
MID LATITUDE DEPRESSIONS
Mid Latitude Depressions are also known as Low Pressure Systems or Cyclonic Systems. They are usually formed over the Atlantic Ocean to the South West of Ireland and then travel in a North Easterly direction. It takes about a week to 10 days from the time they form to the time they eventually wear out – usually to the North East of Ireland well above Norway/Sweden.

Mid Atlantic Depressions form where 2 different air-masses meet. An air-mass is a large body of air where the temperature, humidity and air pressure is almost the same throughout the air-mass. Different types of air-mass do not mix very easily so this helps us to understand the formation of mid latitude depressions.

Fig 1: Map showing 2 different air-masses.
In the above diagram, the *Polar Maritime* air-mass originated over Greenland and North East Canada and is therefore very cold and also quite dry because cold air can’t hold much moisture. On the other hand, the *Tropical Maritime* air-mass originated much closer to the equator and so is very warm and also full of moisture as warm air holds a lot of moisture and it formed over the Atlantic Ocean. As was already stated, different types of air-masses don’t really mix and form one new air-mass so when both these air-masses meet, a barrier called a *front* forms between them. Figure 2 below show the Tropical Maritime air-mass drifting towards the Polar Maritime air-mass and forming a front where they meet.

![Figure 2: 2 air-masses meeting to form a front.](image)

As has already been mentioned, the 2 air-masses do not mix, so, the Tropical Maritime one will begin to rise over the cooler Polar Maritime one. This is because warm air is lighter than cold air. As the warmer air rises over the colder air, the warmer air mass becomes smaller as the colder air fills in the space that the warmer air mass used to cover before it began rising. This is shown in figure 3 below.
By this stage a typical mid latitude depression has formed. The diagram below shows how it is normally represented on a *synoptic chart* (weather map).

**Figure 4: Typical mid-latitude depression shown on synoptic chart**

*Weather associated with Mid-Latitude Depressions*
In figure 4 above, the **warm front** marks the boundary between the colder polar air and the warmer tropical air. The **cold front** marks the end of the warm tropical air and the beginning of the colder air again. The numbered lines are simply lines showing equal areas of air pressure as measured by a barometer. They are called **isobars**. As this mid latitude depression passes over Ireland, predictable weather patterns are experienced. Firstly, cool air passes over with very little moisture. Then as the warm front passes, the temperature will rise and rainfall increases. Between the warm and cold front, the air remains warm and muggy. Rainfall amounts will not be too high but skies will be almost completely covered in low stratus cloud. Finally as the system moves on, the cold front brings colder drier weather again. Huge cumulonimbus clouds usually mark the cold front and they are anvil shaped and rise thousands of feet into the sky. The isobars on the synoptic chart are also important as they show the differences in air pressure. When there are many isobars close together this signifies strong winds. These strong winds are also a characteristic of mid-latitude depressions and blow in an anticlockwise direction. This whole system would normally take up to about 15 hours to pass over Ireland. When the system eventually moves on, the cold front catches up with the warm front as the warm air keeps rising. This is usually shown on a synoptic chart as an occluded front and signifies the end of the system. Sometimes another mid-latitude will follow and the process repeats itself for a number of days in a row resulting in many days of rain and strong winds.

These mid-latitude depressions are probably the most common weather pattern that affects Irish weather.
ANTICYCLONES

An anticyclone also known as a high pressure system occurs when the weather is dominated by stable conditions. Unlike a mid-latitude depression which is made from two different air-masses, anticyclones are just one air mass drifting over an area of the Earth’s surface. In Ireland, whenever we come under the influence of an anticyclone, it has usually originated over Europe. This means that the air will be very dry and settled with very little cloud cover. Under an anticyclone air is descending, forming an area of higher pressure at the surface. Because of these stable conditions, the weather is usually settled with only small amounts of cloud cover. They usually last for about 3 to 5 days at a time. In the Northern Hemisphere winds blow in a clockwise direction around an anticyclone. As isobars are normally widely spaced around an anticyclone, winds are usually very light. Anticyclones can be identified on weather charts as an often large area of widely spaced isobars, where pressure is higher than surrounding areas. See figure 5.

Figure 5. Diagram showing a typical anticyclone
**Winter anticyclones**

In winter the clear, settled conditions and light winds associated with anticyclones can lead to frost and fog. The clear skies allow heat to be lost from the surface of the earth by radiation, allowing temperatures to fall steadily overnight, leading to air or ground frosts. Light winds along with falling temperatures can encourage fog to form; this can linger well into the following morning and be slow to clear. If high pressure becomes established over Northern Europe during winter this can bring a spell of cold easterly winds to Ireland.

**Summer anticyclones**

In summer the clear settled conditions associated with anticyclones can bring long sunny days and warm temperatures. The weather is normally dry, although occasionally, very hot temperatures can trigger thunderstorms. An anticyclone situated over Ireland or near continent usually brings warm, fine weather.

It must be noted that our weather is influenced far more by the mid-latitude depressions than by anticyclones with each bring their own influences as described above.