Geography

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OCEANOGRAPHY

Physical Properties of Ocean (Salinity, Temp, Density).

The oceanic water salinity is always measured in part per thousand that is amount of salt in gram dissolved in sample sea water under oceanographic illustration it is a well accepted notion that the quantity of saline material could vary from equator toward poles and it could also vary in those water bodies which are located in same climatic zone. But the perportion of dissolved saline material always remain constant in sample sea water.

The physical properties of oceanic basins namely salinity and density get influenced by several climatological and oceanographical factor some time one factor sabotage/suppress the other one, and in case these factors are also acting in complementary manner.

Factor influencing or regulating the salinity and Density of water

1. **Temperature & Rate of Evaporation.** has directed proportional relationship with the level of salinity it means high the rate of evaporation more would be the concentration of salt.

The equatorial water bodies receive sufficient amount of solar radiation but characterised by low level of salinity. It is because the relative humidity in the air parcles over equatorial surface reduces the rate of evaporation, the rate of evaporation in equatorial water bodies further reduces by dense cloudiness (70% cloudiness) apart from this Equatorial region receives precipitation throughout the years subsequently the concentration of salt further reduces by the continuous supply of freshwater.

In comparision to equatorial water bodies the tropical and subtropical water bodies carry high level of salinity it is because the tropical and subtropical

influence maintains high rate of evaporation but the prevailing high pressure condition reduces the possibility of cloud formation and precipitation. The resultant impact of all these factors show maximum salinity in tropical subtropical water bodies.

Normally the level of salinity increases from equator to subtropical waterbodies and then it further decreases from subtropical toward subpolar water - bodies.

In tropical subtropical waterbodies maximum salinity is obtained or identified in the upper most layer of the ocean. it means the level of salinity further decreases with ever dreasing depth although in the uppermost photic layer water bodies the level of salinity could increase upto optimum level once it reaches upto its critical point then it reduces the rate of evaporation.

Temperature and level of salinity also regulates the density of watermass in different type of oceanic basins warm water bodies show low

level of density and cooler oceanic basin reflects more denser watermass. It should be noted that in tropical subtropical water bodies where temperature remains high the level of salinity also high and so to as the degree of density. it is because the prevailing high pressure condition increases the specific heat of water molecules and concentration of saline material further accentuates, to increase the level of density. It can be said that the level of density normally increases from equator toward poles

2. Atmospheric Pressure

Atmospheric Pressure does not have any direct influence over the concentration of salt however if the high pressure condition prevails with high temperature, then the rate of evaporation would be higher but the amount of precipitation would be low. The resultant impact of all these factor would lead to maximum level of salinity, it should be noted that all these factors are very well obtained in the zone of

subtropical highpressure belt subsequently sub-tropical waters bodies always show high level of salinity.

Dead sea and lake warm are the typical examples of landlocked waters bodies showing high level of salinity because of their subtropical position, here also the thermal influence of tropical s subtropical climate maintanes high level of salinity. (high temperature & rate of evaporation) but the prevailing high pressure condition reduces the possibility of precipitation apart from this the supply of heat from land to sea by the process of conduction heating also maintain high rate of evaporation.

3. Influx or Outflow of River

Normally near the mouth of a drainage system by the influx of fresh waters, the level of salinity remains low. It should be noted that waters bodies like mediterrean, Black sea, Caspian Sea, Bay of Biscay etc. are located in the same range of ~~ext~~ latitudonal extent but featured by differentiated level of salinity.

It is because rivers like Denube, DNiper, Dneister, have their outflow in the enclosed basin of black sea. (salinity 20 part /ooo) River of Volga supplies fresh water along the northern margin of Caspian sea while the southern margin is characterised by high level of salinity and subtropical influence. in Comparision to these water bodies the basin of Mediterrnean shows high level of salinity (40 /oo) it is because mediterrnean sea receive precipitation during winter months and summer seasons are featured by the predominance of high pressure condition over the surface it means during summer months the rate of evaporation remains high but the amount of rainfall remains low by prevailing anticyclonic High pressure condition apart from this the inculcation of oceanic water from the strait of GIBRALTER also maintane average level of salinity.

Propagation of Oceanic Current → Tropical warm oceanic current carrying high level of salinity also increases the level of salinity and density reaching in the water bodies of temperate latitudes it is because when warm and saline oceanic current of tropical origin becomes cooler, it increases the level of density in high latitudinal water bodies, density further increases because tropical warm oceanic current also carry high level of salinity. On the other hand the cold eastern boundary current enters in tropical equatorial latitudes it decreases the level of salinity in water bodies of low latitudes.