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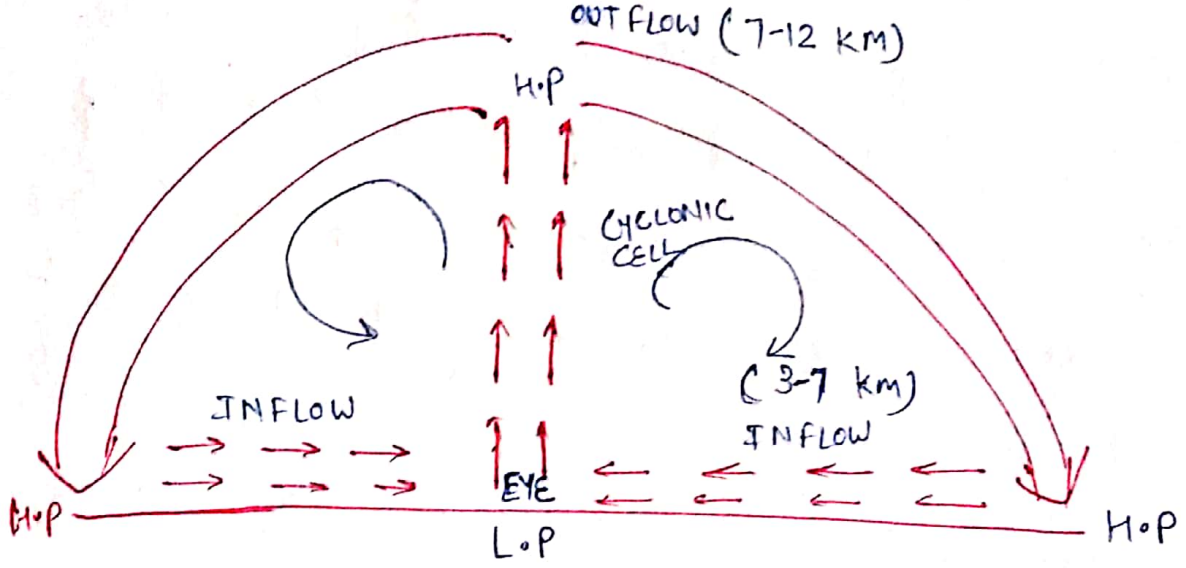
Mechanism of Temperate Cyclone

According of Polar front theory when the aggresive cold air mass coming from high latitude able to inculcate in the zone of warm air mass it uplifts the warm air from the surface and create an intense low pressure condition in the sector of warm air mass by this resultant phenomena the formation of both cold and warm front would take place over the surface of Earth in the zone where two contrasting air masses are converging. This phenomena of frantogensis also start the mechanism of cyclongensis since the upliftment and upwelling of warm air parcles along the boundary of cold & warm front respectively creates an intense low pressure condition to start anticlockwise cyclonic air motion in Northen and clockwise circulation in southern hemisphere.

In the course of time by the aggressive nature of cold air masses coming from high latitudes the approaching cold front able to surpass the warm

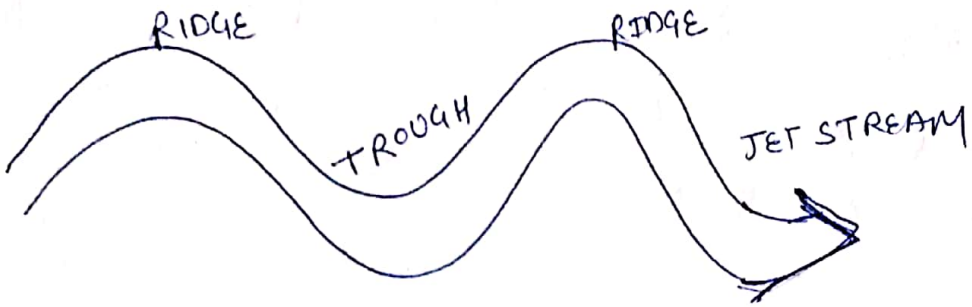
front to create occluded front over the surface of Earth. In this stage of occulution more and more upliftment and upwelling of warm air parcles would take place over the surface of Earth, to create an intense low pressure condition and make the cyclonic air motion more vibrant and devastating in the last stage when the warm air parcles get uplifted completely by aggresive cold air masses, low pressure condition disappear from the surface and this phenomena would lead to the empirical death of a cyclone. It means the phenomena of cyclonogensis is complementary with frontogensis and the death of cyclone starts with the phenomena of frontolysis. It is also well accepted concept in climatology that the zone where the contracting air mass are convercerging there is a high possibility of front and cyclone formation.



CYCLONE FORMATIONS & JET STREAMS

Under ~~meteorological~~ meteorological illustration and climatological studies it is established notion that upper level flow of JET streams also contribute in the formation of cyclonic and anti-cyclonic conditions over the surface of earth. When the JET stream began to meander widely from north to south, forming high amplitude waves of alternating trough and Ridges cyclonic activity intensify over the surface of earth. Morever when surface cyclones form, almost invariably they are centred below the JET stream core. In the regions where ridges of JET streams develope over the surface of earth more upliftment or ~~upwelling~~ upwelling of air parcles

would take place from the surface to create an intense cyclonic condition, on the other hand if the regions of trough are propagating over the surface, more subsidence of air parcles would take place to create a strong anticyclonic high pressure condition. it means upper level convergence normally favours downs stream from a Ridge whereas divergence creates a low pressure condition over the surface.



WESTERN DISTURBANCES (A case study of Temprate Cyclone)

After September when the solar insolation remains vertical in southern hemisphere the sequential shifting of pressure belts also takes place towards south at this time the physical location of subtropical high pressure belt is over Sahara Land form.

The presence of subtropical high pressure belt over Sahara with the arrival of winter months

Creates an antiyclonic high pressure conditions in the regions of Sahara located near mediterra -nean sea at the same time strong high pressure condition also develops over the continental landmass of Europe to start the divergence of Air masses. towards.

↑ Water bodies like Black and Caspian sea, in this change atmospheric scenario the phenomena of frontogensis followed by cyclogensis starts over water bodies, to start viberant wind motion and vibrant precipitation over the surface and coastal areas of respective water bodies.

Cyclones orginating over the surface of respective waterbodies further comes under the influence of prevailing winds like westerlies and subtropical JET stream. The prevailing wind motion of the surface and upper troposphere able to carry/drage the regional cyclonic wind motion in west-east direction. In their path they also able to carry some precipitation over Iran and Afganistan and finally through Pakistan the same cyclonic wind motion carrying some amount of moisture able

to enter in the subtropical region of Indian subcontinent.

In context to India these cyclones are originating and entering from west through prevailing Westerlies and subtropical JET stream. At the same time they also able to cause some amount of precipitation during winter over subtropical India, but they are not a part of regular monsoon circulation. Subsequently they are designated as western disturbances.

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① MORPHOLOGY OF OCEAN
② PHYSICAL PROPERTIES of OCEAN
③ OCEANIC CURRENTS
④ WAVES
⑤ TIDES
⑥ CORAL REEF
⑦ CLOUD.

} Oceanography