

Air Masses

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CHAPTER 1

Air Masses

Learning Objectives

- Explain how air masses form, move, and influence weather.



Pick an air mass!

A cold dry air mass forms over the interior of Alaska. The mountain is Mt. McKinley in Denali National Park. A warm wet air mass forms over the ocean. It sneaks onto the coastal area. Which region would you like to visit?

Air Masses

An **air mass** is a large body of air that has about the same conditions throughout. For example, an air mass might have cold dry air. Another air mass might have warm moist air. The characteristics of an air mass depend on where the air mass formed. The air must stay over that location long enough to pick up those characteristics.

Formation of Air Masses

Most air masses form over polar or tropical regions. They may form over continents or oceans. Air masses are moist if they form over oceans. They are dry if they form over continents. Air masses that form over oceans are called maritime air masses. Those that form over continents are called continental air masses. The image below shows air masses that form over or near North America (**Figure 1.1**).

An air mass takes on the conditions of the area where it forms. For example, a continental polar air mass has cold dry air. A maritime polar air mass has cold moist air. Which air masses have warm moist air? Where do they form?

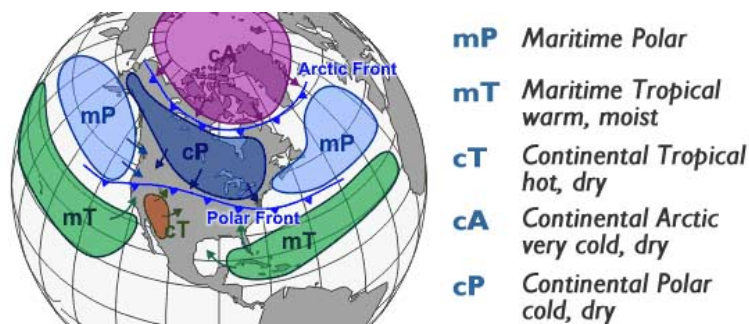


FIGURE 1.1

North American air masses.

Movement of Air Masses

When a new air mass moves over a region it brings its characteristics to the region. This may change the area's temperature and humidity. Moving air masses cause the weather to change when they contact different conditions. For example, a warm air mass moving over cold ground may cause an inversion.

Why do air masses move? Winds and jet streams push them along. Cold air masses tend to move toward the Equator. Warm air masses tend to move toward the poles. The Coriolis effect causes them to move on a diagonal. Many air masses move toward the northeast over the U.S. This is the same direction that global winds blow.

Further Reading

Fronts

Summary

- An air mass has roughly the same temperature and humidity.
- Air masses form over regions where the air is stable for a long enough time. The air takes on the characteristics of the region.
- Air masses move when they are pushed by high level winds.

Review

1. What is an air mass?
2. Why do air masses form where the air stays in one place for a while?
3. What happens when an air mass moves over a new region?

References

1. Courtesy of National Oceanic and Atmospheric Administration; labels added by CK-12 Foundation. [Map of North American air masses](#) . Public Domain

