

# Fronts

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# CHAPTER 1

# Fronts

## Learning Objectives

- Define different types of fronts.
- Explain how fronts create changes in weather.



## What happens when one air mass meets another?

This sight is common when one air mass meets another. You can almost see one air mass being pushed up over the other. When two air masses meet, the result is often a storm. Have you been to the Midwestern United States in the spring? This is a common sight.

## Fronts

When cold air masses move south from the poles, they run into warm air masses moving north from the tropics. The boundary between two air masses is called a **front**. Air masses usually don't mix at a front. The differences in temperature and pressure cause clouds and precipitation. Types of fronts include cold, warm, occluded, and stationary fronts.

## Cold Fronts

A **cold front** forms when a cold air mass runs into a warm air mass (**Figure 1.1**). The cold air mass moves faster than the warm air mass. So the cold air mass lifts the warm air mass out of its way. As the warm air rises, its water vapor condenses. Clouds form, and precipitation falls. If the warm air is very humid, precipitation can be heavy. Temperature and pressure differences between the two air masses cause winds. Winds may be very strong along a cold front.

## Cold Front

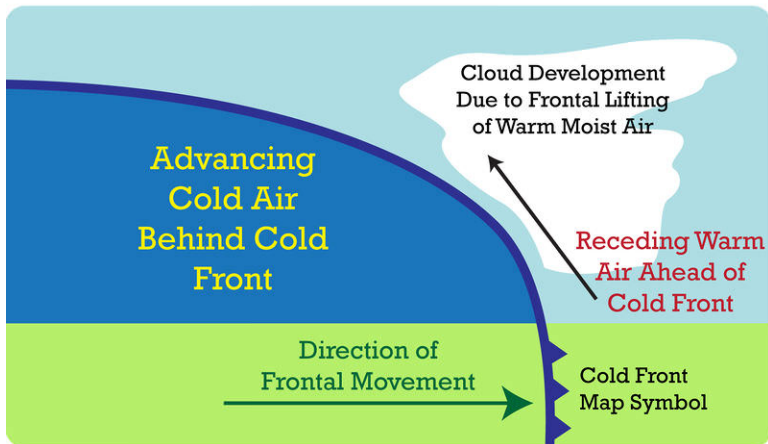


FIGURE 1.1

Cold fronts often bring stormy weather.

As the fast-moving cold air mass keeps advancing, so does the cold front. Cold fronts often bring sudden changes in the weather. There may be a thin line of storms right at the front that moves as it moves. In the spring and summer, the storms may be thunderstorms and tornadoes. In the late fall and winter, the storms may bring snow. After a cold front passes, the cold air mass behind it brings cooler temperatures. The air is likely to be less humid as well. Can you explain why?

## Warm Fronts

When a warm air mass runs into a cold air mass, it creates a **warm front** (Figure 1.2). The warm air mass is moving faster than the cold air mass. The warm air mass then flows up over the cold air mass. As the warm air rises, it cools. This brings about clouds and sometimes light precipitation. Warm fronts move slowly and cover a wide area. After a warm front passes, the warm air mass behind it brings warmer temperatures. The warm air is also likely to be more humid.

## Warm Front

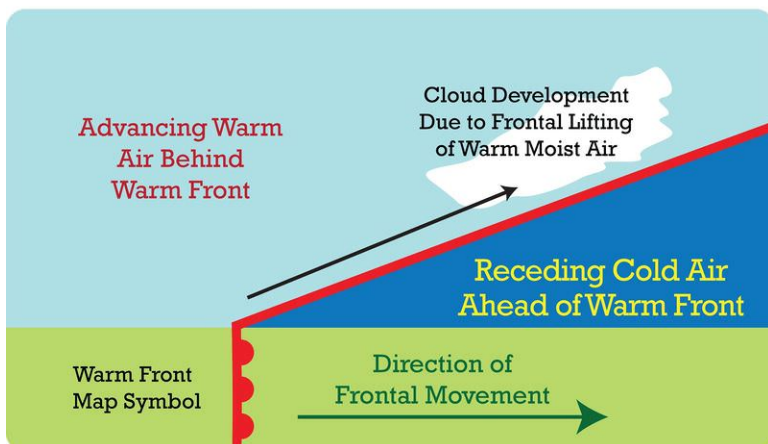
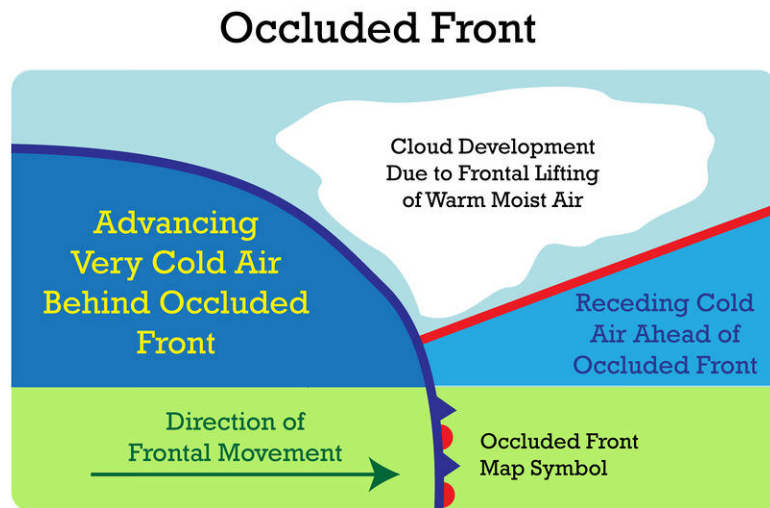


FIGURE 1.2

Warm fronts generally bring cloudy weather.

## Occluded Fronts

With an **occluded front**, a warm air mass becomes trapped between two cold air masses. The warm air is lifted up above the cold air (**Figure 1.3**). Cloudy weather and precipitation along the front are typical.



**FIGURE 1.3**

How does an occluded front differ from a warm or cold front?

## Stationary Fronts

Sometimes two air masses stop moving when they meet. These stalled air masses create a **stationary front**. Such a front may bring clouds and precipitation to the same area for many days.

## Summary

- Much of the weather occurs at fronts, where air masses meet.
- In a warm front, a warm air mass slides over a cold air mass. In a cold front, a cold air mass slides under a warm air mass.
- An occluded front has three air masses: cold, warm, and cold.

## Review

1. What characteristics give warm fronts and cold fronts their names?
2. Describe a warm front. What weather is found with a warm front?
3. Describe a cold front. What weather is found with a cold front?
4. How does an occluded front form?

## Explore More

Use the resource below to answer the questions that follow.



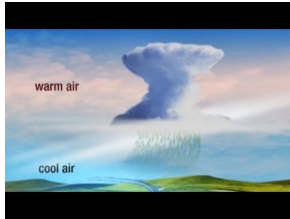
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1. What is a front?
2. How does a cold front form?
3. What forms along a cold front?
4. How does a warm front form?
5. What type of clouds form at warm fronts?
6. What type of precipitation is produced from a warm front?
7. What is a stationary front?
8. What type of weather can occur at an occluded front?

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## References

1. Christopher Auyeung. [Diagram of a cold front](#) . CC BY-NC 3.0
2. Christopher Auyeung. [Diagram of a warm front](#) . CC BY-NC 3.0
3. Christopher Auyeung. [Diagram of an occluded front](#) . CC BY-NC 3.0

