

If dynamic anticyclonic high pressure condition develops over the surface of Earth then days in the concerned areas become more warmer and nights become relative more cooler. It is because once high pressure condition develops over the surface of Earth there would be no possibility of cloud formation. Subsequently the impact of solar radiation would be high over the surface of Earth and the amount of unit heat absorbed by the surface gets radiated in upper atmosphere without any obstacle.

If thermal High pressure condition develops over the surface of Earth then the days are relatively less warmer but nights remain extremely cooler. It is, because during winter nights have more time to radiate the energy absorbed by the surface of Earth and lower troposphere.

(2)

If permanent, persistent and perennial anticyclonic condition prevails over the surface of earth then the climatology of the concerned region would be arid, semi-arid or desert type. It should be noted that the same prevailing H.P condition is very much acknowledged in the zone of subtropical high pressure belt. Subsequently deserts like Arizona, Mozambique, Atacama, Sahara, Kalahari, Namib, Thar, and western Australian Deserts are physically located in the same zone the prevailing high pressure condition further strengthen by the propagation of cold oceanic current and <sup>upwelling</sup> ~~upwelling~~ of cold water, along the western coast of continental landmass. Apart from this the prevailing easterlies are also not in a position to cause sufficient precipitation along the western <sup>coast</sup> ~~coast~~ since their moisture content get exhausted reaching along the western margin of continental landmass.



## Impact of Anti-Cyclones

(8)

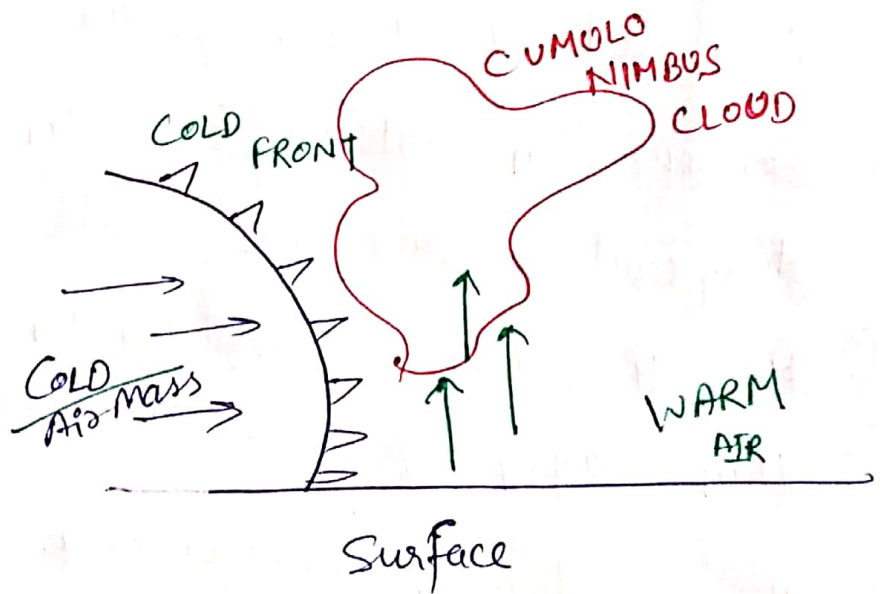
In subtropical temperate regions where the air parcels are less moist but coming near to the surface of earth, could attain the level of condensation it is because the cooling of air parcels during the night-time make them much more saturated to release water droplets over the surface of earth. These minute water droplets<sup>et</sup> which appear to get suspended are regarded as Dew. If the same process of condensation takes place in areas where temperature remains well below freezing point then the air parcels condense in the form of thin layer of ice over the surface of earth. This particular phenomena is regarded as frost action. If the same process of condensation takes place in lower troposphere but not over the surface of earth then the surface for condensation is provided by

(4)

numerous dust particles prevailing in atmosphere as a hygroscopic nuclei. Condensation over these nuclei create a visible aggregation of water droplets known as fog or smog.

Ans:

Air masses and Temperate Cyclones (Extra tropical cyclones)





Temperate cyclones are also low pressure converging circulatory systems having drastic meteorological impact over the climatology of a particular region. It should be noted that the mechanism of temperate cyclones depends upon the convergence of contrasting air masses and formations of fronts between them in this regard. Temperate cyclones are different from that of tropical cyclones in their process of origin propagation and possible impact.

Air masses are immense body of air, usually thousands of kilometers long having similar physical properties of average temperature and level of moisture content. Based on their surface or source of origin they can be differentiated or characterised into warm or cold, dry or humid continental or marine, and Tropical or polar.

According to Polar front theory when two contrasting air masses are converging with each other then a transitional zone develops between the two called as the front.

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This resultant phenomena of frontogenesis is responsible to develop cyclonic air system over the surface of Earth.

According to this theory the formation of warm front takes place when the movement of warm air starts in the territory of cold air mass.

The fronts are named based on the aggressiveness of air mass and the physical location of an air mass, behind the front. Along the zone of

convergence aggressive warm air mass ~~upwell~~ <sup>upwelling</sup> in troposphere to create a zone of discontinuity with cold air mass. By the regular ~~upwelling~~ <sup>upwelling</sup> of warm air parcels several types of cloud also develop near and away from the front.

About 300 km ~~away~~ <sup>ahead</sup> from the front thicker STRATUS, NIMBO STRATUS cloud develop in atmosphere to cause some precipitation over the surface other cloud like ALTO STRATUS, CIRO STRATUS and CIRROS, also develop ahead of NIMBO STRATUS CLOUD.



It should be noted that during hot summer when more moist unstable air enters in the zone of cold air masses then the formation of CUMULO NIMBUS CLOUD would take place along the boundary of front. These clouds are responsible to cause heavy precipitation over the surface.

Cold fronts develop when cold air actively advances into a region occupied by warm air masses. The incursion of cold air in the zone of warm air would start the upliftment of warm air from the boundary of front to create CUMULO NIMBUS CLOUDS in troposphere.

Cold fronts are about twice steeper than warm front and they advance at the speed up to 80 km/hr., about 50% faster than warm front.

8

