UPSC Civil Services Examination

UPSC Notes [GS-I]

Topic: Horizontal And Vertical Distribution Of Salinity (Geography Notes for UPSC)

Horizontal Distribution of Salinity

- The salinity for normal Open Ocean ranges between 33o/oo and 37 o/oo.
- The highest salinity is recorded between 15° and 20° latitudes.
- Maximum salinity (37 o/oo) is observed between 20° N and 30° N and 20° W – 60° W.
- The salinity gradually decreases towards the north.
- The salinity sometimes reaches up to 70 o/oo in the hot and dry regions where evaporation is high.
- The salinity variation in the Pacific Ocean is largely due to its shape and larger areal stretch.
- In the landlocked Red Sea, the salinity is 41o/oo which considerably high.
- The salinity in the estuaries and the Arctic varies from 0 – 35 o/oo, seasonally.
- Due to the influx of melted water from the Arctic region, the salinity decreases from 35 o/oo – 31 o/oo on the western parts of the northern hemisphere.
- The North Sea records higher salinity due to more saline water brought by the North Atlantic Drift despite its location in higher latitudes.
- Due to the influx of river waters in the large amount, the Baltic Sea records low salinity.
- The Mediterranean Sea accounts for the higher salinity due to high evaporation.
- Salinity is very low in the Black Sea due to massive freshwater influx by rivers.
- The average salinity of the Indian Ocean is 35 o/oo.
- The low salinity trend in the Bay of Bengal is due to the influx of river water.
- But the Arabian Sea displays higher salinity due to the low influx of freshwater and high evaporation.

Vertical Distribution of Salinity

- Salinity changes with depth, but the way it changes relies on the position of the sea.
- Salinity at the surface of the sea is decreased by the input of fresh waters or increased by the loss of water to ice or evaporation.
- Salinity at depth is fixed as neither water nor salt can be added in it.
- There is a marked difference in the salinity between the surface zones and the deep zones of the oceans.

- The lower saline water remains above the higher saline dense water.
- Salinity, usually, increases with depth and there is a distinct zone called the halocline, where salinity increases abruptly.
- The increasing salinity of seawater causes an increase in the density of water.
- High salinity seawater, usually, sinks below the lower salinity water. This leads to stratification by salinity.