

## Impacts of Oceanic Currents;

In tropical-subtropical areas upwelling of cold water takes place on the western coast of continental margins to bring phytoplankton near the upper layers of the ocean, this phenomena remains very favourable for fishing industries, however in temperate areas where two contrasting currents are converging along the eastern coast of continental margins, a particular atmospheric-oceanographical condition develops along the coast which remains favourable for fish breeding.


The propagation of oceanic current in different seas and water bodies also regulates the mechanism of temperate cyclones. The circulation of Mediterranean current in the basin of Mediterranean sea creates a relative low pressure condition during winter months, which remain favourable for the formation of temperate cyclones.

In Northern Indian Ocean, the propagation of N.E. and North equatorial current in East-West direction during winters is able to accumulate sufficient amount of warm water mass along the eastern coast of Africa.

Subsequently, a relative low pressure develops along the coast which intensify the propagation and velocity of retreating monsoon and north-east monsoon. On the other hand, during summers, the propagation and frictional drag of SW monsoon starts the upwelling of cold water and propagation of cold Somali current from the coast of Africa. By this resultant phenomena, the propagation and velocity of south west monsoon also increases over Arabian sea and Bay of Bengal.

## Tides or Oceanic Tides

Tides are the rhythmic rise and fall of sea water created by differentiated gravitational pull of celestial bodies like Sun and Moon. Since water mass remains the least bound matter over the surface of earth, the impact of gravitational pull is able to generate some undulation in the oceanic water mass over different meridians. The undulation or oscillation over a particular meridian also develop tidal waves, able to propagate in different directions.





By applying the general rule of gravitation, it is clear that lunar attraction because of its nearness is much more obtained over the surface of earth in comparison to solar gravitational pull. The force applied by the centre of moon over the centre of earth is of the magnitude of  $M/r^2$  where  $M$  is the mass of moon and  $r$  is the distance b/w centre of earth and moon. It should be noted that under oceanographic illustration always four conditions are taken into consideration to the tidal period. These range, their duration and their arrival over the continental landmass.

### Tidal Mechanism

The mechanism of tidal undulation / disturbance depends upon differentiated gravitational and centrifugal force. Basically, the tide producing force over the surface of earth is nothing but difference b/w the two resultant forces. Normally the surface of moon meridian is characterized by the development of high tides, the same type of high tides are also obtained over the meridian which is almost opposite to the moon meridian.

Every attractive buldge due to ~~static~~ inertia tends to develop equal and opposite centrifugal buldge. Basically both gravitational and centrifugal force get balanced at the centre of earth but over the surface of earth the difference b/w the two is very much acknowledged. The same difference create sythmic rise and fall of sea water / oceanic water. It should be noted that by the same difference or magnitude, low tides are observed over lateral meridians.

The moon completes the whole revolution of earth in total 8 phases subsequently the position of moon is continuously changing with regard to surface of earth. ~~At the time of~~ when all the celestial bodies are in the straight lines, the high tides are obtained over moon and opposite meridian, it is because during this conjunction, the combined gravitational force of sun and moon would work over the same meridian. Similarly, the solar ~~the~~ and lunar centrifugal force in a combined manner would bring high tide over opposite meridian. At the same time during the opposite phenomena, high tides would be obtained over moon and opposite meridian, it is because the lunar attraction get complemented by solar centrifugal and solar attraction gets supplemented by lunar centrifugal.

However, at the time of quadrature, the solar (3)  
lunar attraction and the centrifugal impact  
would work over different meridians subsequently  
low tides would be obtained over the surface of earth.