

occurs only when there is no vertical movement of air.

Horizontal Distribution of Pressure

Air pressure is generally divided in two types viz.:

(i) High pressure also called high or anticyclone.

(ii) Low pressure also called low or cyclone or depression.

In all there are seven pressure belts on the globe. On the basis of mode of genesis pressure belts are divided into two categories—(I) thermally induced pressure belts (e.g., equatorial low pressure belt and polar high pressure belt), and (II) dynamically induced pressure belts (e.g., subtropical high pressure belt and subpolar low pressure belt).

(i) **Equatorial Low Pressure Belt**—It is located on either side of the equator in a zone extending between 5°N and 5°S latitudes but this zone shifts northward (summer solstice) and southward (winter solstice) with the migration of the sun. The equatorial pressure belt is thermally

induced because the ground surface is intensely heated during the day due to almost vertical sun's rays and thus the lower most layers of air coming in the contact with heated ground surface also gets warmed. This warm air expands becomes light and consequently rises upward causing low pressure. The equatorial low pressure belt represents the zone of convergence of north east and south east trade winds. Because of frequent calm conditions this belt is called 'a belt of calm' or doldrum.

(ii) **Sub-Tropical High Pressure Belt**—It extends between the latitudes of 25°–35° in both the hemispheres. This belt is not thermally induced because besides two-three winter months, received fairly high temperature throughout the year. This pressure belt is rather dynamically induced due to rotation of the earth and sinking and settling down of winds. The convergence of winds at higher altitude above this zones results in the subsidence of air from higher altitudes. Thus, descent of winds results in the concentration of their volume and ultimately causes high pressure. This zone is also characterized by anticyclonic conditions which cause atmospheric stability and aridity. This is one of the reason for the presence of **hot deserts** of the world in the western side of the continents in zone extending between 25°–35° in both the hemisphere. This zone of high pressure is known as '**horse latitude**'. In ancient times, the merchants carrying horses in their ships, had to throw out some of the horses while passing through this zone of calm in order to lighten their ships. This is why this zone is called horse latitudes. This zone of high pressure is not a continuous belt but is broken into a number of high pressure centres or cells.

(iii) **Sub Polar Low Pressure Belt**—The belt of sub polar low pressure is located between 60°–65° latitudes in both the hemisphere. The low pressure belt does not appear to be thermally induced because there is low temperature throughout the year and as such there should have been high pressure belt instead of low pressure belt. So this low pressure belt is dynamically produced. Here the air spreads outward from this zone due to rotation of the earth and low pressure is produced. The sub polar low pressure belt is more developed and regular in the southern hemisphere while it is broken in the northern hemisphere, because of over dominance of water in the former case. Instead of regular and continuous belt there are

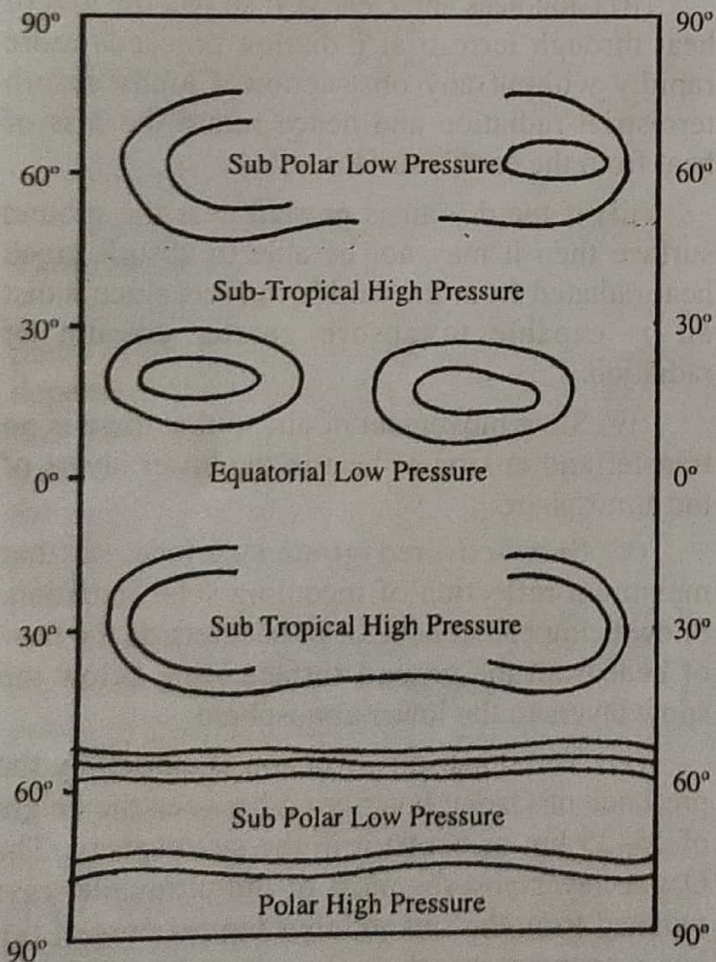


Fig. : Generalized distribution of air pressure

well developed low pressure centres or cells over the oceans in the northern hemisphere.

(iv) **Polar High Pressure Belt**—The high pressure belt persists at the poles throughout the year because of prevalence of very low temperature (below freezing point) throughout the year. Here both thermal & dynamic factors operate. There is thinning out of layers of air due to diurnal rotation of the earth as the air spreads outward due to this factor but this effect is overshadowed by thermal factor and hence high pressure is produced due to very low temperature.

General Circulation of Air