Tornadoes are most common in **mid-latitudes** where warm moist air from the south meets cold, dry air from the north to form a **cold front**. This forces warm air aloft.

Inflow of **warm, moist air** is needed to fuel the development of a **Severe Steady State Storm,** with **outflow of air aloft** to allow up draughts and downdraught to occur within the system. In the USA the inflow of warm moist air is usually **from the Gulf of Mexico**.

The tornado starts with a **mesocyclone** at mid-altitude, that intensifies into a **narrow vortex** that extends **down to the surface**.

Tornadoes develop in and beneath deep **cumulonimbus clouds called supercells**, formed by the **convective uplift** of air warmed over a heated land surface. Consequently this occurs mostly in **late afternoon.**

This **narrow violent vortex** can form the tornado funnel cloud, spiralling dust and debris up from the surface. The cooling of the uplifted warm, moist air as it rises, causes **condensation** to form the **visible funnel cloud.**

A **deep unstable atmosphere**, up to 10 km (the whole of the **Troposphere**) allows uplift to occur to form a deep cumulonimbus cloud capped by the **Tropopause Inversion**. **Intense rainfall, hail, thunder, lightning and tornadoes form in the cumulonimbus cloud.**

Vertical wind shear, in terms of direction and speed, is needed for the development of the system and tornadoes. This is often caused by the **mid-latitude Jet Stream** of upper, high velocity winds.

TORNADO WARNINGS

1. WATCH - Issued by the Storm Prediction Centre for a large area if tornadoes are possible. Be prepared, have emergency plans in place, check supplies and a safe room.
2. WARNING - Issued by the local water service for a smaller area. A tornado has been seen. Take action, shelter, move to a safe room or area.
3. EMERGENCY - Issued by the National Weather Service. Touchdown of the tornado and track seen and forecast.