UPSC Civil Services Examination

UPSC Notes [GS-I]

Topic: Atmospheric Pressure [Geography Notes for UPSC]

Atmospheric pressure

- The weight of a column of air contained in a unit area from the mean sea level to the top of the atmosphere is called the atmospheric pressure.
- It is measured in force per unit area.
- It is expressed in 'milibar' or mb unit.
- In application level, the atmospheric pressure is stated in kilo-pascals.
- It is measured by the aneroid barometer or mercury barometer.
- In lower atmosphere, pressure declines rapidly with height.
- The vertical pressure gradient force is much larger than that of the horizontal pressure gradient and is commonly balanced by an almost equal but opposite gravitational force.
- Low-pressure system is encircled by one or more isobars with the lowest pressure at centre.
- High pressure system is also encircled by one or more isobars with highest pressure in centre.
- Isobars are lines connecting places having equal pressure.

Pressure Gradient

- The rate of change of pressure in regard to distance is the pressure gradient.

Pressure belts

- There is a pattern of alternate high and low-pressure belts over the earth.
- There are seven pressure belts.
- Except the Equatorial low, there are two Sub-Tropical highs (in North and South), the two Sub-polar lows (in North and South), and the two Polar highs (in North and South).
- The above-given pressure belts oscillate with the movement of the sun.
- In the northern hemisphere, they move southwards in winter, and in summers they move northwards.
- The Equatorial region gets abundant heat and warm air being light, the air at the Equator rises, generating a low pressure.

- **Equatorial low**
    - It is found near the equator.
    - The sea level pressure is low.
- **Subtropical high**
    - The region in 30 degrees North and 30 degrees South, which are high-pressure areas.
- **Sub-polar Lows**
    - The region in 60 degrees North and 60 degrees South, which are low-pressure belts.
- **Polar Highs**
    - These occur near poles which have high pressure.