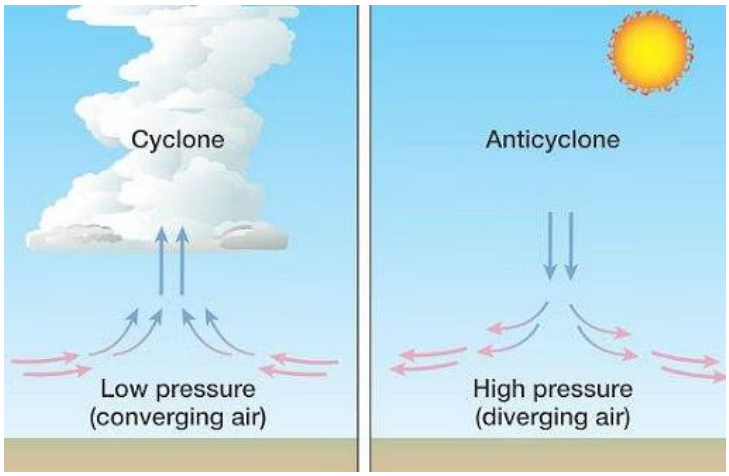
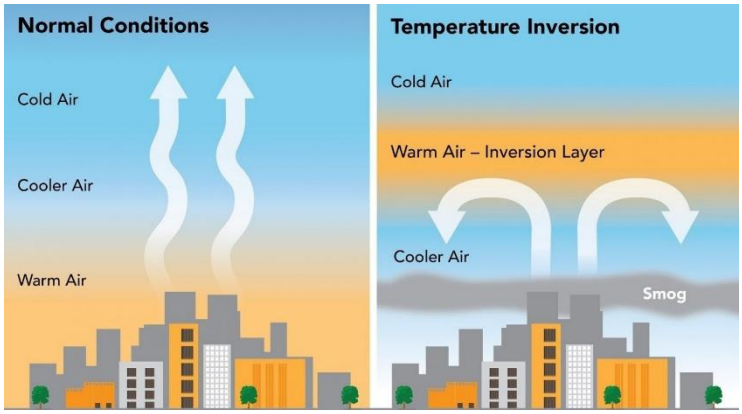
# Cold Anticyclones



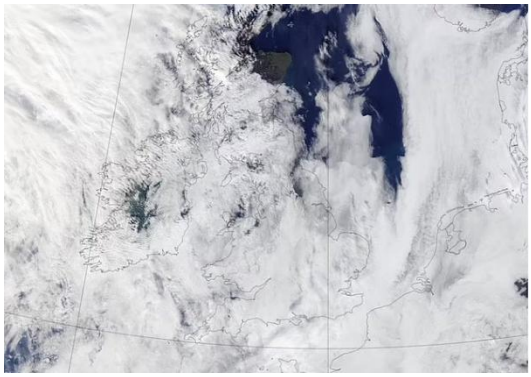

High pressure or an 'anticyclone' usually brings a variety of settled, dry weather, depending on the season. During winter the weather under high pressure over the UK can be often cold and cloudy during the daytime with nights often cold enough to allow frost to form.

Cold anticyclones form typically over polar climates, here temperatures are very low and the air is often cold and dense.

Normally, air temperature gradually decreases as altitude increases, but this relationship is reversed in an inversion. In meteorology, an inversion (or temperature inversion) is a phenomenon in which a layer of warmer air overlies cooler air.



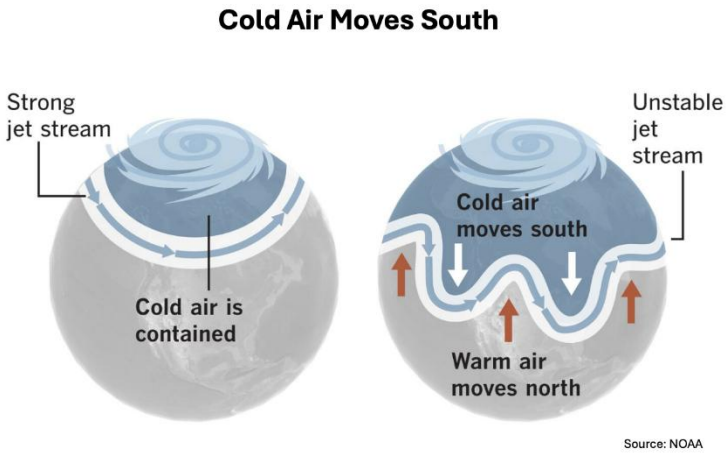

An inversion tends to develop at low altitudes with anticyclones; this prevents clouds from building any further. If this is so, any cumulus which does form during the daytime will quickly stop growing and spread into a layer of stratocumulus and then disperse when night comes. At night when the temperatures drop below freezing frosts are very likely to form.



