



## NOAA Cloudwise

There are ten basic cloud types arranged in three divisions based on the altitude at which they form. Low level clouds are Cumulus, Cumulonimbus, Stratus, and Stratocumulus. Middle level clouds are Altocumulus, Altostratus and Nimbostratus. High level clouds are Cirrus, Cirrocumulus and Cirrostratus. Precipitation primarily occurs from Cumulus, Cumulonimbus and Nimbostratus.

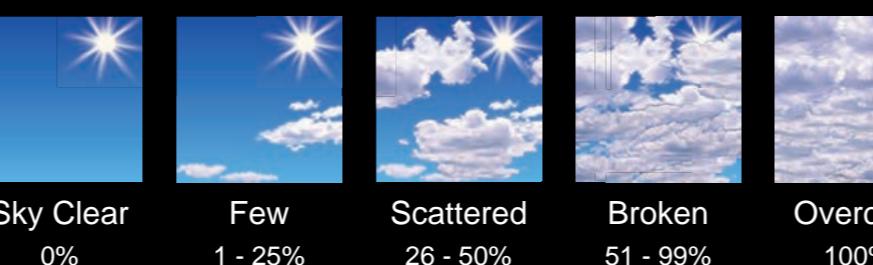
These ten clouds are further divided into 27 classifications. Many of these classifications represent the same basic cloud type (or combinations of clouds) but in various stages of development, opacity, or sky cover.

Learn more about clouds at [www.weather.gov/jetstream](http://www.weather.gov/jetstream)



## Sky cover

The percent of sky covered by clouds. Clouds near the horizon appear to be lower, more numerous and closer together.



## Other Cloud Phenomena

- Mammatus**: Small pouch or pocket-like clouds sinking into drier air and often seen near thunderstorms.
- Fog**: A cloud on the ground which lifts from the surface and becomes Stratus or dissipates with heat from the sun.
- Wall Cloud**: Rotating, lowered, rain-free base of thunderstorm in area of strongest updraft, under which a tornado may form.
- Shelf Cloud**: Forms in a gust front from a squall line or thunderstorm.
- Asperitas**: Long waves that ripple through the base of the cloud near the dry/moist air boundary of a thunderstorm.
- Virga**: Precipitation that evaporates before reaching the surface.



# NOAA Weatherwise



The weather we experience every day on the ground is a result of what is happening far above our heads. Up there, the air is always moving as heat energy is redistributed across the Earth.

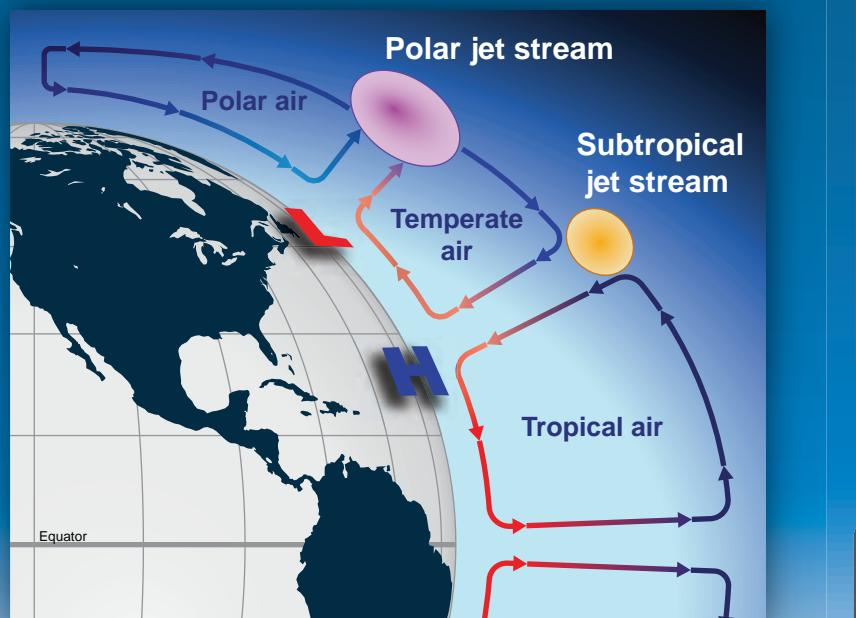
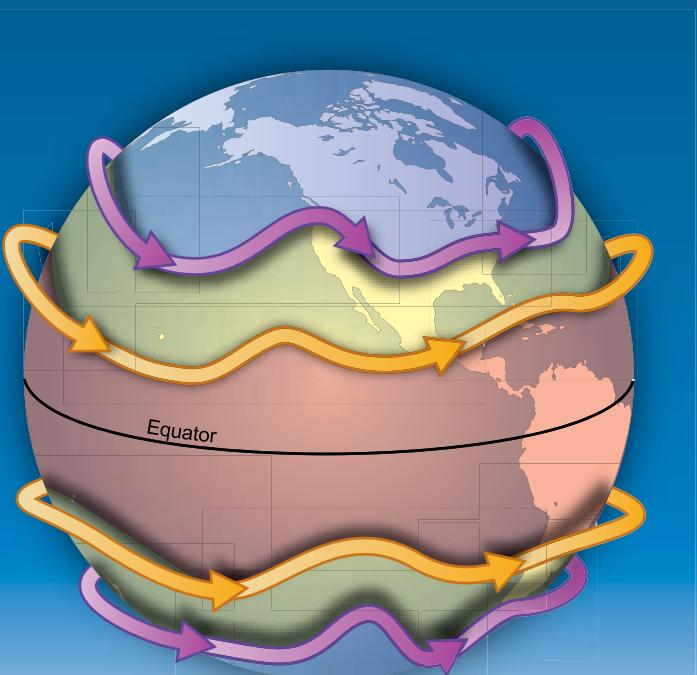
Meteorologists study air movement to make weather forecasts.

