UPSC Civil Services Examination

UPSC Notes [GS-I]

Topic: Composition of the atmosphere [Geography Notes for UPSC]

Composition of the atmosphere

- The atmosphere is comprised of several gases, dust particles, and water vapour.
- The presence of oxygen becomes insignificant at the height of 120 km from the surface of the earth with respect to the composition of the atmosphere.
- Water vapour and Carbon dioxide occur only up to 90 km.

Ozone gas

- Present around 10-50 km above earth surface and acts as a sieve, absorbing UV (ultraviolet rays) from the sun.
- Ozone averts the harmful rays from reaching the surface of the earth.

Water vapour

- Water vapour is a variable gas, declines with altitude.
- It also drops towards the poles from the equator.
- It acts like blanket letting the earth to neither to become too hot nor too cold.
- It also contributes to the stability and instability in the air.

Dust particles

- Dust particles are in higher concentration in temperate and subtropical regions due to dry winds in contrast to the Polar Regions and equatorial regions.
- They act as hygroscopic nuclei over which water vapour of atmosphere condenses to create clouds.

Nitrogen

- The atmosphere is composed of 78% nitrogen.
- Nitrogen cannot be used directly from the air.
- Biotic things need nitrogen to make proteins.
- The Nitrogen Cycle is the way of supplying required nitrogen for living things.

Oxygen

- The atmosphere is composed of 21% oxygen.
- It is used by all living things and is essential for respiration.
- It is obligatory for burning.

Argon

- The atmosphere is composed of 0.9% argon.
- They are mainly used in light bulbs.

Carbon Dioxide

- The atmosphere is composed of 0.03% carbon dioxide.
- Plants use it to make oxygen.
- It is significant as it is opaque to outgoing terrestrial radiation and transparent to incoming solar radiation.
- It is also blameable for the greenhouse effect.