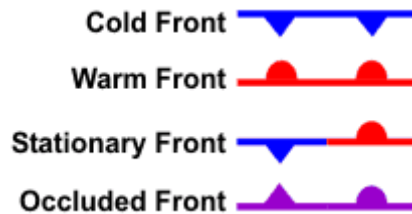


Fronts

Don Simonsen, General Forecaster

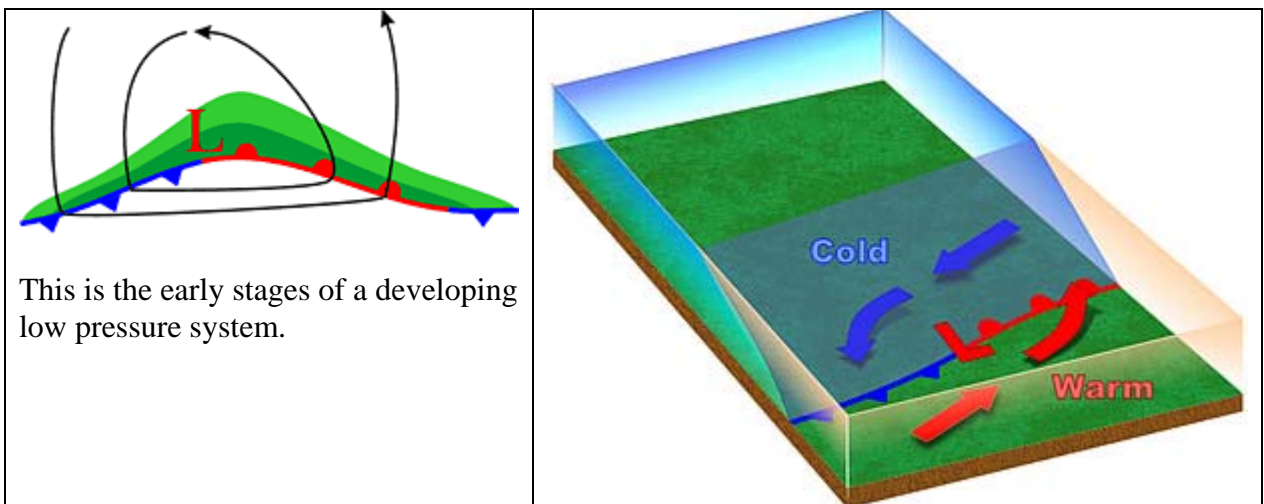
A front is a boundary or discontinuity that separates the air masses of differing temperature and humidity. If a front is moving and replacing warmer air with colder air, it is called a cold front. If the front is moving and replacing colder air with warmer air, it is called a warm front. If the front isn't moving or moving very little, it is referred to as a stationary or quasi-stationary front.