The Sun heats the Earth, which then heats the air in the atmosphere. Because the Sun hits the equator most directly, the air at the equator receives more heat energy than the air closer to the poles. This warm air rises because it is less dense than cool air.

When the warm air reaches the upper atmosphere, it can no longer rise and is forced toward the poles. As the air cools, it becomes denser and falls back toward Earth. **High-pressure** areas form where cooler air is falling towards the Earth. **Low-pressure** areas form where warm air is rising. Air circulates from areas of high pressure to areas of low pressure.

The way the air moves affects the weather. Between the large areas of circulating air, **jet streams** form. Jet streams are tube-like paths of strong wind moving from West to East around the globe. The position and strength of jet streams vary from North to South, as well as vertically throughout the atmosphere.

The location of the jet streams and their seasonal movement drive major weather patterns around the world. In the United States, cold snaps happen when the polar jet stream dips south. Heat waves can occur when the polar jet stream is very far north, allowing for warm sub-tropical air to move north.



## Be Weather-Ready wherever you are

This map shows a simplified forecast for a single, hypothetical day. The locations of the low- and high-pressure systems, jet stream, and fronts shape the weather that a given region may experience.

There can be hazardous weather anywhere, at any time. Begin each day knowing the weather forecast. If severe or extreme weather is a possibility, periodically check for forecast updates.

Be prepared with a safety plan. Have a "go-kit" with important property and documents ready in case of emergency. Have at least a three-day supply of food and water. Learn the specific recommendations for regional and seasonal weather hazards.

Learn more about weather safety at  
<https://weather.gov/wrn>



### South of the fronts and west of the dry line

In the orange area, weather is generally dry and mild. Approaching fronts can lead to high altitude thunderstorms over mountain peaks, resulting in strong winds at the surface. Over time the effects of the fronts will diminish.

To learn more about the characteristics of fronts, explore the rest of the map.

#### Possible impacts

Strong surface winds can lead to dust storms and wildfires. In Southern California, the warm, dry Santa Ana winds blow towards the coast from the high desert areas. Seasonal heavy rain, even from distant thunderstorms, can lead to flash floods and debris flows in typically very dry areas.

#### Weather safety

Be alert for dust storms, which can come with little warning — **Pull Aside, Stay Alive**. Pull far off the road and turn all car lights off. Follow evacuation orders during fires. Monitor forecasts for flash floods, which can be a risk many miles from a storm, especially in dry valleys and canyons. Don't be caught off guard; be prepared to move to higher ground.

