

General Information.

Met. Conditions for the formation of Radiation Fog:-

Moist air, clear cloudless sky, rapidly falling temperature and a gentle breeze about 5 - 8 Knots.

Met. Conditions for the formation of Advection Fog:-

Warm moist air moving over a cold sea or land surface. Unlike radiation fog, strong wind assists the formation and intensity of advection fog.

Met. Conditions for the formation of Carburettor Ice:-

Temperatures between +20° C and -20° C, with relative humidity in excess of 60%. (Some books suggest the formation of carburettor ice as possible up to temperatures of +25° C). The formation of carburettor ice is more pronounced at low throttle settings, quite common during landing approaches.

Met. Conditions for the formation of Airframe Ice:-

Airframe temperature from 0° C to about -18° C, with adequate moisture present, for instance flying through cloud in subzero temperatures. This generally results in opaque or rime ice at least till the condition becomes severe.

Clear Ice is formed when flying in heavy rain bearing clouds at subzero temperatures and near thunderstorms. Also clear ice can form even at temperatures above zero, when supercooled water drops are present such as in very heavy rain showers. In such conditions the icing temperature should be considered to be about +5° C.

Conditions when Gale Warnings are issued:-

- A. Forecast mean wind speeds of 33 Kts or more.
- B. Forecast mean wind speeds of 25 Kts with gusts in excess of 41 Kts.

Sigmets:-

Warnings of severe weather conditions likely to be a hazard to aviation. Sigmets are issued on a serial number system on any given day, and may be updated or cancelled. The principal conditions when a sigmet is issued are, severe turbulence, thunderstorms, severe airframe icing, wind shear, mountain wave activity, sandstorms.

QNH:-

A value of sea level pressure, which when set on an altimeter subscale, will cause the altimeter to read ALTITUDE above sea level.

QFE:-

A value of pressure at some point on the ground, which when set on an altimeter subscale, will cause the altimeter to read HEIGHT above that point.

QFF:-

A value of sea level pressure given by a met. observer, other than an Aviation forecaster, using a different altitude and temperature correction chart to that used for aviation purposes. If set on an altimeter subscale the altimeter will read altitude above sea level.

Weather conditions in a Warm Airmass:-

Considerable formations or mainly stratus type cloud, which has low cloud bases causing dull misty drizzly conditions. Hill fog is also quite common. The visibility is generally poor, and at times down to fog levels. Some outbursts of heavier rain occur in colder spots of the airmass. There is usually an absence of heavy shower activity, or turbulence. The temperature, dewpoint and freezing levels will be fairly high. The pressure is generally low in warm air, and fairly strong winds are not uncommon, due to the low pressure.

These characteristics are always recognisable, but the amount or severity of the conditions is related to the temperature, pressure and humidity relationships within the same airmass and relative to the surrounding airmasses. A warm airmass does not necessarily mean that we will feel very hot and have high temperatures, as in many cases it is only recognised by definition and behaviour.

Weather conditions in a Cold Airmass:-

Generally fairly clear skies with regular heavy shower activity. Clouds build-ups with high tops, cumulus, towering cumulus and cumulonimbus, giving showers of rain, hail, sleet or snow depending on the temperature. There is also a strong likelihood of thunderstorms especially if the cold air is near to warm air. The temperature, dewpoint and freezing levels are generally low. There is often moderate or severe turbulence, especially close to showers and squalls. In winter, there will be cold frosty nights, with the possibility of fog, or even freezing fog.

Indications of the Approach of a Warm Front:-

The pressure falls gradually, the wind backs by several degrees, sometimes up to 180° , and increases. Cirrus cloud appears followed in the next couple of hours by cirrostratus, altostratus and a general darkening of the sky as the nimbostratus approaches, and the rain begins. Any shower activity which had been present gradually dies out as the warmer air approaches. A warm front will result in several hours of heavy and persistent rain as the nimbostratus moves through.

After the Warm Front Passage:-

The heavy rain ceases, the temperature and dewpoint rise, the wind veers by about 30° and may decrease. Virga, and low stratus type cloud is persists with considerable drizzle and mist, or light intermittent rain. The visibility is generally poor. The pressure will stabilise gradually, or maybe increase slightly.

Indications of the Approach and Passage of a Cold Front:-

In general the cold front arrives with very little warning, because its presence is generally obscured by the stratus in the warm sector, and also it moves quickly. As the front arrives there may be a slight wind increase and veer, followed quickly by heavy rain which will last for a couple of hours. Hail and thunder may sometimes occur. As the front passes the wind will veer by 60° to 120° and the sky will quickly clear with perhaps some cirrostratus and cirrus present for a short while. The pressure may begin to rise, and the temperature and dewpoint will fall.

Accurate weather forecasting depends on understanding the changes that are likely to occur in the approaching weather systems. Also there is a need for some historical knowledge of the outcome of similar situations in the past and at various times of the year. Some fronts are quite weak and produce little more than some dense cloud, especially in summer, while other fronts are very intense. The position of the fronts and their associated depressions is relatively easy to pin-point, but their movement pattern and speed can be a little more difficult to predict precisely. As a general rule weather forecasters tend to document the worse case scenario in a given set of circumstances, and if the weather is better it is a bonus. For light VFR flying the worse case scenario is worth believing too.