

WINDS - ATMOSPHERIC CIRCULATION

Name

Winds are caused by differences in air **Pr**. Because nature tries to equalise pressure, air is forced from zones of **H** pressure to areas of low **P**. Differences in pressure are caused by differences in **Te** which causes air to **Exp** or contract, changing its **Den**.

* When the ground is heated, it heats the air **C** to the ground by **Con**. This air expands, becomes less **Den** and therefore tends to **R**, decreasing air **Pr** at ground level. Air from surrounding areas (where the air is **Den** and pressure **H**) will then be drawn **Inw** towards the zone of **L** pressure.

* Air that cools at height in the atmosphere will tend to **D** because it is **Den** than surrounding air. Sinking air creates an area of **H** pressure where air will be forced **Ou** at ground level (divergent) towards areas of **L** pressure.

* Wind (air in **Mot**) blows from areas of **H** pressure to low **Pr**, its force proportional to the **Di** in pressure (the **pressure gradient** which can be judged by the distance between the **Is**). It does NOT blow in a **St** line, but is diverted by the **Ro** of the earth to the **right** (in the **N** hemisphere - causing prevailing winds in Britain to be **S** westerly and not southerly). This force is called the **CORIOLIS FORCE**.

GLOBAL PATTERNS

* Due to temperature, the equator forms a major belt of **L** pressure and the poles of **H** pressure. Equatorial low pressure causes **H** rainfall, mostly in the form of **Conv** thunderstorms. Rising equatorial air diverges at **H** level, and draws in air at **Gr** level.

* High level diverging equatorial air sinks at the latitude of the **Tr** (where rainfall is therefore very **L**, and is where major deserts such as the **Sa** are found) and diverges at **Gr** level.

* Polar **H** pressure causes winds to blow **Ou** at ground level. This **C** air meets warmer air blowing from the **Tr** in the mid-latitudes (40-60°) - that of **Br** and Western Europe. This contrast in **T** of the two air masses results in the development of low pressure systems (**De**) and much **Fr** rainfall. In the British summer, these winds belts move **N** with the overhead **S**. This means that many rain-bearing **Dep** drift north of Britain and causing rainfall in **Sca** or **Ic**.

* Wind systems that blow consistently through the year are called **T** winds. These systems are interrupted by any thing which causes **T** to vary on a smaller scale (**Con** land masses, **H** land, distance from the **S**, **Urb** areas, **Alb** etc). They may also vary **Sea** as the overhead sun moves from northern to southern **H**, and even between day and **N**, as temperature **V**.