstorm meets horizontal winds at a high altitude. These winds cause the warm air rising in the thunderstorm to spin. A storm cloud may form a thin funnel

shape that has a very low pressure center. As the funnel reaches the ground, the higher-pressure air rushes into the low-pressure area. The result is high-speed winds, which cause the damage associated with tornadoes.

Where do you find tornados?

Tornadoes happen in many places, but they are most common in the United States in Tornado Alley. Tornado Alley reaches from Texas up through the midwestern United States, including Iowa, Kansas, Nebraska, and Ohio. Many tornadoes form in the spring and early summer, typically along a front between cool, dry air and warm, humid air.



The funnel cloud becomes visible as the tornado picks up dust from the ground or particles from the air.



Follow Up Questions:

What is a tornado?



Describe the atmospheric conditions that cause the formation of a tornado.

Damage caused by tornadoes

The danger of a tornado is mainly due to the high speed of its winds. Winds in a tornado's funnel may have speeds of more than 400 km/h. Most injuries and deaths caused by tornadoes happen when people are struck by objects blown by the winds or when they are trapped in buildings that collapse.

Imagine that you are a weather detective and you are shown this photo. You must determine what weather event caused this damage. Justify your answer.



What weather event caused this destruction?

How do you know?

Why are some houses destroyed while other houses look completely fine?