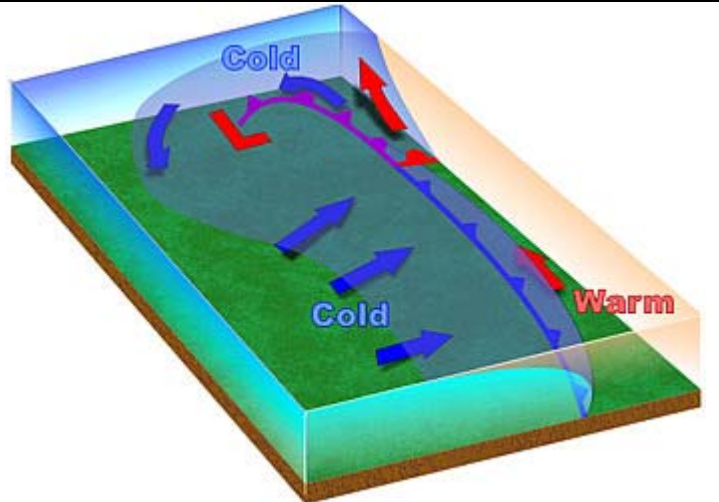
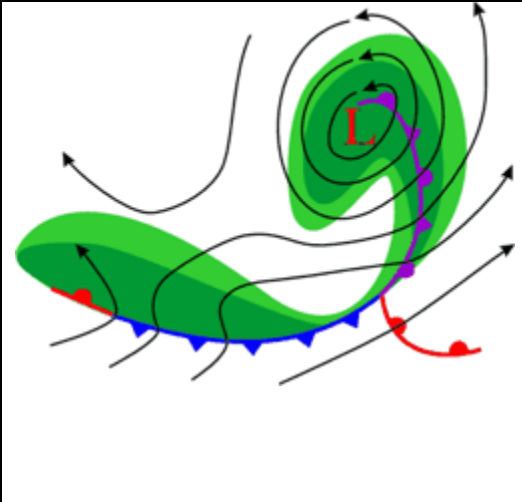
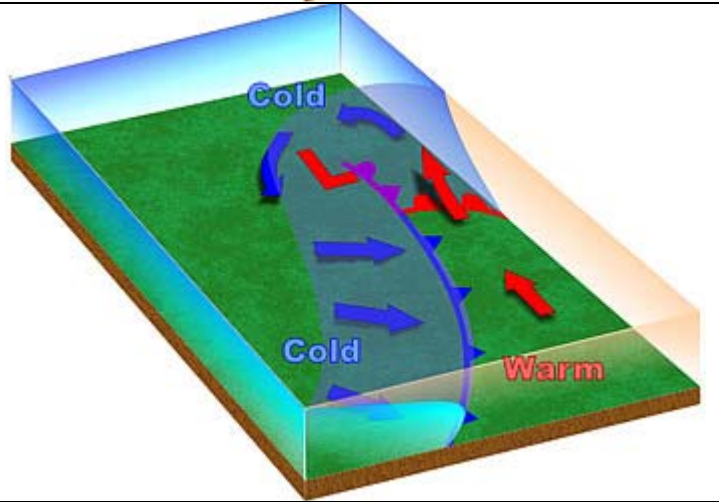
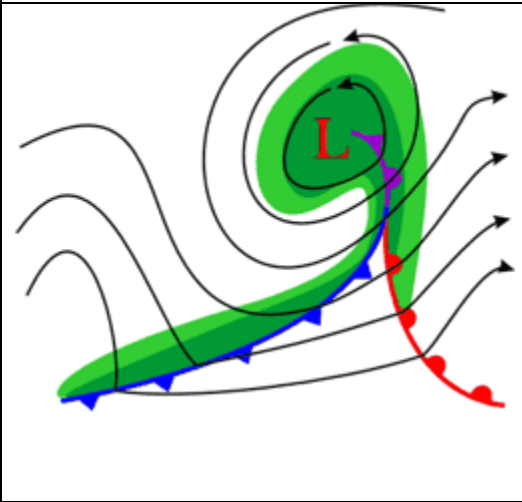
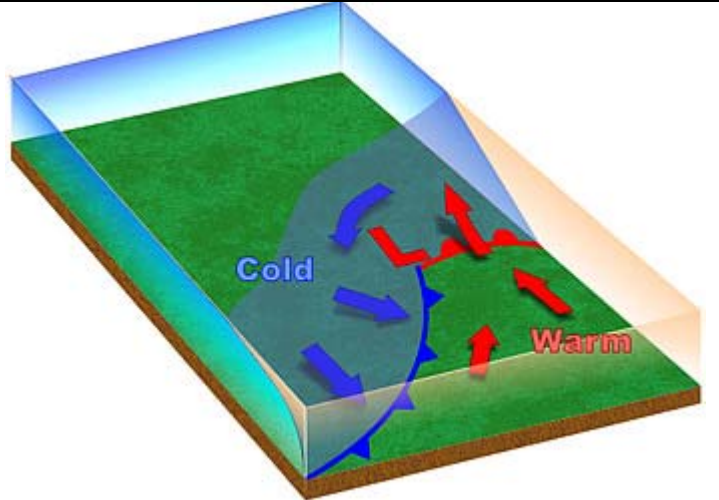
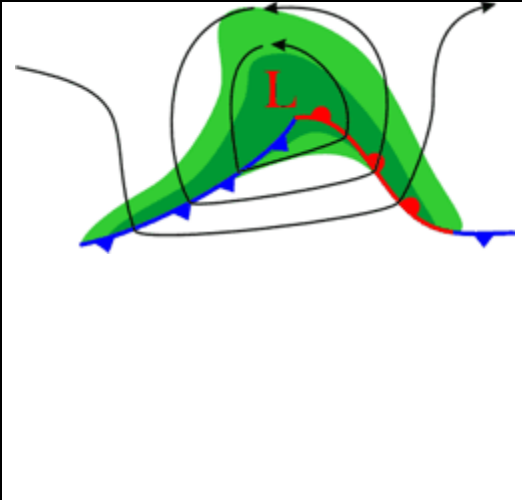
Fronts vary greatly in size and intensity. In general, the intensity is determined by how much difference there is between the airmasses it separates, while the size of fronts generally reflects the size and strength of the airmasses it separates. Fronts may be a very sharp discontinuity between the airmasses, that is only a few feet wide, or it may be a more diffuse boundary, several miles wide. On the other hand, the length of the front is typically several hundred miles long.

After a front passes a particular location, there is usually a change in the weather, sometimes a sudden and dramatic change, and sometimes very subtle. Precipitation, temperature, humidity, wind speed and direction, barometric pressure, cloud types and amounts, may all change, or some combination of these.

A front is often a favorable location for precipitation to develop. This is due to the collision of different air masses. This collision causes one air mass to rise above the other. If adequate moisture is present, this rising motion causes clouds and precipitation to form. Lower pressure along the front increases this effect.



This is the early stages of a developing low pressure system.



Although the terms cold and warm fronts are used to describe fronts, these are relative terms. A front that brings only slight cooling, such as cooling an air mass from 100 to 90 degrees, is still called a cold front.

Sometimes terms such as Pacific cold front, Canadian cold front, polar front, or arctic front are used to more specifically describe the origin of the airmasses that arrive with the front.

There are other small-scale fronts. One common such front is found near coastlines of oceans. These “sea-breeze” fronts mark the boundary between cooler, moist air from the oceans, from warmer and drier air over land. These can sometimes be found along lakes as well, including Fort Peck Lake.

Another type of front is found near thunderstorms. These mark the boundary between rain-cooled air associated with one or more thunderstorms, and their surrounding environment. These are most commonly called “Gust fronts” or “outflow boundaries,” and may exist long after their originating thunderstorms have dissipated.

Often fronts of different types and intensities are part of a large complex low pressure storm system. The interaction between these can make for a complex weather pattern, and difficult forecasting.