'Anticyclone gloom' forms when the air at the surface is warm and moist, extensive stratus or fog occurs under the stable, calm conditions, it will remain this way unless the sun is strong enough to burn it away. However, in winter low stratus or fog at ground level, could persist for days, or even weeks in extreme cases. The UK is located in the mid-latitudes of the Earth

Mid-latitude weather and climate are dominated by the jet streams and associated eastward moving storm systems. Occasionally, however, these are blocked by persistent anticyclonic regimes known as blocking. The weather and climate of the midlatitudes are dominated by the prevailing westerly winds and accompanying cyclonic storm systems. However, the westerly flow may be blocked or split and the cyclonic storm systems diverted by persistent stationary anticyclonic blocks.

The polar jet stream and polar vortex are two rings of fast-moving air around the Arctic, which play a large role in world weather patterns. Many climate scientists believe that global warming is changing these rings, in ways that allow freezing air from the Arctic to intrude on the warmer mid-latitude regions. This means that, even as the Earth warms on average, climate change may lead some places to see more extreme cold spells during winter.



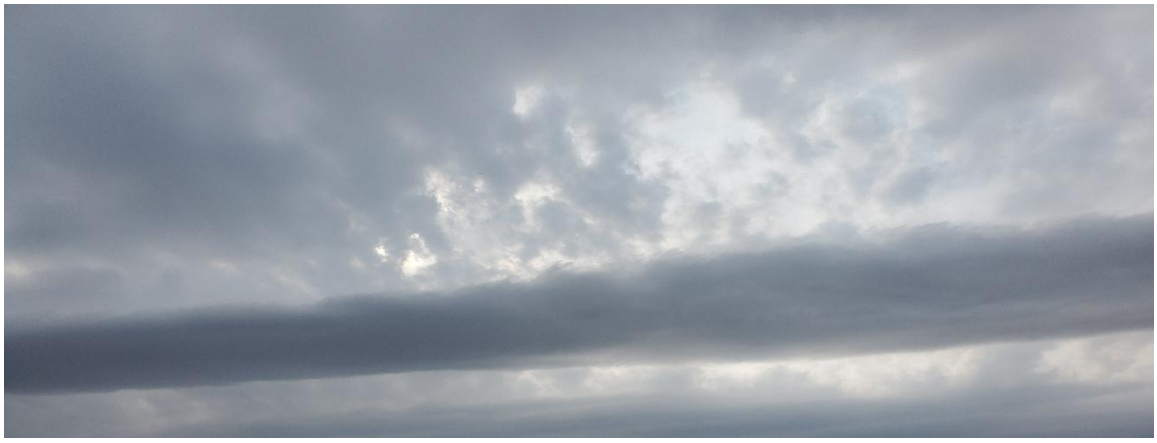

These blocking events often lead to damaging impacts such as dry, cold winters or wet conditions.

Climate change affects the jet stream because different parts of the planet are warming at different rates. In particular, the Arctic is warming fastest. This means that, as the Earth warms, the temperature difference between the Arctic and mid-latitudes is getting smaller.

This makes the polar jet stream slower and weaker. That slower jet stream has less eastward momentum and is more likely to bend north and south as it encounters small variations in temperature and pressure.

In addition to this, amplified Arctic warming is a key feature of the warming pattern. Some studies of the recent loss of Arctic Sea ice have suggested that amplified Arctic warming might lead to an increase in the occurrence of blocking or related stationary weather patterns.

We do not know yet, if climate change will make these events more common in the future. Scientists are still working to fully understand the polar vortex: continuous long-term observations are only available after the satellite era, and many climate models still struggle to simulate it.



Waiting for the spring sunshine to break through. March 2025