

The Cold Front.

The other main feature of the **polar front** is depicted in *Figure 5.13*. Along the line marked by the blue triangles, the **blue colder air** is being **forced against the red warmer air**. The **colder, heavier air** will undercut the **warmer, lighter air** in the form of a **wedge** creating a **cold front** (see *Figure 5.14*). The **blue triangles**, in *Figure 5.13* are the standard symbols denoting a **cold front**.

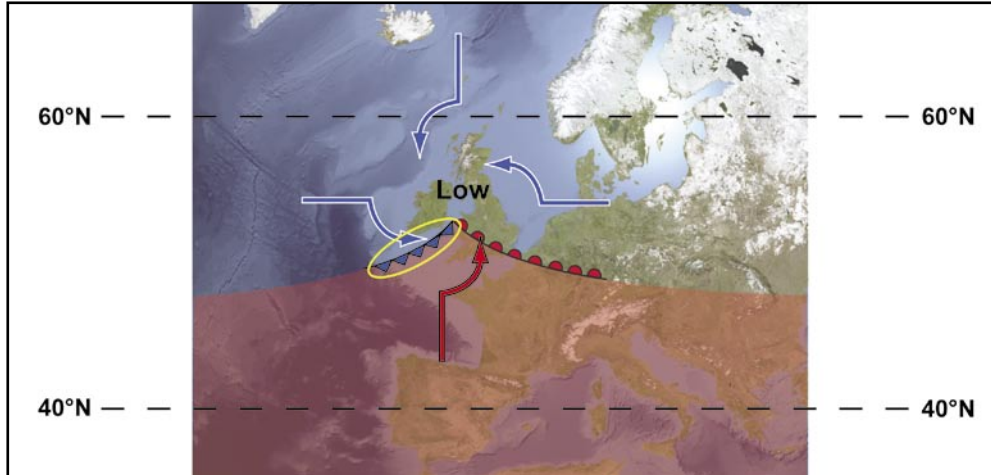



Figure 5.13 The cold front. The blue triangle symbols denote a cold front, where cold air pushes itself under the warm air.

As the **cold air** advances, it **forces the warm air upwards** causing the **warm air to cool**. The **water vapour** in the **warm air mass**, consequently, **condenses**, and **clouds** are created. The **slope** of the **cold front boundary** is **steeper** than that of the **warm front**, with a **gradient of approximately one in fifty**. If we consider the whole extent of the **cold front**, **cloud** will still take on a general **stratiform appearance**. However, there is a fundamental difference along the **cold front** compared to the **warm front**. Notice that the **cold front slopes forwards first**, then **slopes backwards** creating a **wedge** shape. The **wedge** shape is formed because the **portion of the front in contact with the ground will slow down due to friction as the front advances**, and, **as a result, will lag behind** the air immediately above it. This phenomenon creates **instability** in the **warm air** which is in direct contact with the **wedge**.

 CLOUD TYPES ASSOCIATED WITH THE COLD FRONT

CS = Cirro - Stratus
 AS = Alto - Stratus
 NS = Nimbo - Stratus
 CU = Cumulus
 CB = Cumulo - nimbus

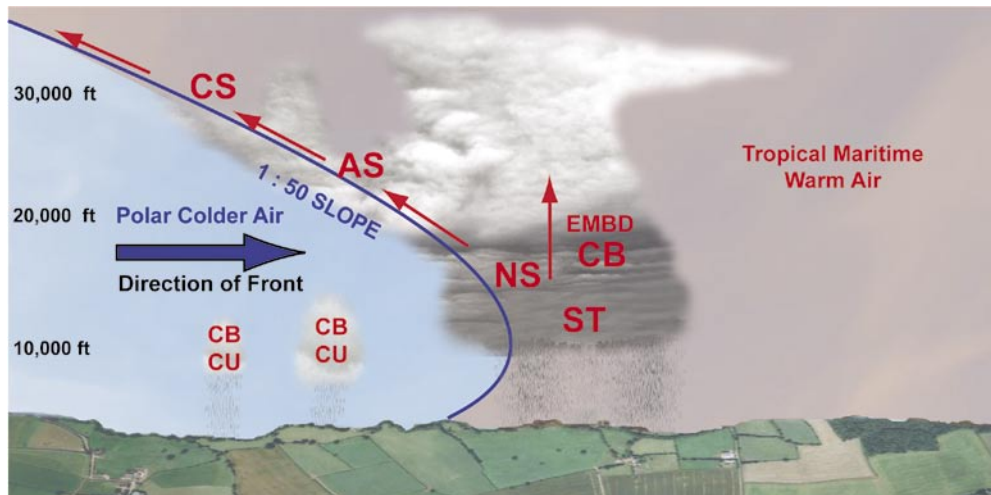


Figure 5.14 The Cold Front - cooler air undercuts warmer air, forcing it to rise. Just ahead of the cold front, vigorous vertical ascent of the warm air creates cumuliform cloud.